



Easton Staff Development Review MEETING AGENDA

Wednesday, November 22, 2023 - 10:00 AM
Council Chambers, Easton Town Office
14 S Harrison Street

1. Staff Review

a. Staff review only time: 10:00 AM - 11:00 AM

Easton Staff Development Review (ESDR) meetings are an opportunity for staff to meet with applicants to discuss our preliminary review of their application. At the ESDR meeting, staff also confirm with the applicant the next steps in the review process.

No public comments will be taken at this meeting, but there will be opportunities for public comment at future Planning Commission and/or Town Council public hearings.

2. Discussion Items

- | | | |
|-----------|----------------------------|---|
| a. | Application Number: | 2023 - 23 |
| | Location: | Mistletoe Drive, Lot 2 & 3
Tax Map 025, Grid 0022, Parcel 0138 |
| | Applicant: | Lane Engineering, LLC |
| | Request: | Sketch Site Plan and Stormwater Management review of a proposed manufacturing building and 2 story office building with associated site improvements, and interior property line abandonment. |
|
 | | |
| b. | Application Number: | 2023 - 24 |
| | Location: | 507 North Street and 108 North East Street
Tax Map 103, Grid 0EA, Parcel 0753 & 0756, Lot 3 & 4 |
| | Applicant: | Shoregate of Cannery Commercial LLC |
| | Request: | Sketch Site Plan review for the demolition of the existing garage and storage building; and to construct three |

(3) multi-family residential and amenity buildings.



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

RECEIVED
OCT 30 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 Reference:	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 Required Y ☒ N ☐

BOZA Required Y ☐ N ☒

Historic District Commission Required Y ☐ N ☒

Resubmission for ESDR Required Y ☐ N ☐

Staff Signature *Samantha N. Smith*

Date 11/13/2023

Revised 02-2019

**Town of Easton**

Engineering, Planning and Zoning

14 South Harrison Street, Easton, MD 21601

RECEIVED**NOV 01 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 Reference:	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

For Office Use Only

Planning Commission Required	Y ☐	N ☐
Planning Commission Meeting Date		
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



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

RECEIVED
OCT 31 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 Reference: 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:

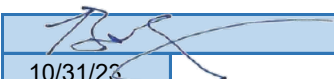
Abandoning interior property line between lots 2 & 3.

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			
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	Review Fee Paid	10/31/2023
		Revised 02-2019	



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

RECEIVED
OCT 31 2023
TOWN OF EASTON

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 spaces 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 employees 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

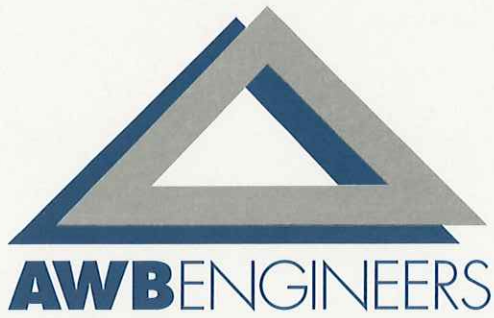
10-31-23

Printed Name of Applicant or Agent

Brett Ewing

ESDR Meeting Date: 11/22/2023

ESDR 23-23 / 23-1069



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.

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,

A handwritten signature in blue ink, consisting of a stylized 'E' followed by a long horizontal stroke.

Eric M. Catellier, AIA
Project Architect

APPENDIX B

SKETCH PLAN SUBMITTAL CHECKLIST

NOTE: THIS CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED ON A SITE PLAN. ADDITIONAL INFORMATION MAY BE REQUIRED FOR UNIQUE SITUATIONS.

COMPLETE THE CHECKLIST AND SUBMIT IT WITH THE PLAN. IF AN ITEM IS NOT APPLICABLE, ENTER "N/A".

1. Location map,	<u>X</u>
2. Boundary,	<u>X</u>
3. Topography,	<u>X</u>
4. General proposed land uses drawn to scale, and	<u>X</u>
5. The Forest Stand Delineation as detailed in the Town of Easton's Forest Conservation Ordinance.	<u>X</u>
6. The location of any easements, rights-of-way or any other encumbrances which pertain to the property subject to the site plan review.	<u>X</u>
7. Conditions of concern, for example, water courses, wetlands, floodplains, or other environmentally sensitive features.	<u>X</u>
8. Location of refuse collection, exterior lighting, fencing, and all pedestrian walkways and sidewalks.	<u>X</u>
9. General location and description (r.e. intended function, proposed species, etc.) of proposed landscaping.	<u>X</u>
10. Location of parking including layout and landscaping.	<u>X</u>
11. Conceptual building elevations or renderings illustrating the character, scale, and materials of all proposed structures. Such elevations or renderings shall be sealed by a licensed professional as described above.	<u>X</u>
12. A statement describing the extent to which the application complies with the Recommended Design Principles for Easton set forth on pages 29-31 of the Comprehensive Plan.	<u>X</u>

APPENDIX B-2

SKETCH STORMWATER MANAGEMENT PLAN SUBMITTAL CHECKLIST

EFFECTIVE MAY 4, 2010

NOTE: THE FOLLOWING CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED FOR SUPPORT OF A STORMWATER MANAGEMENT CONCEPT PLAN, SITE DEVELOPMENT PLAN, AND/OR FINAL DESIGN PLAN. THE TOWN MAY REQUEST ADDITIONAL INFORMATION AS DEEMED NECESSARY.

COMPLETE THE APPROPRIATE CHECKLIST AND SUBMIT IT WITH THE PLANS, APPLICATION FORM, NARRATIVE OR REPORT, AND FEE. ITEMS IN BOLD ARE REQUIRED FOR CONCEPT AND/OR SITE DEVELOPMENT PHASE REVIEW.

I. Sketch Plan Submittal

A. Site and Resource Map

Natural Resources Identified on Plan, including, but not limited to:

Please use these responses for the following:

(Provided = P; Not Provided = NP; Not Applicable = N/A)

Tidal and Non-Tidal Wetland Boundaries

Wetland Buffers

Floodplain Boundaries and Elevations

Streams and other Waterways

Stream Buffers

Forest Boundaries

Forest Buffers

Critical Areas

Steep Slopes (>25%)

Erodible Soils

Areas of High Recharge

Springs

Soil Types and Hydrologic Soil Groups

Bedrock and/or other Geologic Features

Vegetative Cover

Existing Drainage Areas and Flow Patterns

Existing Stormwater Outfalls

Site and Resource Map field verified by a properly
licensed design professional.

Existing contours (1' max intervals) and utilities shown.

Large tracts of contiguous open spaces, forested areas and
other important resources protected by conservation
easements.

Opportunities for afforestation identified.

Wetland, stream and forest buffers enhanced and/or

P
N/A P
P P
P P
N/A
N/A
N/A
N/A
P N/A
N/A P
P P
P
P

P

P

P

expanded.

N/A

B. Site Fingerprinting and Development Layout

Locations of proposed impervious areas provided.

P

Proposed contours (1' max intervals) and utilities shown.

P

Preliminary locations of proposed Environmental Site Design (ESD) practices provided.

P

Locations of stormwater outfalls and conveyance provided with offsite storm drains, culverts and grass channels with size and slope.

P

Limit of disturbance and extent of clearing & grading.

P

Site natural resources protected during construction.
If site natural resources must be disturbed during construction, please include an explanation in the stormwater narrative.

P

Better Site Design Techniques incorporated, including:

Sheetflow and overland flow provided wherever possible

P

Building footprint and site layout designed to protect conservation areas

P

Proposed streets, rights of way, and/or sidewalks with modifications to reduce impervious area

N/A

Landscaped medians and/or cul-de-sacs

P

Stormwater management features in medians or cul-de-sacs

P

Private open road section with grass channels and/or biofilters

P

Minimize numbers of parking spaces and sizes

P

Narrow frontages to reduce road length

P

Site graded to encourage runoff from impervious areas to pervious areas or other natural conveyance systems

P

C. Stormwater Narrative

Title Page includes:

Job Name

Owner/Developer

Design Professional

Date Prepared

Seal and Signature (properly licensed Design Professional)

P

P

P

Project is identified as new development or redevelopment.
(Redevelopment projects have $\geq 40\%$ total site imperviousness)

P

Project and streets designed for 2-year and 10-year quantitative management.

P

Project is identified as being within the Tanyard Branch Watershed. (Projects within this watershed must manage proposed 10-year storm flows to the existing 2-year storm discharge rate.)

N/A

A narrative that supports the concept and describes how the design will achieve:

Natural resource protection and enhancement

P

Maintenance of natural flow patterns

Reduction of impervious areas through better site design, alternative surfaces, and non-structural practices

P

Implementation of ESD planning techniques and practices to the Maximum Extent Practicable (MEP)

P

Preliminary ESD sizing calculations provided

P

Integration of erosion and sediment controls (ESC) into the stormwater strategy

P

D. Sketch Plan Meeting

Following the Sketch Plan submittal, a meeting will be scheduled between the Town of Easton Planning & Zoning, Town Engineer, the Talbot County Soil Conservation District (SCD) ESC reviewer, the owner/developer, the SWM and ESC designer(s), and any other reviewers deemed necessary by the Town of Easton and/or the Talbot County SCD. Official Minutes from the Sketch Plan Meeting must be submitted for review and acceptance by all parties. These minutes must accompany all future submittals.

OK

This checklist completed by Alan F. Thors Date 10-31-23

APPENDIX B

SKETCH PLAN SUBMITTAL CHECKLIST

NOTE: THIS CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED ON A SITE PLAN. ADDITIONAL INFORMATION MAY BE REQUIRED FOR UNIQUE SITUATIONS.

COMPLETE THE CHECKLIST AND SUBMIT IT WITH THE PLAN. IF AN ITEM IS NOT APPLICABLE, ENTER “N/A”.

1. Location map,	<u>X</u>
2. Boundary,	<u>X</u>
3. Topography,	<u>X</u>
4. General proposed land uses drawn to scale, and	<u>X</u>
5. The Forest Stand Delineation as detailed in the Town of Easton’s Forest Conservation Ordinance.	<u>N/A</u>
6. The location of any easements, rights-of-way or any other encumbrances which pertain to the property subject to the site plan review.	<u>X</u>
7. Conditions of concern, for example, water courses, wetlands, floodplains, or other environmentally sensitive features.	<u>X</u>
8. Location of refuse collection, exterior lighting, fencing, and all pedestrian walkways and sidewalks.	<u>X</u>
9. General location and description (r.e. intended function, proposed species, etc.) of proposed landscaping.	<u>X</u>
10. Location of parking including layout and landscaping.	<u>X</u>
11. Conceptual building elevations or renderings illustrating the character, scale, and materials of all proposed structures. Such elevations or renderings shall be sealed by a licensed professional as described above.	<u>X</u>
12. A statement describing the extent to which the application complies with the Recommended Design Principles for Easton set forth on pages 29-31 of the Comprehensive Plan.	<u>X</u>

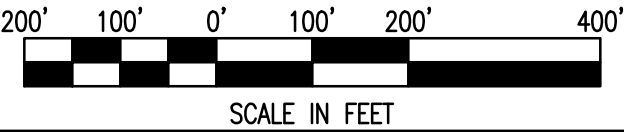
TALBOT COUNTY, MARYLAND

Page 17 of 53

Date: 10/31/2023 - 3:17pm User: mphilips Project Manager: BCE
Drawing Path: J:\2023\0400\230407\Civil3D\230407\Draw\Plan\CSK-230407.dwg | AERIAL
XREF File(s): CBS-24436-BASE-230407\NSF-BASE-230407\ULD-BASE-230407\CSK-BASE-230407\RD-BASE-230407\RR-BASE-230407\RR-BASE-230407\OSD-BASE-230407\LP-BASE-230407



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



NAD 83 (2011) COORDINATE SYSTEM

APPROVED: **PLANS ARE ISSUED FOR REVIEW ONLY**
TOWN OF EASTON - TOWN PLANNER DATE
APPROVED: **PLANS ARE NOT APPROVED FOR CONSTRUCTION**
TOWN OF EASTON - TOWN ENGINEER 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.

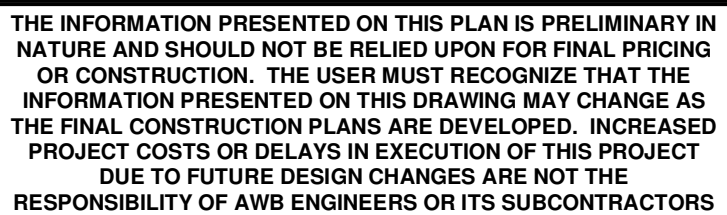
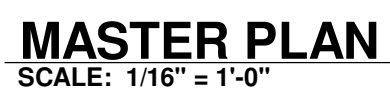


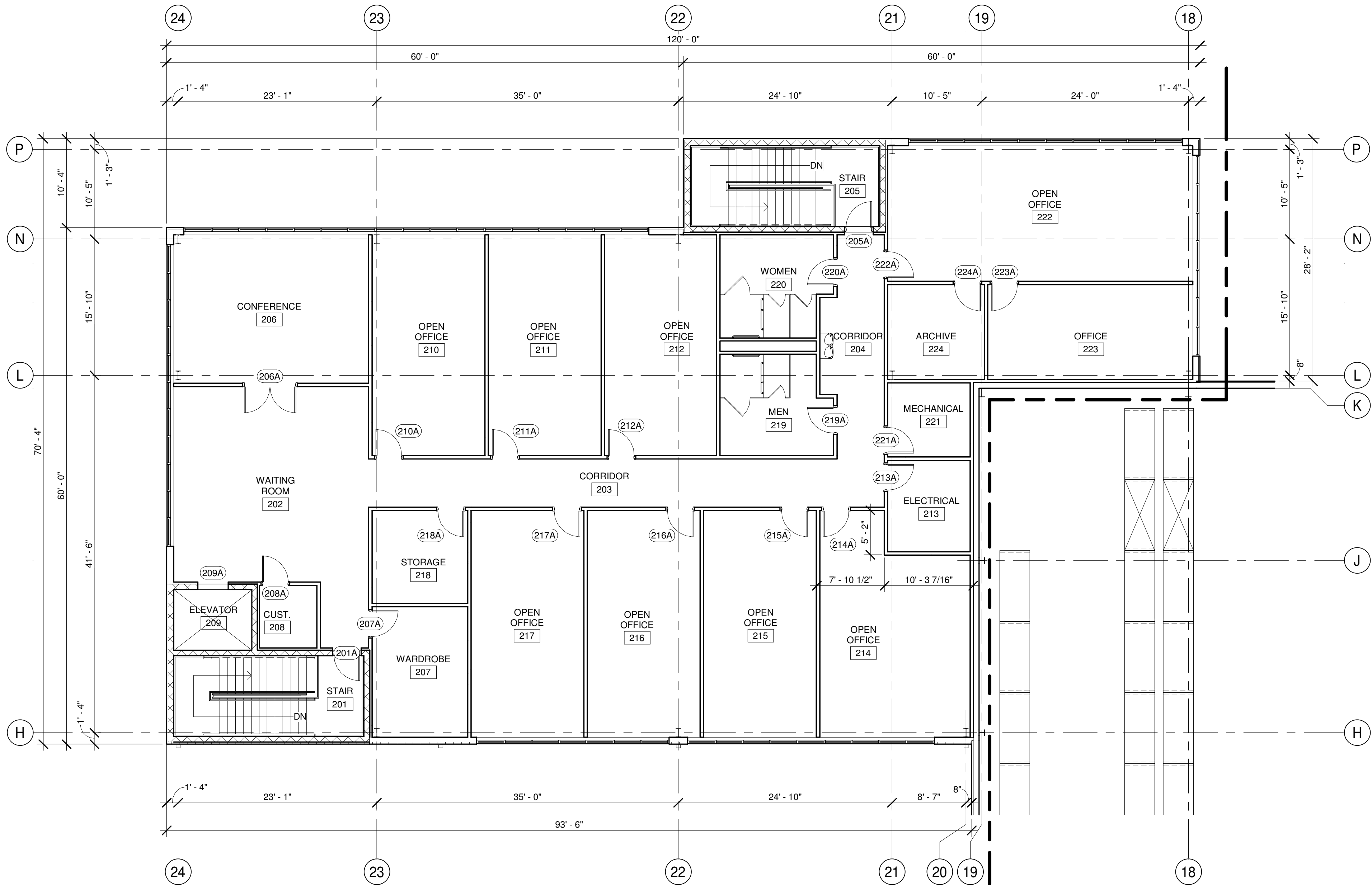
Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@laneinc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Centreville, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

SEAL
DATE

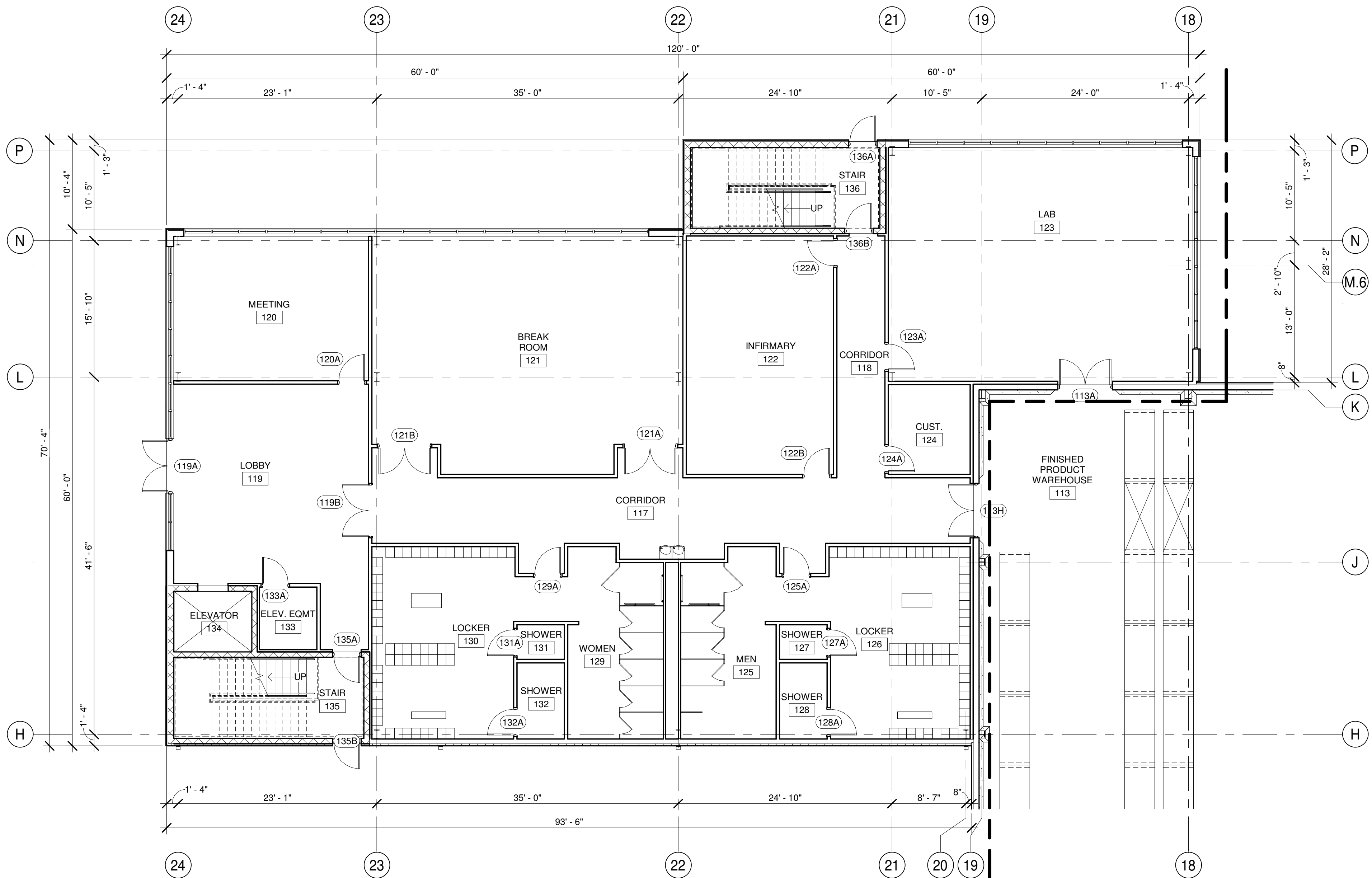
AERIAL CONTEXT PLAN
VETAGRO
LIKE NO ONE ELSE
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 25 GRID 22 PARCEL 138 LOTS 2 & 3
ISSUED/REVISED FOR: ESDR SUBMITTAL DATE: 11/01/23 BCE BY: BCE

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





SECOND FLOOR PLAN - OFFICE
SCALE: 1/8" = 1'-0"

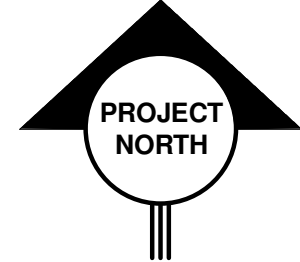
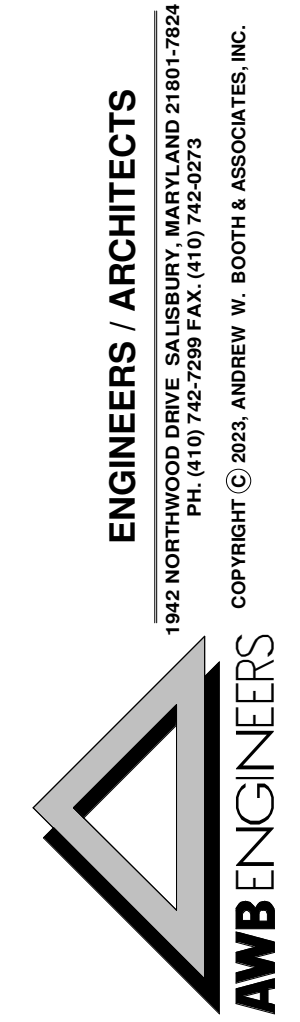


FIRST FLOOR PLAN - OFFICE
SCALE: 1/8" = 1'-0"

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)
2	FIRE BARRIER WALL - 2 HR. RATED C.M.U. TO DECK ABOVE (2015 VCC TABLE 721.1 (2) - CALCULATED EQUIVALENT THICKNESS)
3	FIRE BARRIER WALL - 2 HR. RATED C.M.U. TO DECK ABOVE (2015 VCC TABLE 721.1 (2) - CALCULATED EQUIVALENT THICKNESS)
4	FIRE EXTINGUISHER - BRACKET MOUNTED
5	FIRE EXTINGUISHER - SEMI-RECESSED CABINET

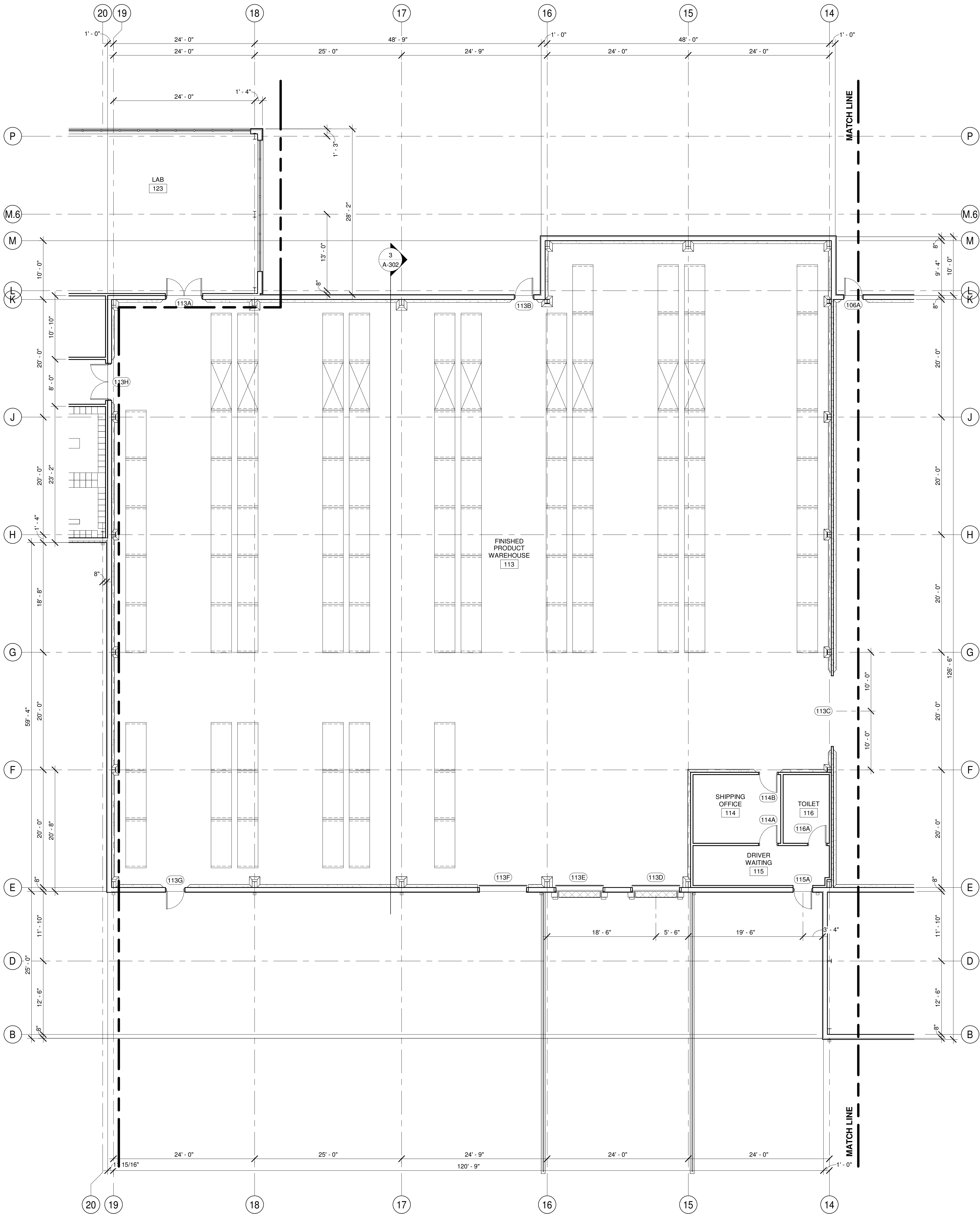
NOTE: BASIC PLAN DIMENSIONS ARE TO FACE OF C.M.U., FACE OF CONCRETE, FACE OF METAL PANEL, FACE OF STUD, OR CENTERLINE OF COLUMNS AS APPLICABLE	
OFFICE	
AREA "A" AREA "B" AREA "C"	
KEY PLAN	
THE INFORMATION PRESENTED ON THIS PLAN IS PRELIMINARY IN NATURE AND SHOULD NOT BE RELIED UPON FOR FINAL PRICING 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	

FLOOR PLANS - OFFICE
VETAGRO FACILITY
EASTON, MARYLAND



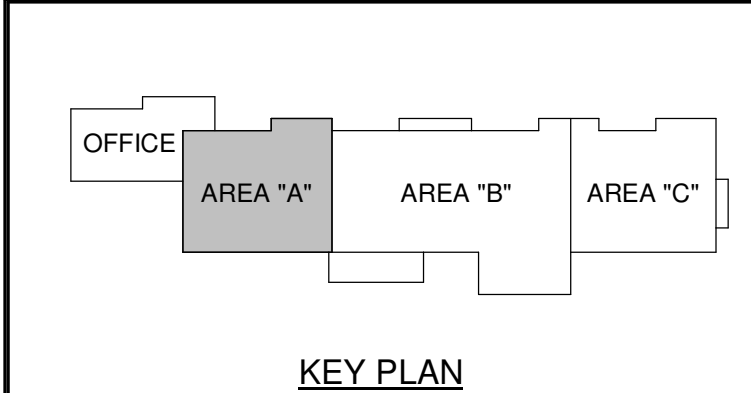
DATE	BY	DESCRIPTION	REV
27 OCT 23	RMW	30% RELEASE	
27 OCT 23	RMW	ESD SUBMISSION	

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



FIRST FLOOR PLAN - AREA "A"
SCALE: 1/8" = 1'-0"

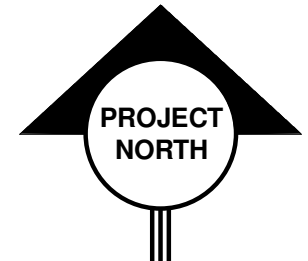
LEGEND	
(101A)	DOOR NUMBER
(101)	ROOM NUMBER
(A)	WINDOW TYPE
1	FIRE BARRIER WALL - 1 HR. RATED GYP. BD. ASSEMBLY TO DECK ABOVE (U.L.DESIGN NO. U419)
1	FIRE BARRIER WALL - 1 HR. RATED C.M.U. TO DECK ABOVE (2015 VCC TABLE 721.1 (2) - CALCULATED EQUIVALENT THICKNESS)
2	FIRE BARRIER WALL - 2 HR. RATED C.M.U.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



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

FLOOR PLAN - AREA "A"
VETAGRO FACILITY
EASTON, MARYLAND

SCALE	1/8" = 1'-0"
DRAWN	RMW
PROJ.MGR.	MRS
JOB	230303
SHEET	A-102

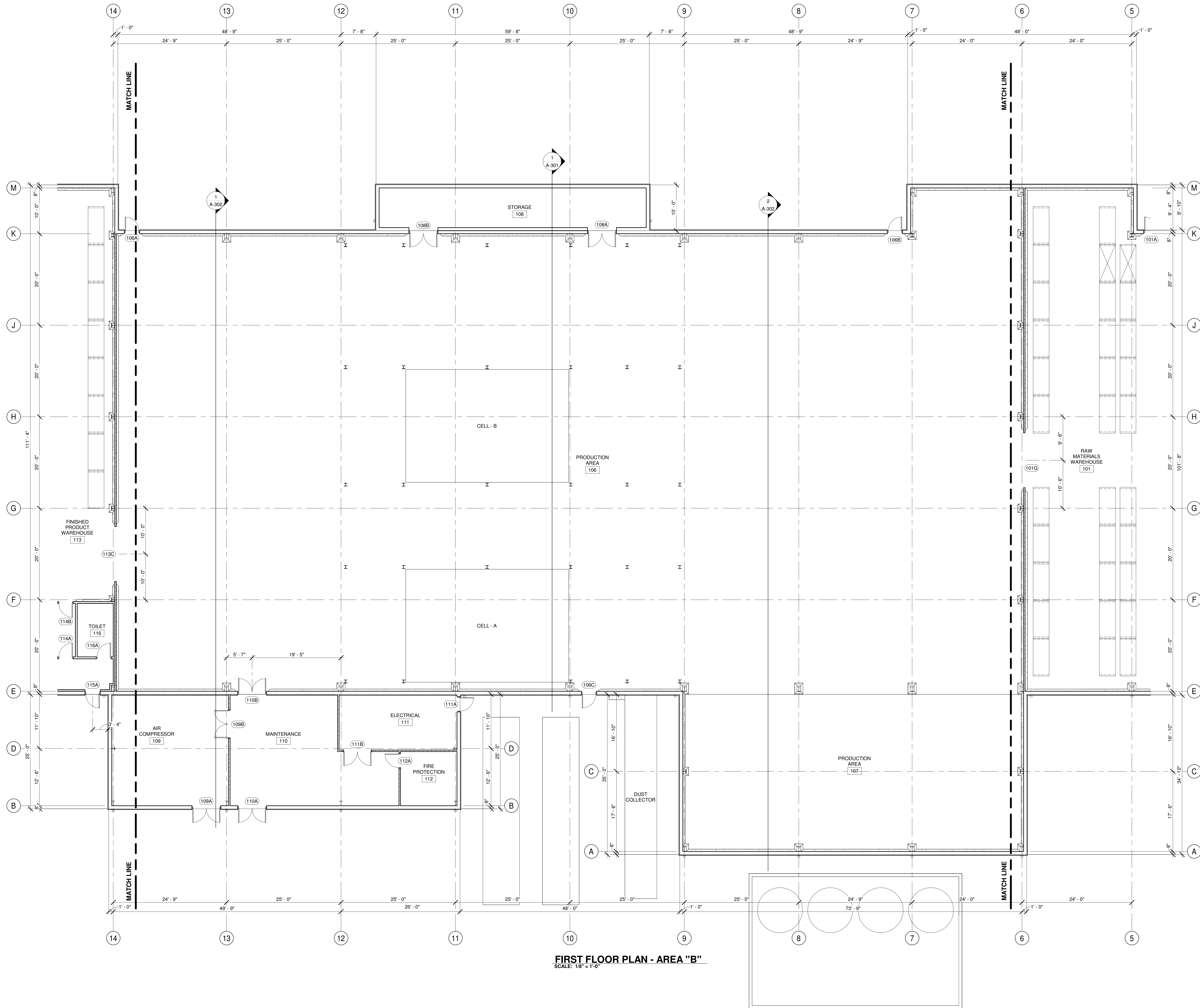


ENGINEERS / ARCHITECTS
1842 NORTHWOOD DRIVE, SALESBURY, MARYLAND 21861-7884
PH: (410) 742-7299 FAX: (410) 742-2972
COPYRIGHT © 2023, ANDREW W. BOOTH & ASSOCIATES, INC.

AWB ENGINEERS



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



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)
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
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.

KEY PLAN

OFFICE
AREA "A"
AREA "B"
AREA "C"

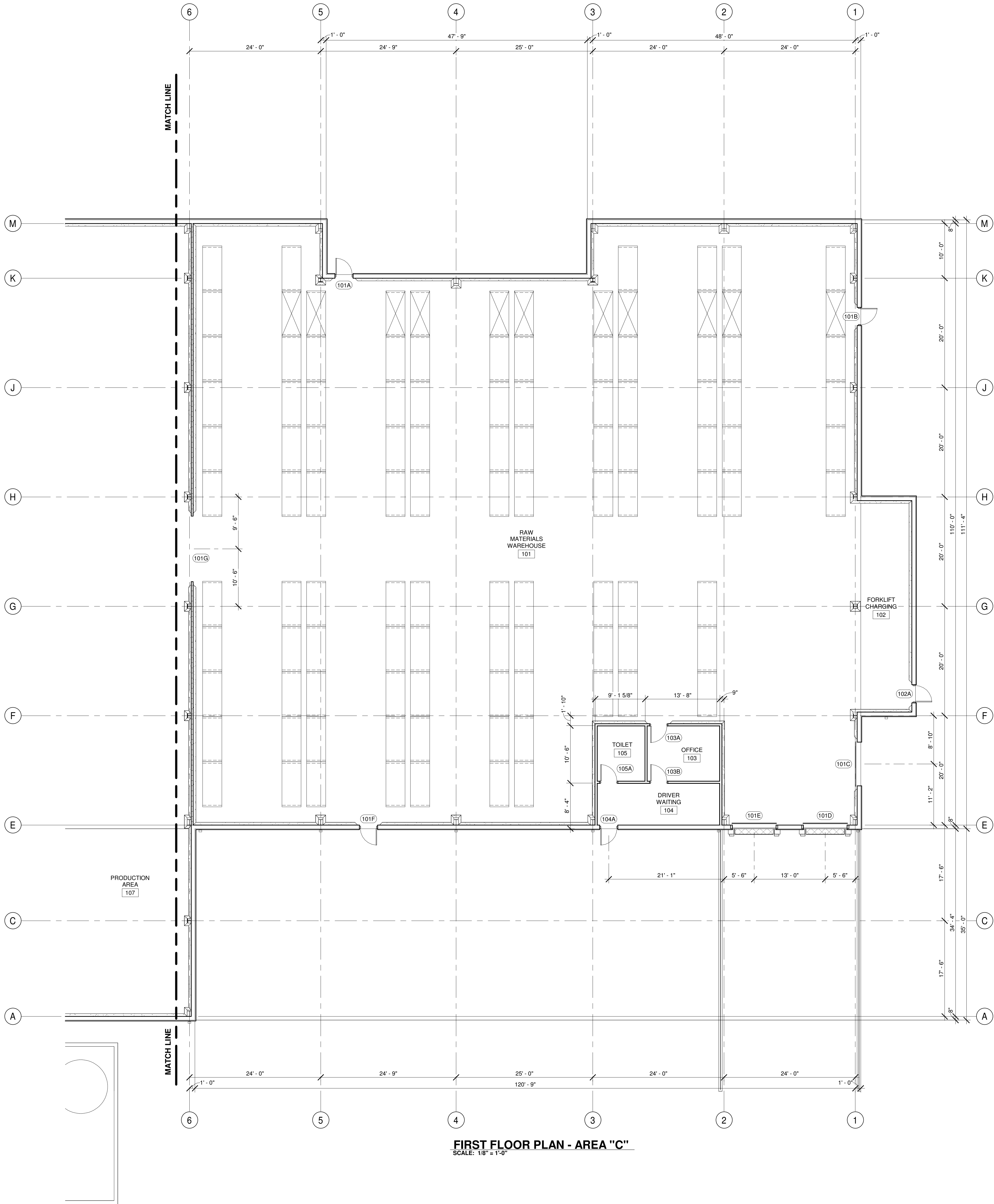
FLOOR PLAN - AREA "B"
VETAGRO FACILITY
EASTON, MARYLAND

AWB ENGINEERS
ENGINEERS / ARCHITECTS
1842 NORTHWOOD DRIVE, SALESBURY, MARYLAND 21861-7884
PH: (410) 742-7299 FAX: (410) 742-9273
COPYRIGHT © 2024 ANDREW W. BOOTH & ASSOCIATES, INC.

WILLOW CONSTRUCTION

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

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



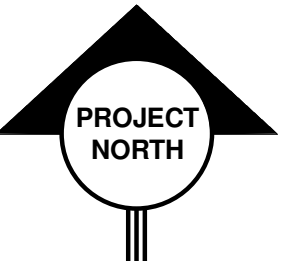
FIRST FLOOR PLAN - AREA "C"
SCALE: 1/8" = 1'-0"

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)
2	FIRE BARRIER WALL - 2 HR. RATED C.M.U. TO DECK ABOVE (2015 VCC TABLE 721.1 (2) - CALCULATED EQUIVALENT THICKNESS)
EXT	FIRE EXTINGUISHER - BRACKET MOUNTED
EXT 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	

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	

FLOOR PLAN - AREA "C"
VETAGRO FACILITY
EASTON, MARYLAND

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

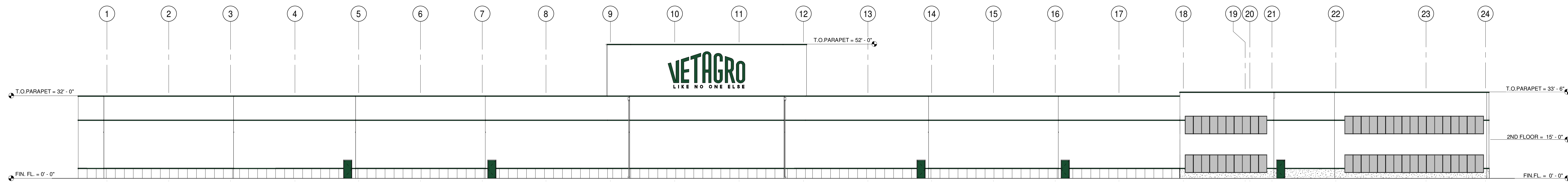


ENGINEERS / ARCHITECTS
1842 NORTHWOOD DRIVE, SALESBURY, MARYLAND 21861-1784
PH: (410) 742-7299 FAX: (410) 742-2973
COPYRIGHT © 2023, ANDREW W. BOOTH & ASSOCIATES, INC.

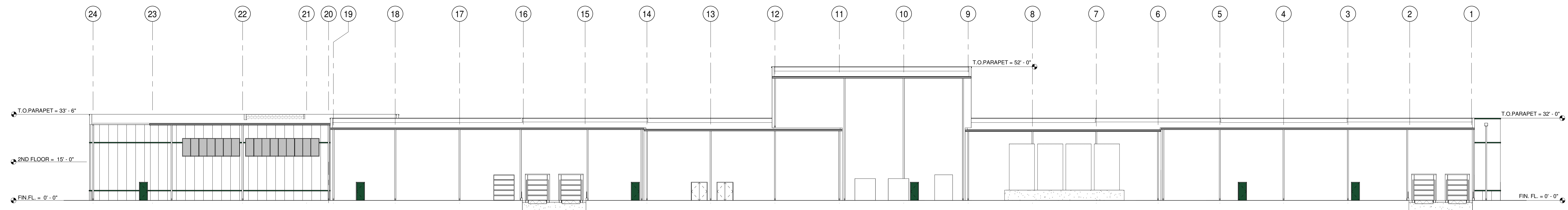
AWB ENGINEERS



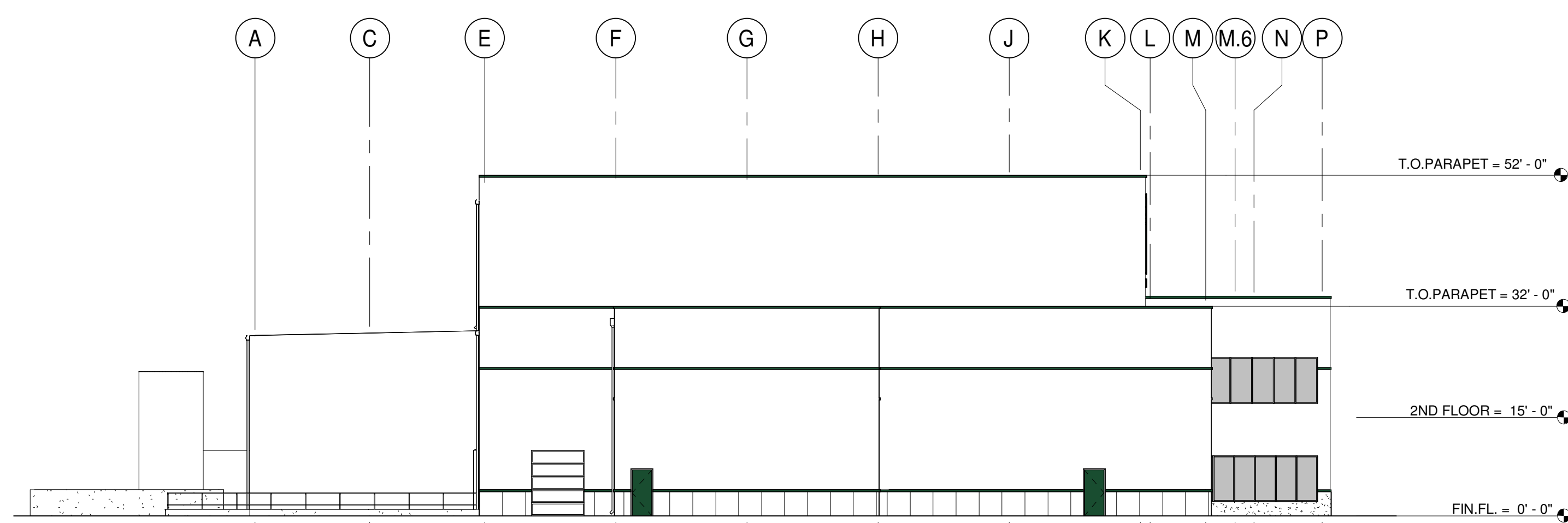
REV	DESCRIPTION	DATE	BY
1	30% RELEASE	27 OCT 23	RMW
2	ESD SUBMISSION	27 OCT 23	RMW



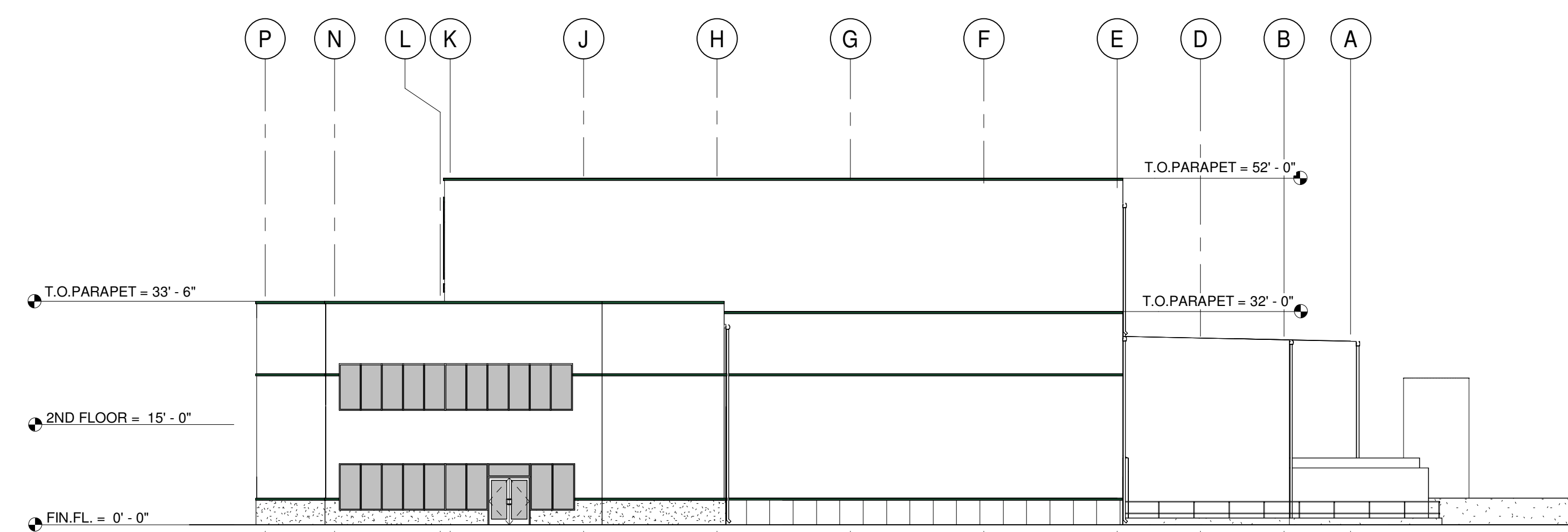
NORTH ELEVATION
SCALE: 1/16" = 1'-0"



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



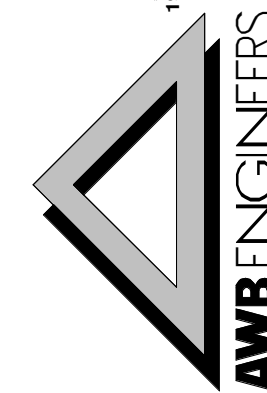
EAST ELEVATION
SCALE: 1/16" = 1'-0"



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

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

ENGINEERS / ARCHITECTS
942 NORTHWOOD DRIVE SALISBURY, MARYLAND 21801-7624
PH. (410) 742-7299 FAX. (410) 742-0273
COPYRIGHT © 2023, ANDREW W. BOOTH & ASSOCIATES, INC.



BUILDING ELEVATIONS

VETAGRO FACILITY
EASTON, MARYLAND

VETAGRO FACILITY
EASTON, MARYLAND

EASTON, MARYLAND

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

A-201

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. INCREASES IN PROJECT COSTS OR DELAYS IN EXECUTION OF THIS PROJECT DUE TO FUTURE DESIGN CHANGES ARE NOT THE RESPONSIBILITY OF AVB ENGINEERS OR ITS SUBCONTRACTORS.



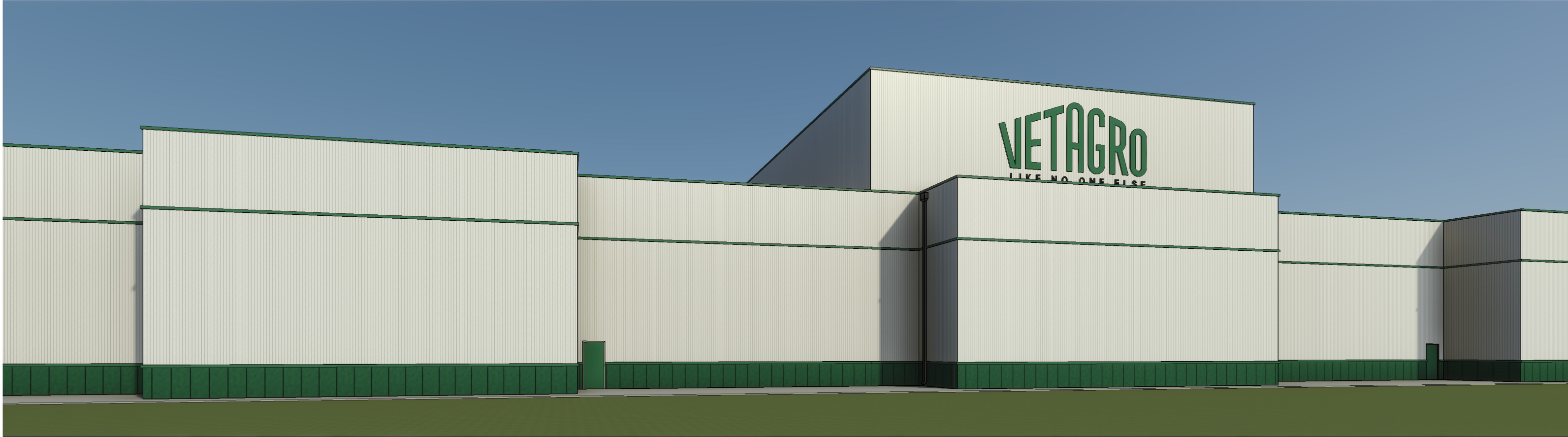
1 WEST 3D VIEW
A-901



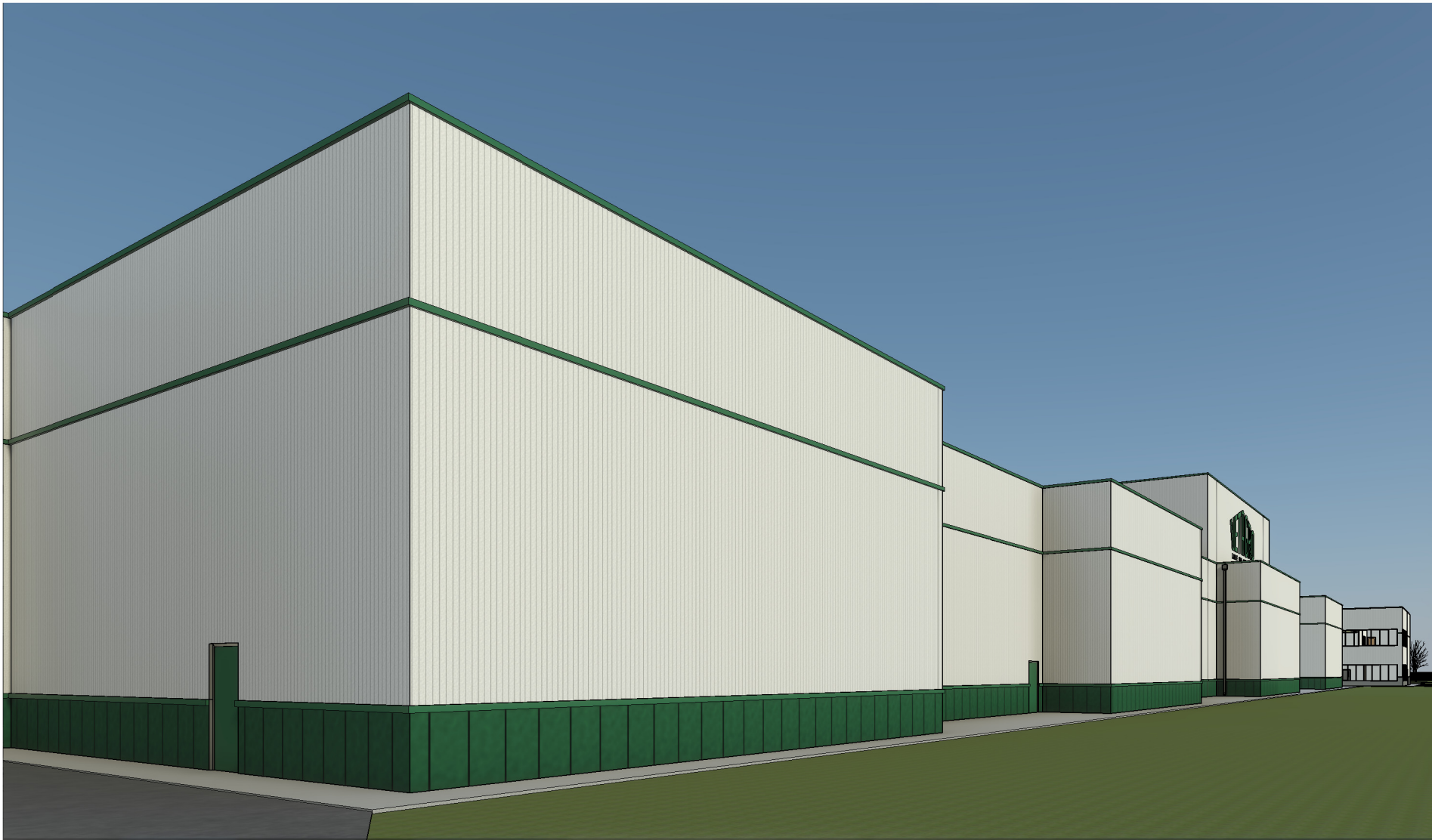
2 NORTHWEST 3D VIEW
A-901



3 NORTH 3D VIEW
A-901



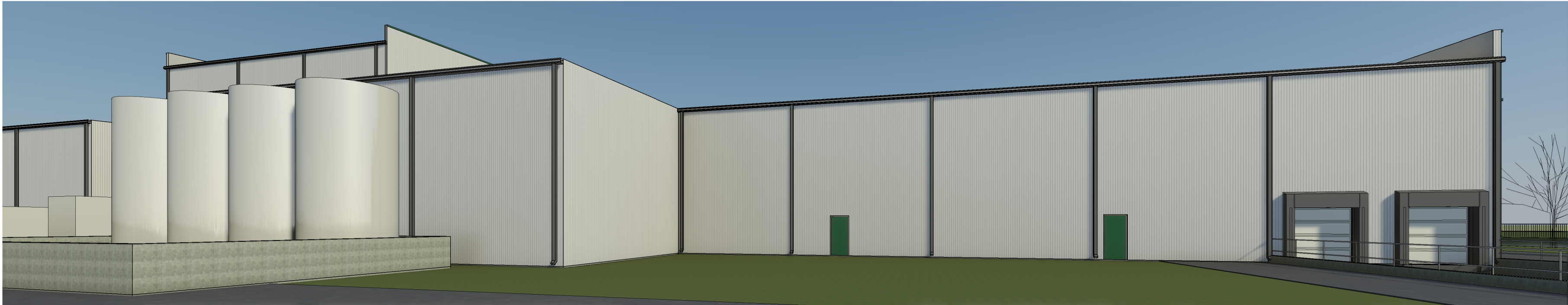
4 NORTH 3D VIEW
A-901



5 NORTHEAST 3D VIEW
A-901



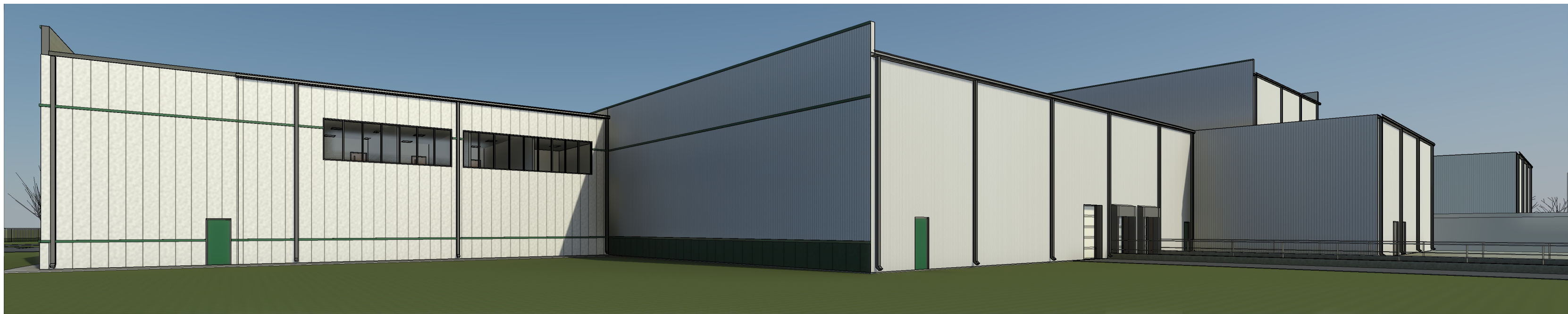
6 SOUTHEAST 3D VIEW
A-901



7 SOUTH 3D VIEW
A-901



8 SOUTH 3D VIEW
A-901



9 SOUTHWEST 3D VIEW
A-901



10 FRONT 3D VIEW
A-901

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

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

ISOMETRIC VIEWS
VETAGRO FACILITY
EASTON, MARYLAND

VETAGRO
LIKE NO ONE ELSE

WILLOW
CONSTRUCTION

ENGINEERS / ARCHITECTS
1842 NORTHWOOD DRIVE SALESBURY, MARYLAND 21861-7884
PH: (410) 742-7299 FAX: (410) 742-7272
COPYRIGHT © 2024 ANDREW W. BOOTH & ASSOCIATES, INC.
AWB ENGINEERS

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



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 61°28'13" E	287.10'
	R=295.00'	A=375.08'
O6	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'
	R=295.00'	A=304.85'
C10	B=S 12°11'09" E	C=291.29'
L11	S 28°54'22" W	589.27'
L12	N 61°33'50" W	116.02'
L13	N 32°18'25" E	586.95'
	R=205.00'	A=197.59'
C14	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=197.59'
	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'

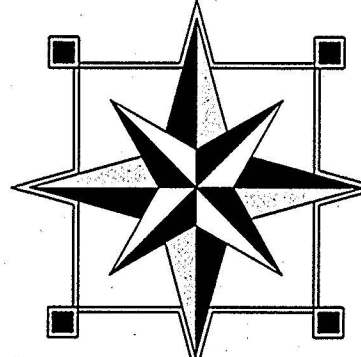
UNDERGROUND UTILITY WARNING:

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 REQUIREMENTS 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.

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 COMPLETES 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
PROFESSIONAL LAND SURVEYOR MD. NO. 21326
CURRENT LICENSE EXPIRES/RENEW: 1 / 8 / 2021



FINK, WHITTEN & ASSOCIATES, LLC.

LAND SURVEYING LAND PLANNING
ENVIRONMENTAL CONSULTING
PERMITTING

EASTON
410-822-6484
115 E. Dover St., Unit C
Easton, Maryland 21601

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

www.FINKWHITTEN.com

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 08.05.04; 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 STOPS 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 COMMERCIAL 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 COMPLEMENT 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 SE, 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.

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.

APPROVED: *Anne J. Moore* 6/19/20
TALBOT COUNTY APPROVING AUTHORITY DATE

APPROVED: *Talbot W. Bone* 6/10/20
CHAIRMAN OF PLANNING AND ZONING COMMISSION DATE

James B. Thompson 6/10/20
THE TOWN PLANNER DATE

OWNER'S CERTIFICATE:

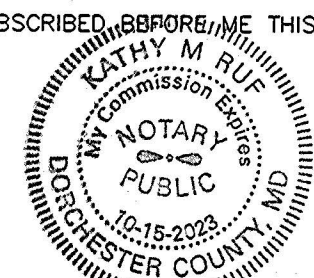
WE, THE TOWN OF EASTON OWNER OF PROPERTY SHOWN AND DESCRIBED HEREON, HEREBY ADOPTS THIS REVISION PLAT.

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

Robert C. Woody 6/6/20
TOWN OF EASTON DATE

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

Joseph M. Duf
NOTARY



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

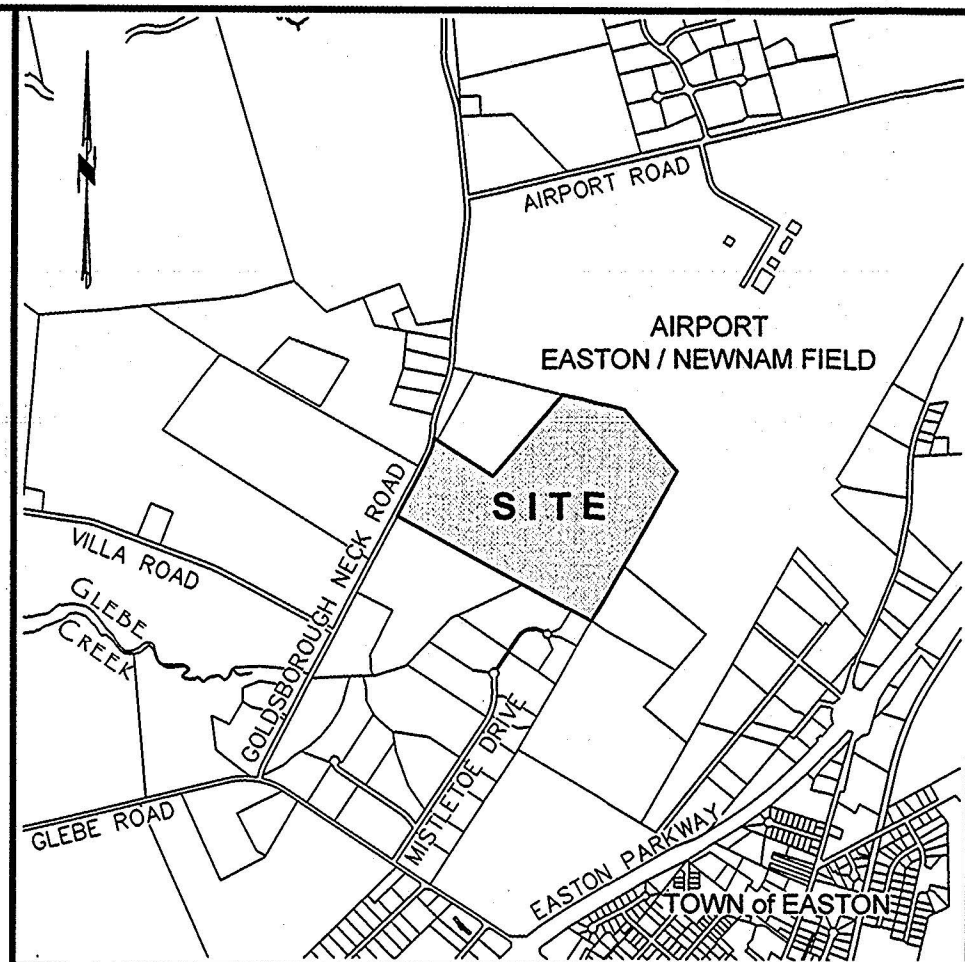
FINAL PLAT

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



VICINITY MAP
SCALE: 1" = 2,000'

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.

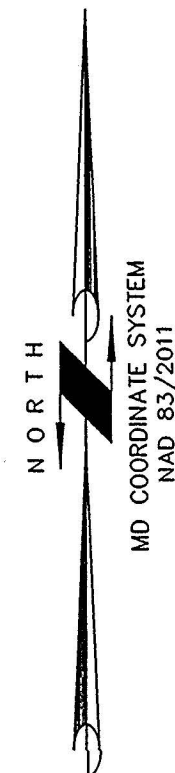
LEGEND:

- GRAVEL SURFACE
- ASPHALT SURFACE
- UTILITY EASEMENT RESERVED UPON TRANSFER
- OPEN SPACE LOT
- PERENNIAL STREAM
- FENCE
- BUILDING RESTRICTION LINE
- COMPUTED POINT
- FORCE MAIN
- WATER
- GAS
- TELEPHONE
- UNDERGROUND ELECTRIC
- OVERHEAD UTILITY LINES
- UTILITY POLE
- TELEPHONE PEDESTAL
- ELECTRIC TRANSFORMER
- SANITARY SEWER MANHOLE
- 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

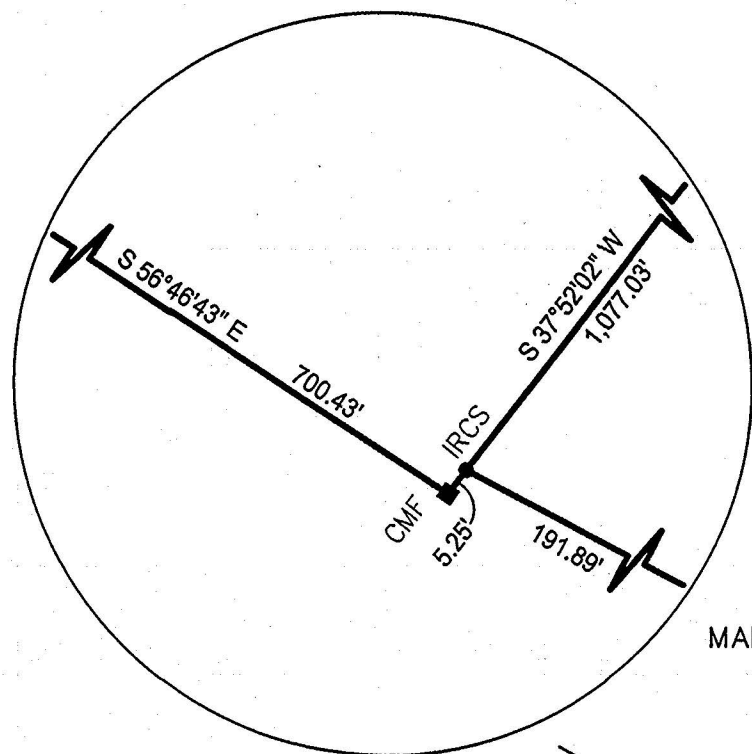
P237113

MSA C2399-14903-1

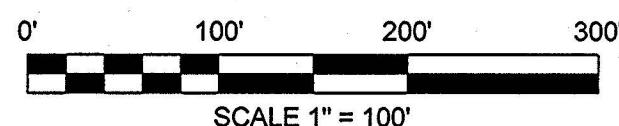
TALBOT COUNTY CIRCUIT COURT (Plat Book) Plat Book KMD 87, pp. 124-128, MSA C2399_14903. Date available 2020/06/10. Printed 01/23/2023.



NAD 83/2011



DETAIL 'A'
(NOT TO SCALE)



SCALE 1" = 100'

TAX PARCEL 98
N / F
KENNETH F. STOUGH
AND
DORIS L. STOUGH
729/256

TAX PARCEL 139
N / F
MARY ELIZABETH MCKENNA
2643/240

TAX PARCEL 129
N / F
JOHN O. BROOKS, JR.
AND
SHERRILL G. BROOKS
1050/656

TAX PARCEL 158
N / F
JOHN O. BROOKS, JR.
AND
SHERRILL G. BROOKS
1050/656

TAX PARCEL 100
N / F
ALISON BIRD FREELAND GELB,
SAMUEL LYLES FREELAND, JR.,
AND
ROBERT FREELAND, VI
2336/449

OPEN SPACE 4
FOREST CONSERVATION
7.662 ACRES ±
SEE SHEET #3

LOT 5
4.427 ACRES ±
SEE SHEET #3

LOT 6
6.362 ACRES ±
SEE SHEET #3

LOT 7
9.626 ACRES ±
SEE SHEET #3

LOT 1
10.049 ACRES ±

LOT 2
7.592 ACRES ±

LOT 3
5.593 ACRES ±

LOT 4
2.536 ACRES ±
20' WIDE UTILITY EASEMENT
RESERVED UPON TRANSFER

LOT 9
6.424 ACRES ±
SEE SHEET #4

- 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 1-4 & OPEN SPACE 1

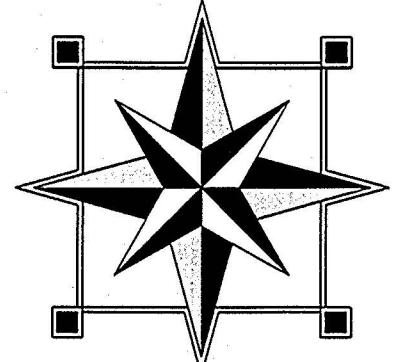
SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON
"MISTLETOE HALL"

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

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

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/RENEW: 1 / 8 / 2021



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
804 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

P237114

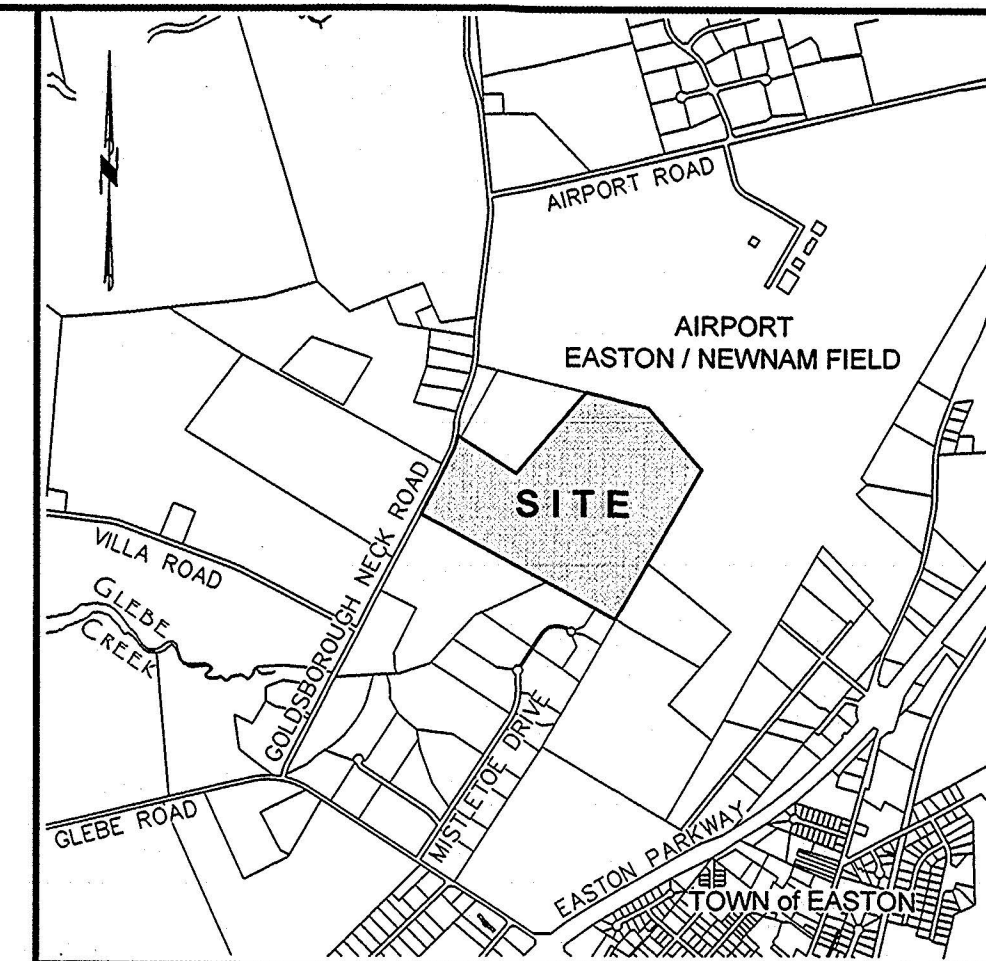
MSA C2399-14903-2



NORTH
MD COORDINATE SYSTEM
NAD 83/2011

TAX PARCEL 158
N / F
JOHN O. BROOKS, JR.
AND
SHERRILL G. BROOKS
1050/656

TAX PARCEL 104
N / F
TALBOT COUNTY, MARYLAND
743/685



VICINITY MAP
SCALE: 1" = 2000'

KMD 87/126

LR - Plat Fee - 9.00
Subdivision
Subdivision Name:
Mistletoe Hall Plat
Ref: KMD 87/126
Total: 06/10/2020 01:11 25.00
1190JL
County/CD: 05.02 -
Register 02

STATE OF MARYLAND
TALBOT COUNTY, TO WIT:
Recorded in the Land Records of Talbot County

Notarized by
Christina M. Quinn
Notary Public for Talbot County

- 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

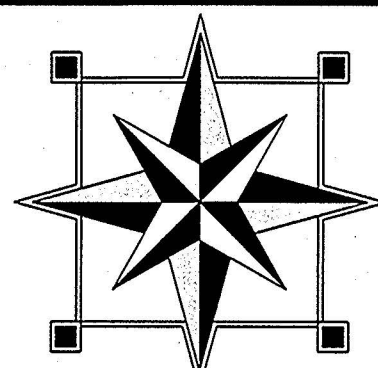
0' 100' 200' 300'
SCALE 1" = 100'

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. 21328
CURRENT LICENSE EXPIRES/RENEW: 1 / 8 / 2021

6 / 8 / 2020
DATE



FINK, WHITTEN & ASSOCIATES, LLC.

LAND SURVEYING LAND PLANNING
ENVIRONMENTAL CONSULTING
PERMITTING

EASTON 410-822-8484
118 E. Dover St., Unit C
Easton, Maryland 21601
CAMBRIDGE 410-225-8885
501 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
DETAIL LOTS 5-7, OPEN SPACE 3 & 4

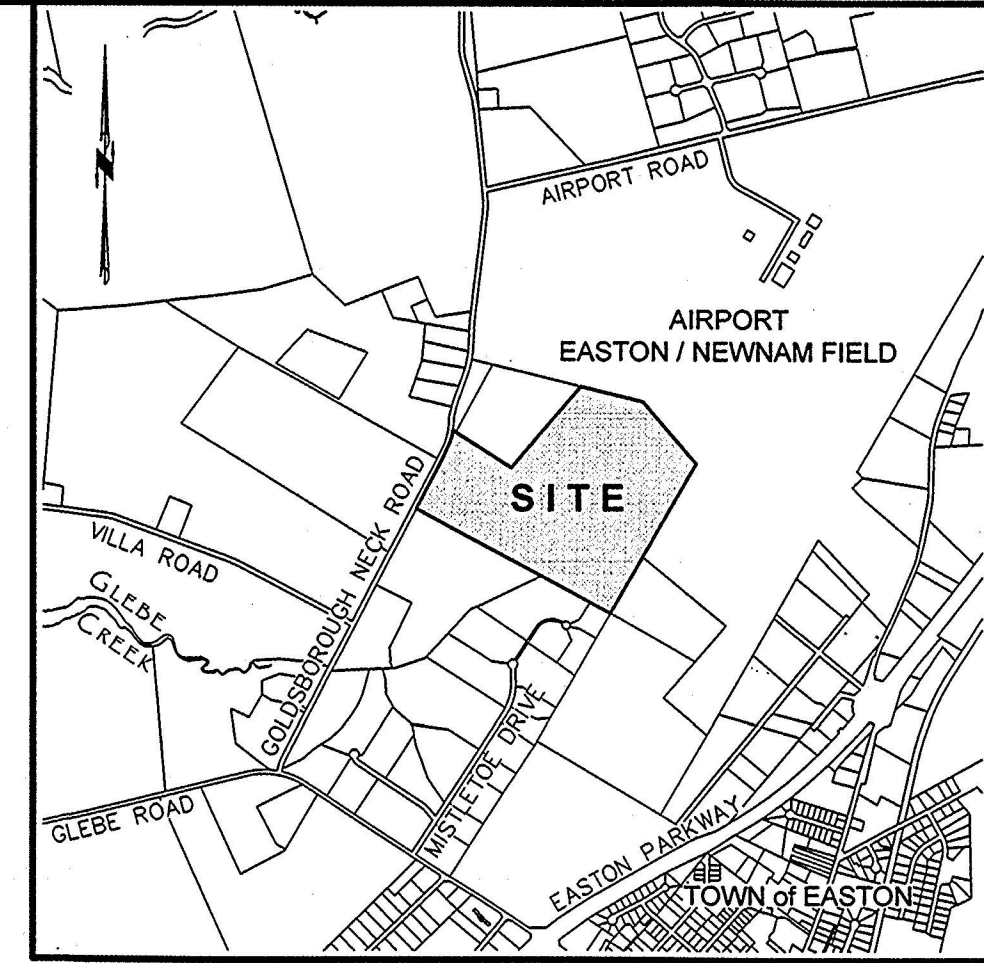
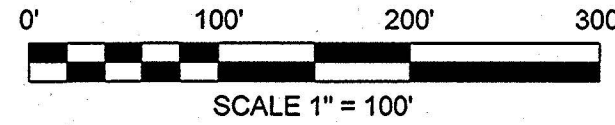
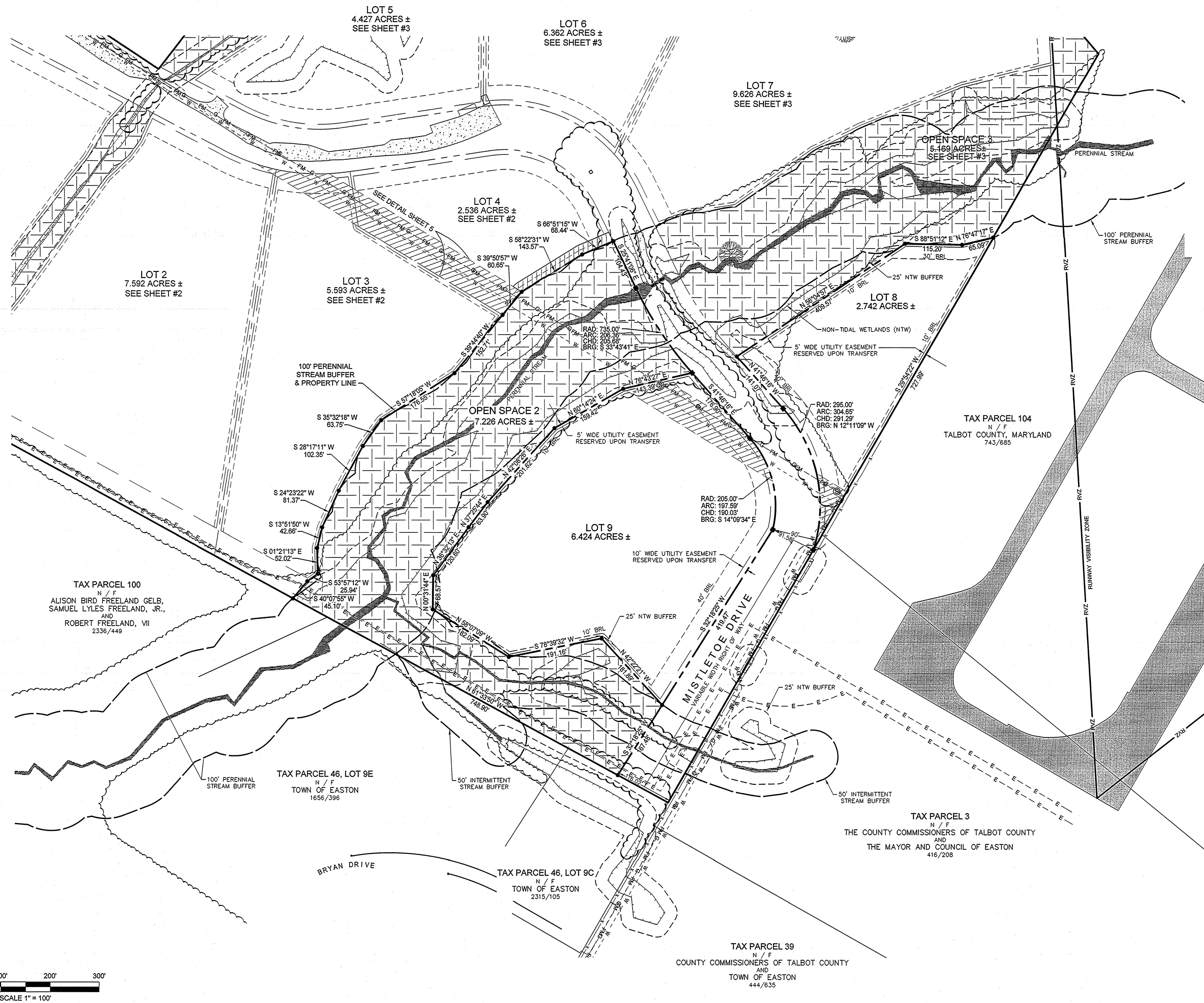
SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON
"MISTLETOE HALL"

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

MSA C2399-14903-3

P237115



VICINITY MAP
SCALE: 1" = 2000'

KMD 87/127

LR - Plat Fee - \$8.00
Subdivision Name - Mistletoe Hall Plat
of 5
Ref: KMD 87/127
Total: 25.00
62/12/2020 01:11
CC21-H6
213745631 CC2205 -
Talbot
County/CC22.05.02 -
Register 02

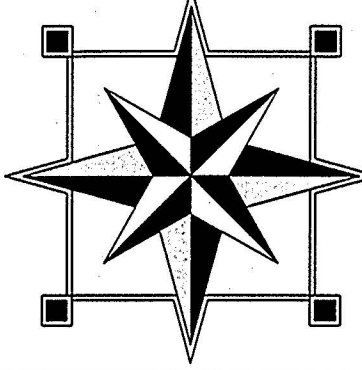
STATE OF MARYLAND
Talbot County, MD
Recorded in the Office of the
Register
11/17/2019

- 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

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/RENEW: 1 / 8 / 2021



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

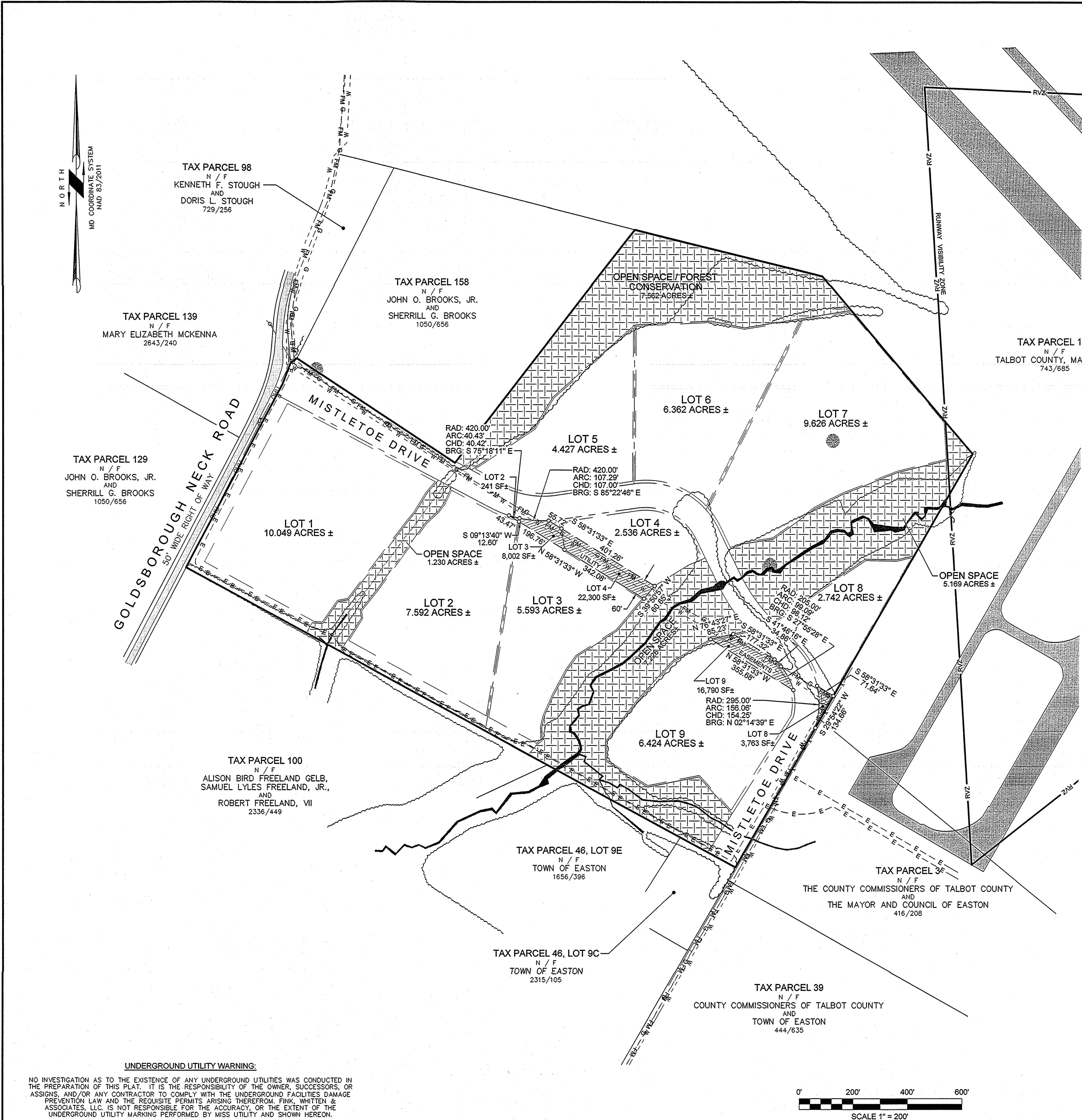
DATE	REVISION
5-12-2020	PER 5-12-2020 TOWN COMMENTS
3-24-2020	PER 3-19-2020 TOWN COMMENTS

FINAL PLAT
DETAIL LOTS 8-9, OPEN SPACE 2

SUBDIVISION
OF THE LANDS OF
TOWN OF EASTON
" MISTLETOE HALL "

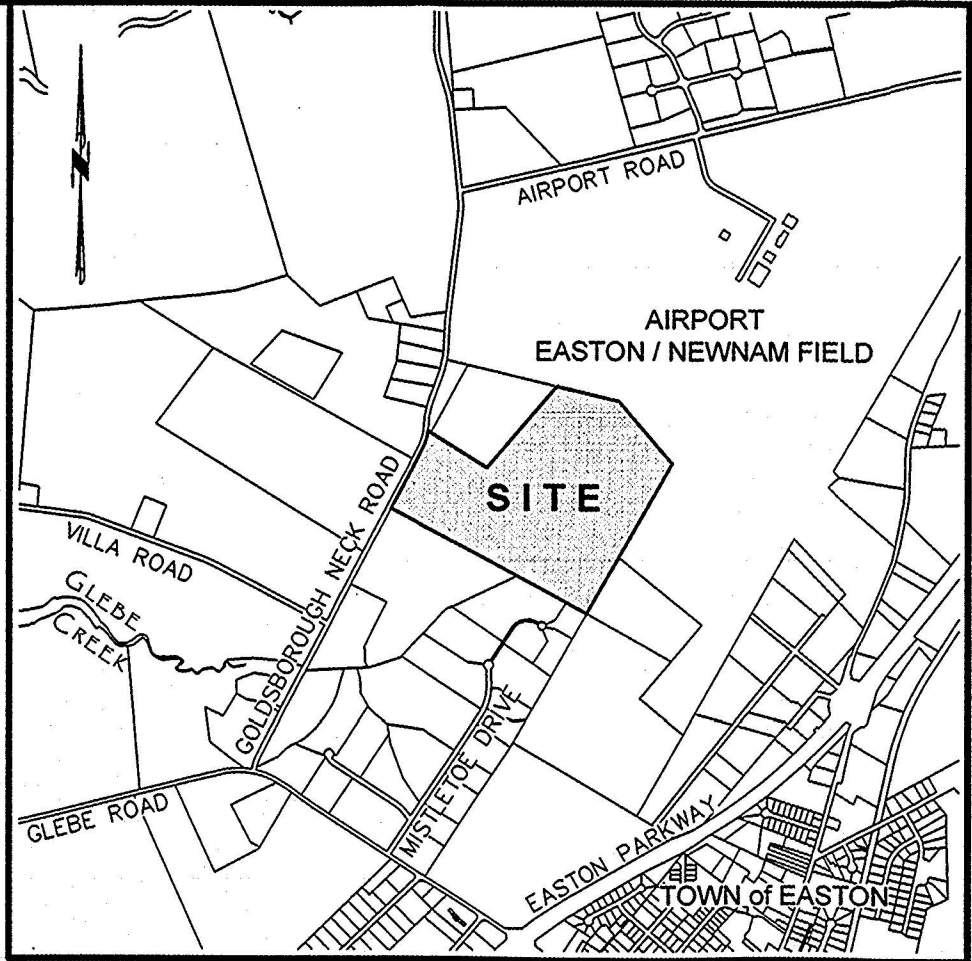
TAX MAP 25, GRID 16, PARCEL 138
IN THE TOWN OF EASTON
TALBOT COUNTY MARYLAND

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



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
 - Fence
 - Building Restriction Line
 - Computed Point (Utilities Easement)
 - Force Main
 - Water
 - Gas
 - Telephone
 - Electric
 - Overhead Utility Lines
 - Utility Pole
 - Telephone Pedestal
 - Electric Transformer
 - Sanitary Sewer Manhole
 - Sanitary Sewer Cleanout
 - Proposed Lot Line
 - Utility Easement Reserved Upon Transfer



VICINITY MAP
SCALE: 1" = 2,000'

KMD 87/128

LG - Plat Fee -
Subdivision
Mistletoe Hall Plat
of 5
Ref: KMD 87/128
Total:
06/10/2020 01:11
#13745031 CC205 -
Talbot
County/CC02.05.02 -
Register 02

STATE OF MARYLAND
Talbot County, MD
Notarized by the Clerk of the County
Commissioner of the County

Notarized by the
Clerk of the County

06/10/2020

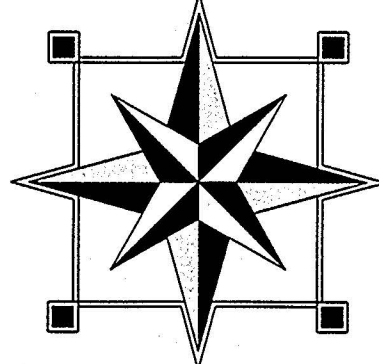
UNDERGROUND UTILITY WARNING:
NO INVESTIGATION AS TO THE EXISTENCE OF ANY UNDERGROUND UTILITIES WAS CONDUCTED IN THE PREPARATION OF THIS PLAT. IT IS THE RESPONSIBILITY OF THE OWNER, SUCCESSORS, OR ASSIGNS, AND/OR ANY CONTRACTOR TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE 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.

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/RENEW: 1 / 8 / 2021

6 / 8 / 2020
DATE



FINK, WHITTEN & ASSOCIATES, LLC.

LAND SURVEYING LAND PLANNING
ENVIRONMENTAL CONSULTING
PERMITTING

EASTON CAMBRIDGE
410-822-8484 410-228-8885
113 E. Dover St., Unit C 504 Maryland Avenue
Easton, Maryland 21601 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
UTILITY EASEMENT DETAIL

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

MSA C2399-14903-5

P237117

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

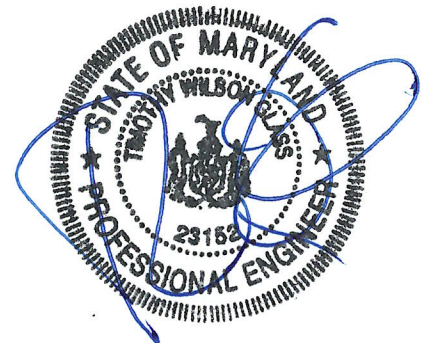
Date Revised

N/A

Prepared by

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

Timothy W. Glass, P.E.



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-bioretenion media, and provide 6 inches of temporary ponding compared to the 1' of ponding in all micro-bioretenions 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:

$$R_v = 0.05 + 0.009(I) \\ = 0.54$$

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**

$$ESD_v = \frac{(P_E)(R_v)(A)}{12} \\ = 46,130 \quad \text{cf}$$

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 = $\frac{(P_e)(R_v)(A)}{12}$
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-Bioretenention (M-6)

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 3,767 \text{ cf}$$

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-bioretenention practice is **2,379 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	11,748 sf	
Percent Impervious (I)	59 %	= 1,736 cf
$R_v = 0.05 + 0.009(I)$	0.58	75% of target = 1,302 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,878 \text{ cf}$$

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-bioretenention practice is **2,701 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	10,693 sf	
Percent Impervious (I)	54 %	= 1,591 cf
$R_v = 0.05 + 0.009(I)$	0.54	75% of target= 1,194 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,464 \text{ cf}$$

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-bioretenention practice is **2,464 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_F)(R_v)(A)}{12}$
Impervious Area	13,313 sf	
Percent Impervious (I)	75 %	= 1,931 cf
$R_v = 0.05 + 0.009(I)$	0.72	75% of target= 1,448 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,449 \text{ cf}$$

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-bioretenention practice is **2,449 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	14,376 sf	
Percent Impervious (I)	72 %	= 2,091 cf
$R_v = 0.05 + 0.009(I)$	0.70	75% of target= 1,568 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$
$$= 3,795 \text{ cf}$$

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-bioretenention practice is **3,253 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
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-Bioretenention (M-6)

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,449 \text{ cf}$$

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-bioretenention practice is **2,449 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	16,391 sf	
Percent Impervious (I)	82 %	= 2,363 cf
$R_v = 0.05 + 0.009(I)$	0.79	75% of target = 1,772 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,800 \text{ cf}$$

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-bioretenention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	15,507 sf	
Percent Impervious (I)	79 %	= 2,240 cf
$R_v = 0.05 + 0.009(I)$	0.76	75% of target= 1,680 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,800 \text{ cf}$$

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-bioretenention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	16,621 sf	
Percent Impervious (I)	82 %	= 2,396 cf
$R_v = 0.05 + 0.009(I)$	0.79	75% of target = 1,797 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,800 \text{ cf}$$

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-bioretenention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	16,865 sf	
Percent Impervious (I)	82 %	= 2,431 cf
$R_v = 0.05 + 0.009(I)$	0.79	75% of target= 1,823 cf

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

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

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

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,800 \text{ cf}$$

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-bioretenention practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_F)(R_v)(A)}{12}$
Impervious Area	16,181 sf	
Percent Impervious (I)	82 %	= 2,333 cf
$R_v = 0.05 + 0.009(I)$	0.79	75% of target= 1,750 cf

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

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

$$V = \frac{(P)(R_v)(A)}{12} = 3,629 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,800 \text{ cf}$$

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-bioretenction practice is **2,800 cf.**

Now check for compliance with design criteria:

Micro-Bioretenction 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-Bioretenction 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 = $\frac{(P_e)(R_v)(A)}{12}$
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:

$$V = \frac{(P)(R_v)(A)}{12} = 2,158 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,279 \text{ cf}$$

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-bioretenention practice is **2,158 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
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-Bioretenction (M-6)

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

$$V = \frac{(P)(R_v)(A)}{12} = 2,927 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,280 \text{ cf}$$

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-bioretenction practice is **2,280 cf.**

Now check for compliance with design criteria:

Micro-Bioretenction 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-Bioretenction 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 = $\frac{(P_e)(R_v)(A)}{12}$
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-Bioretenention (M-6)

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

$$V = \frac{(P)(R_v)(A)}{12} = 2,354 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 3,795 \text{ cf}$$

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-bioretenention practice is **2,354 cf.**

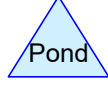
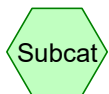
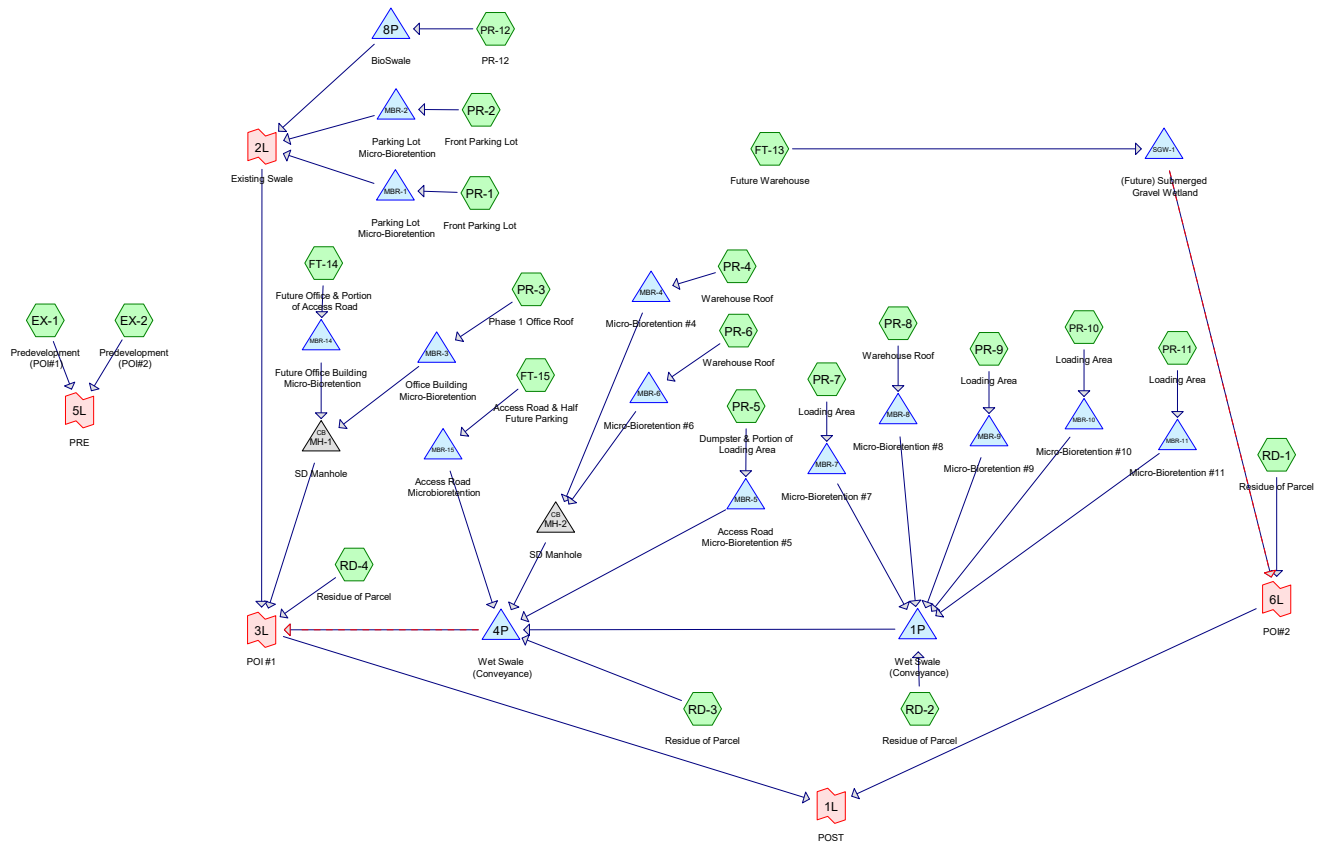
Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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



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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 2

Summary for Subcatchment EX-1: Predevelopment (POI#1)

Runoff = 8.35 cfs @ 12.28 hrs, Volume= 1.296 af, Depth> 1.60"

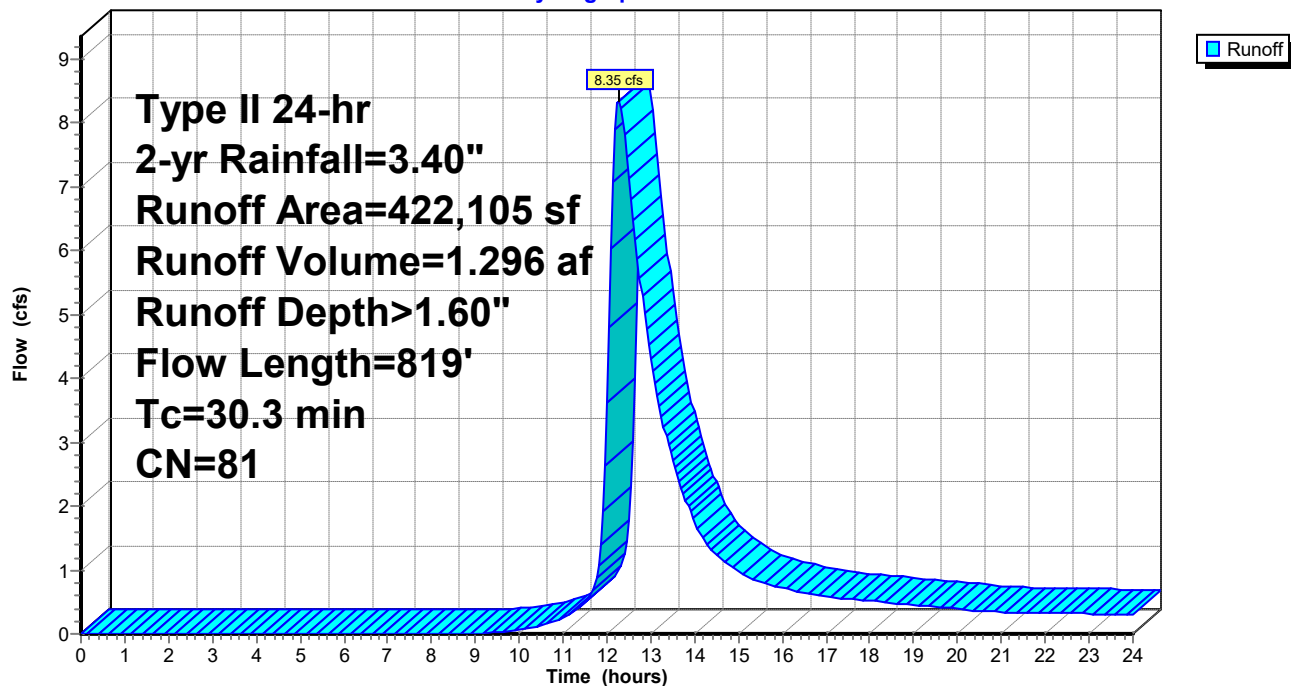
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

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)

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 3

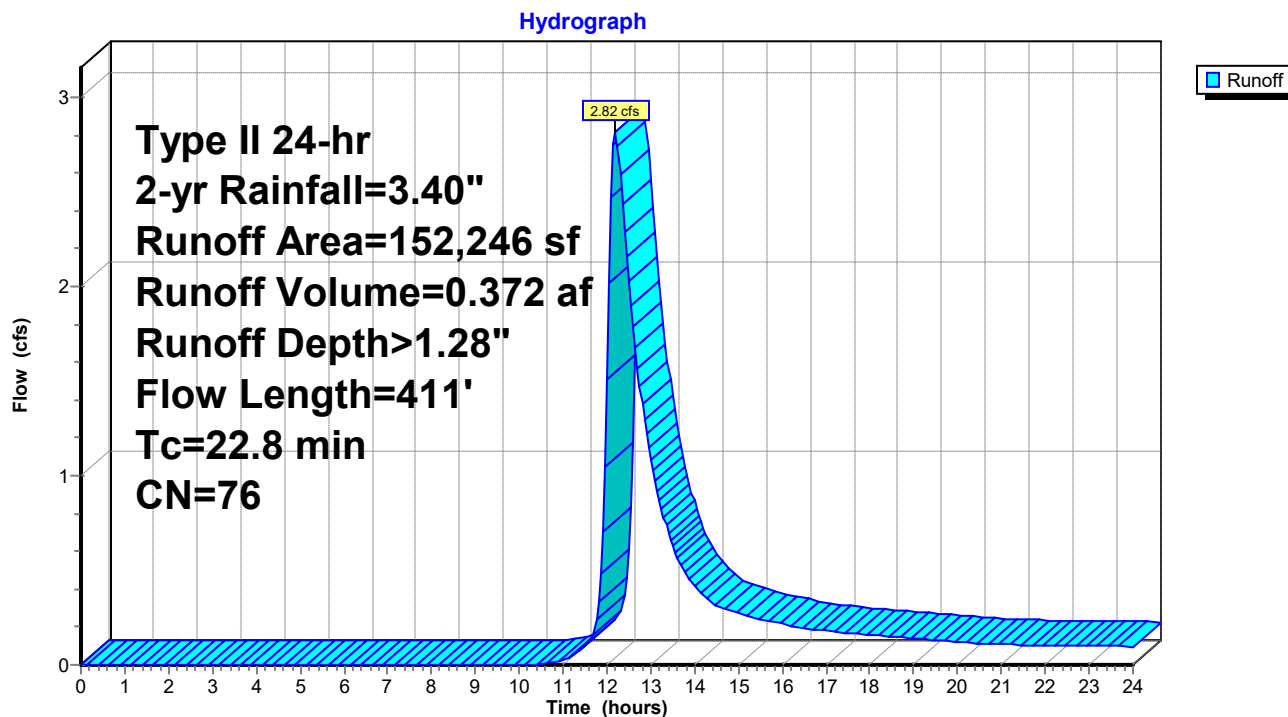
Summary for Subcatchment EX-2: Predevelopment (POI#2)

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 4

Summary for Subcatchment FT-13: Future Warehouse

Runoff = 15.17 cfs @ 11.97 hrs, Volume= 0.891 af, Depth> 2.54"

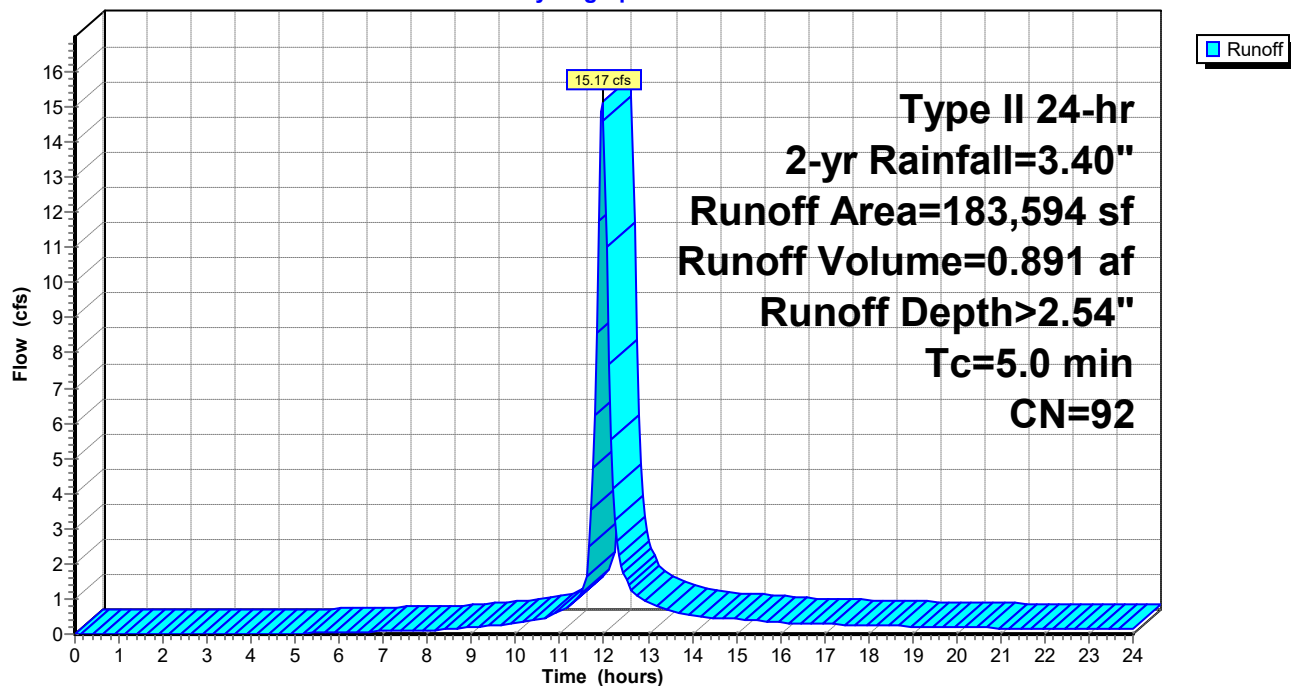
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 5

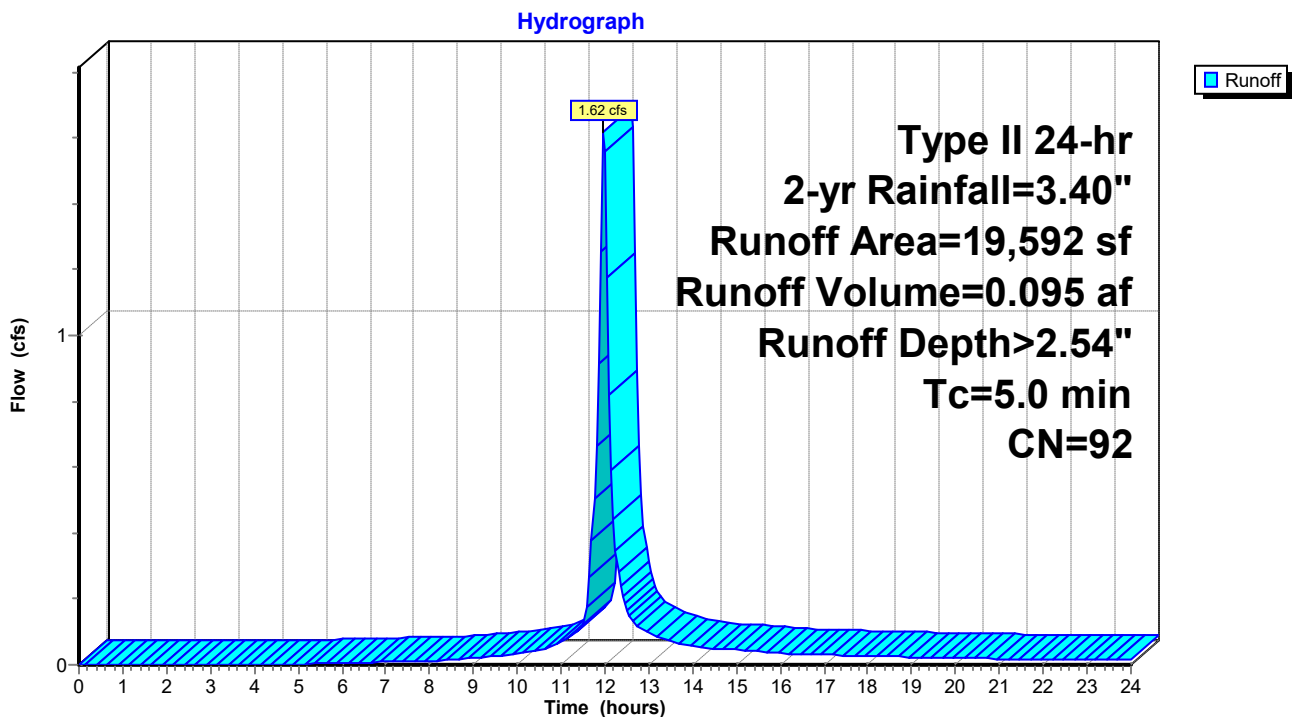
Summary for Subcatchment FT-14: Future Office & Portion of Access Road

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 6

Summary for Subcatchment FT-15: Access Road & Half Future Parking

Runoff = 1.39 cfs @ 11.97 hrs, Volume= 0.081 af, Depth> 2.35"

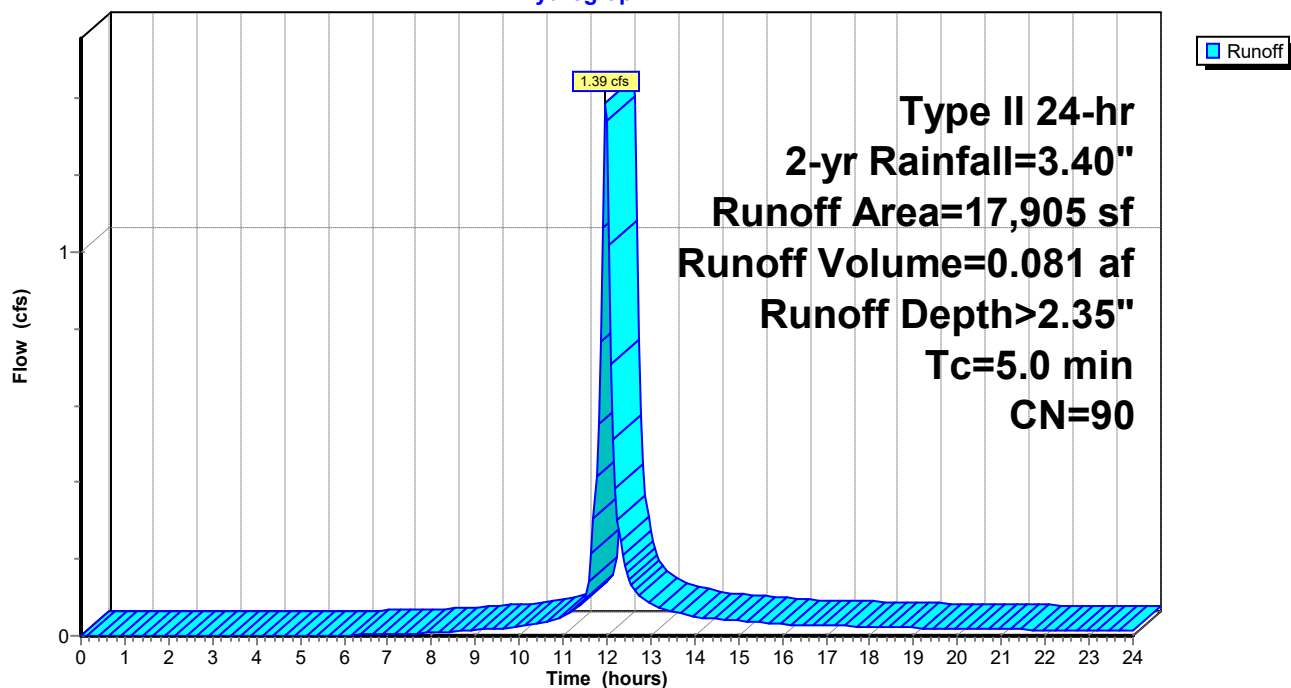
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 7

Summary for Subcatchment PR-1: Front Parking Lot

Runoff = 1.51 cfs @ 11.97 hrs, Volume= 0.087 af, Depth> 2.26"

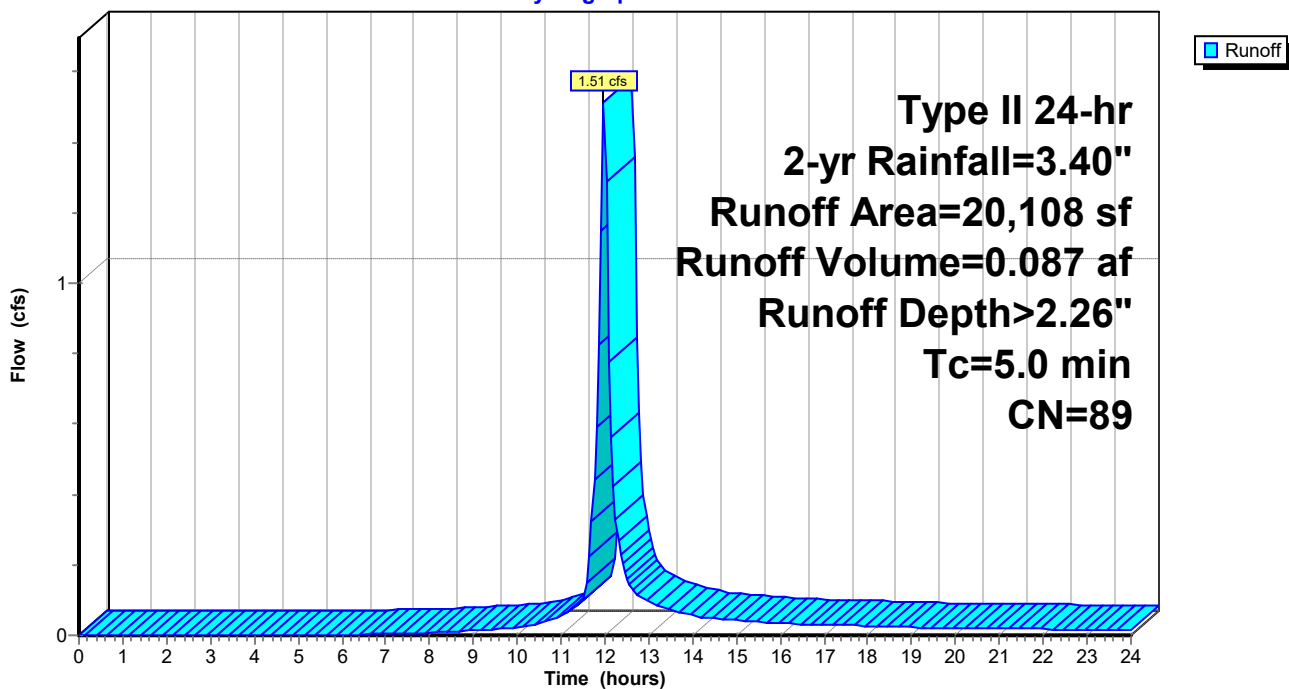
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 8

Summary for Subcatchment PR-10: Loading Area

Runoff = 1.84 cfs @ 11.97 hrs, Volume= 0.112 af, Depth> 2.84"

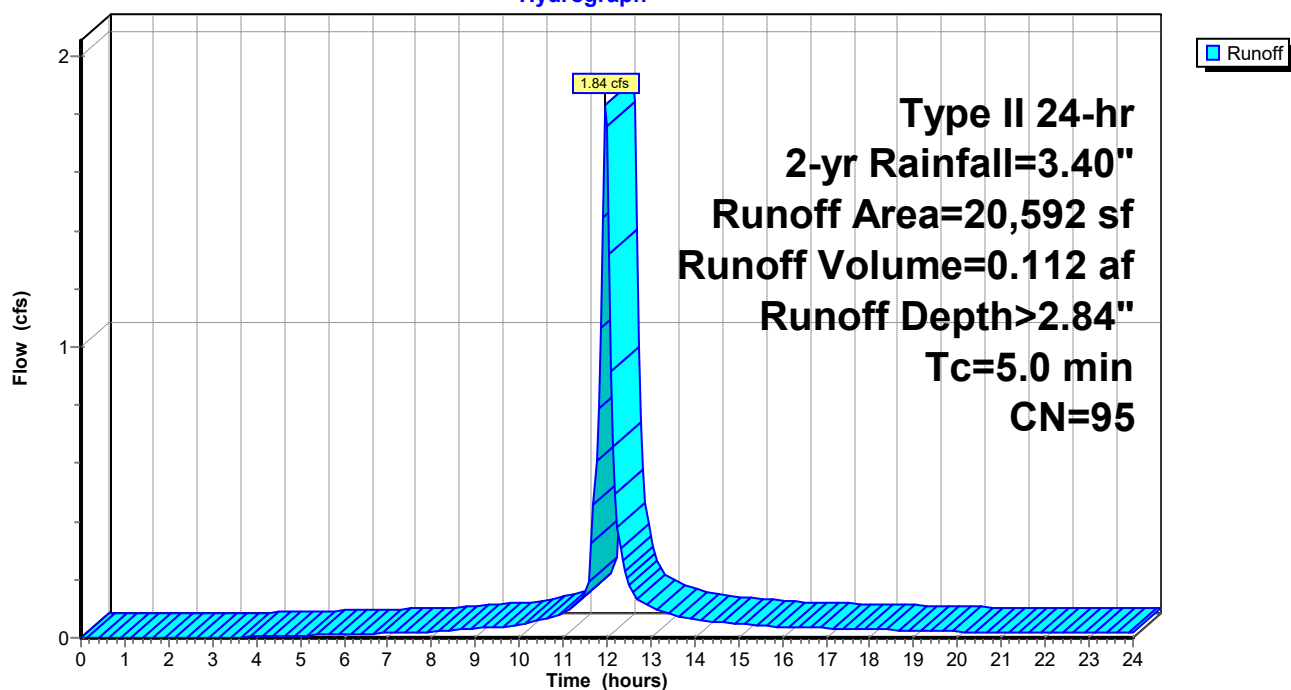
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 9

Summary for Subcatchment PR-11: Loading Area

Runoff = 1.77 cfs @ 11.97 hrs, Volume= 0.108 af, Depth> 2.84"

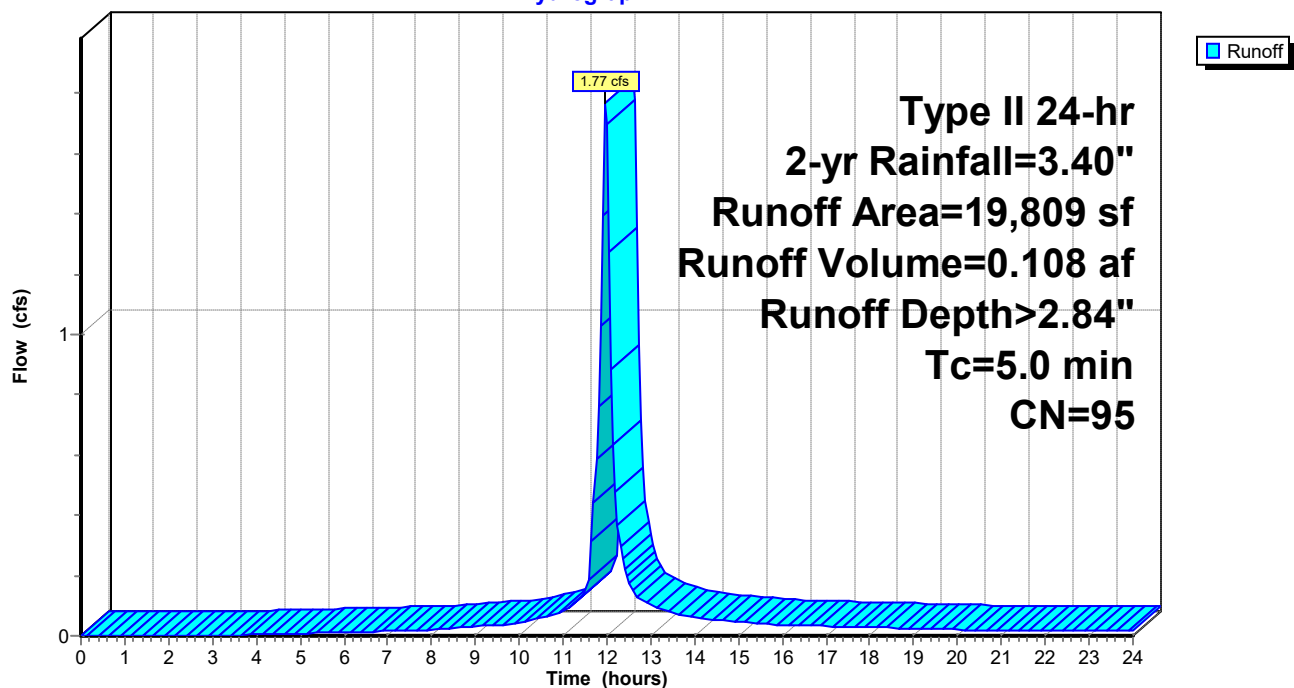
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 10

Summary for Subcatchment PR-12: PR-12

Runoff = 2.04 cfs @ 11.98 hrs, Volume= 0.115 af, Depth> 1.93"

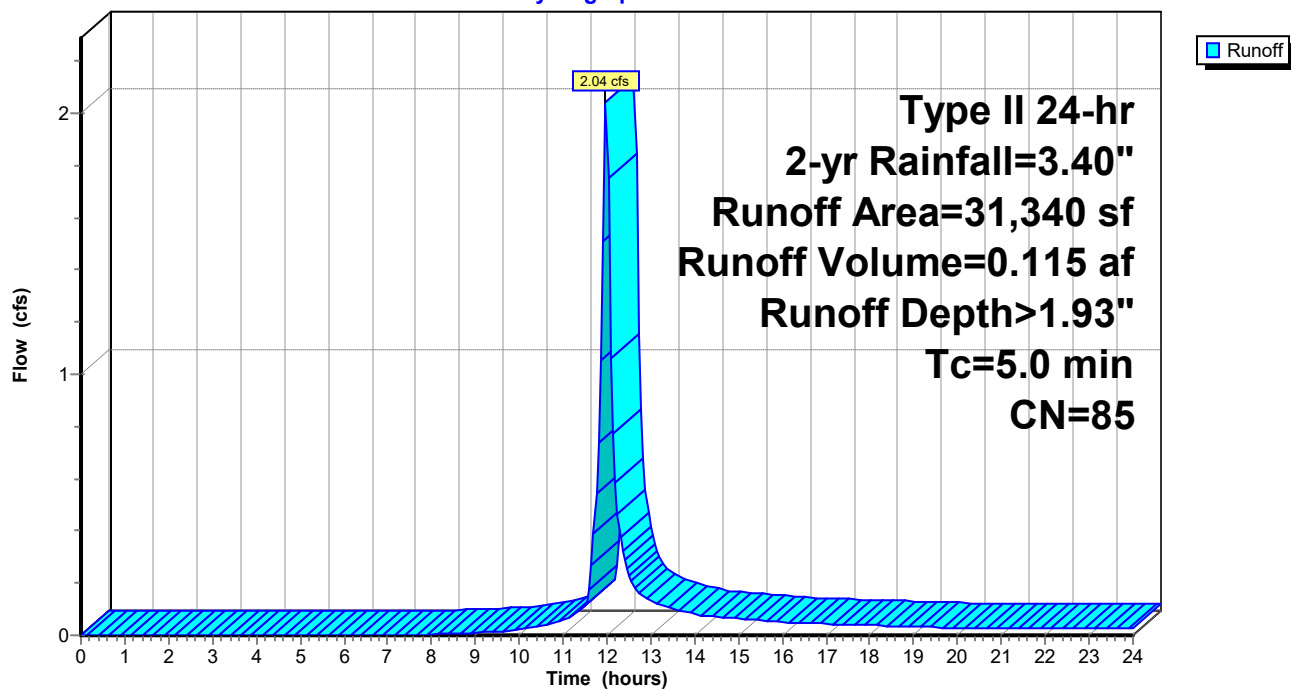
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 11

Summary for Subcatchment PR-2: Front Parking Lot

Runoff = 1.61 cfs @ 11.97 hrs, Volume= 0.094 af, Depth> 2.44"

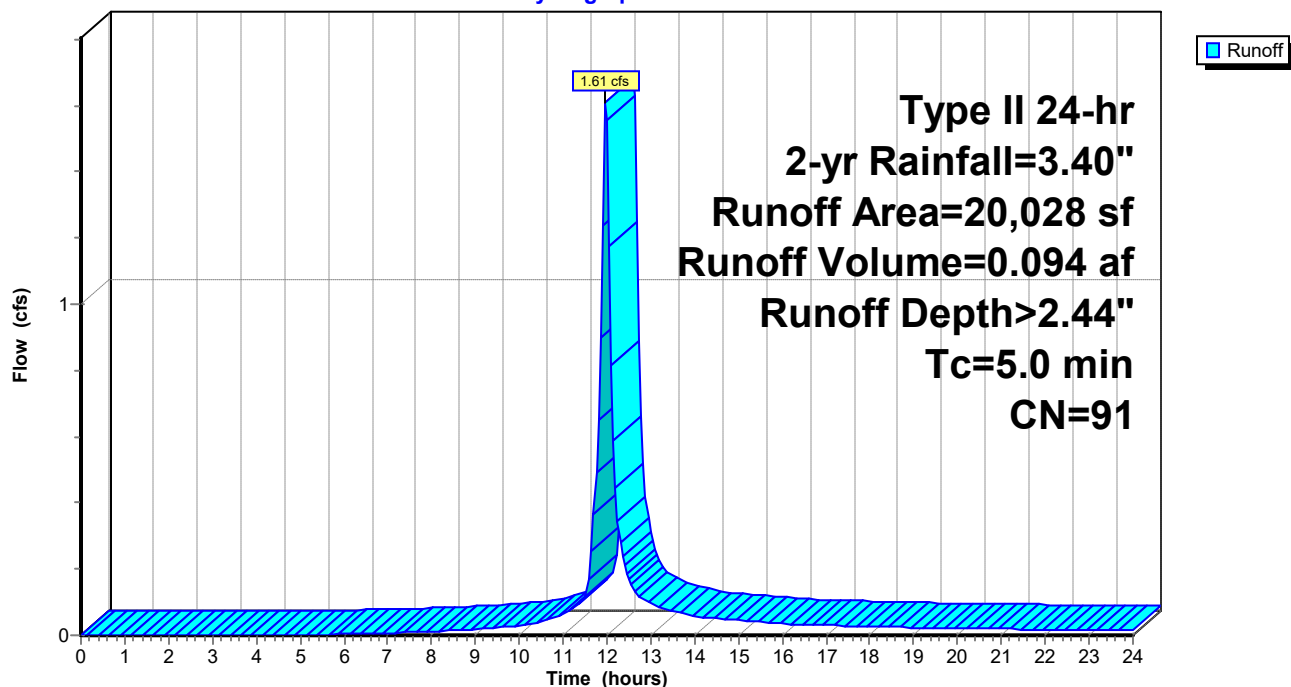
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



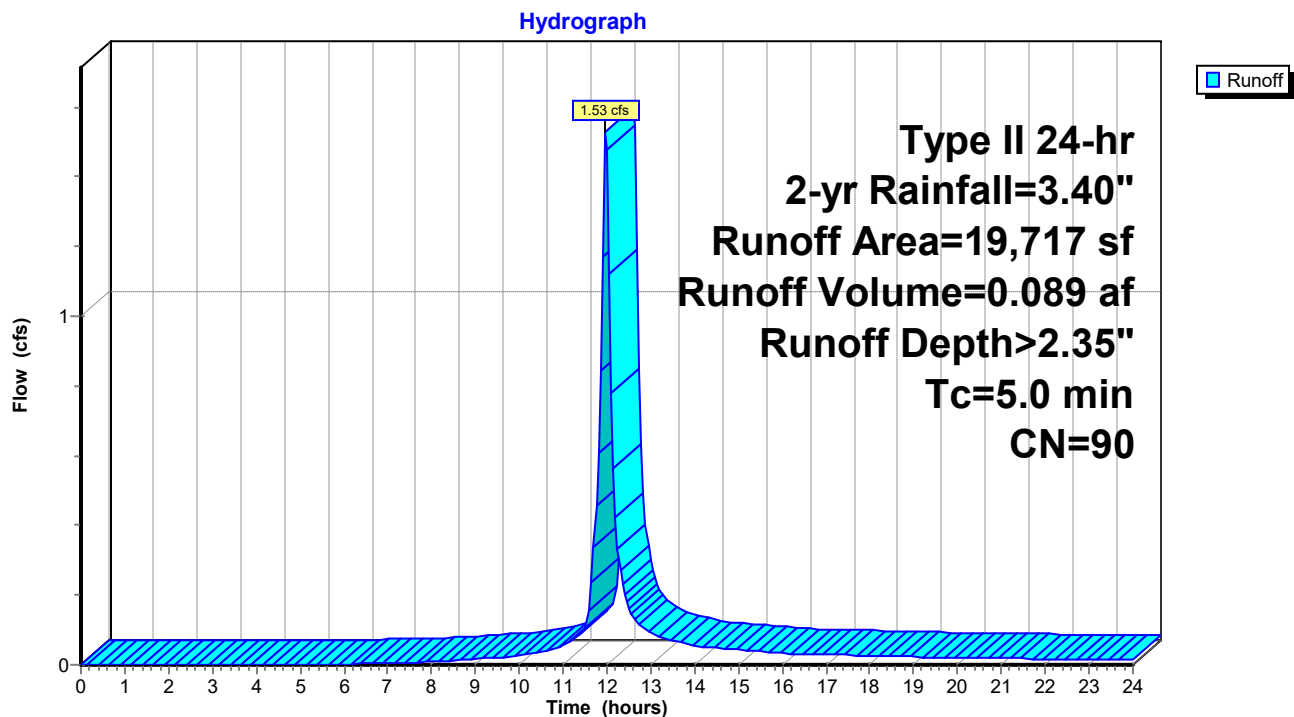
Summary for Subcatchment PR-3: Phase 1 Office Roof

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 13

Summary for Subcatchment PR-4: Warehouse Roof

Runoff = 1.51 cfs @ 11.97 hrs, Volume= 0.090 af, Depth> 2.63"

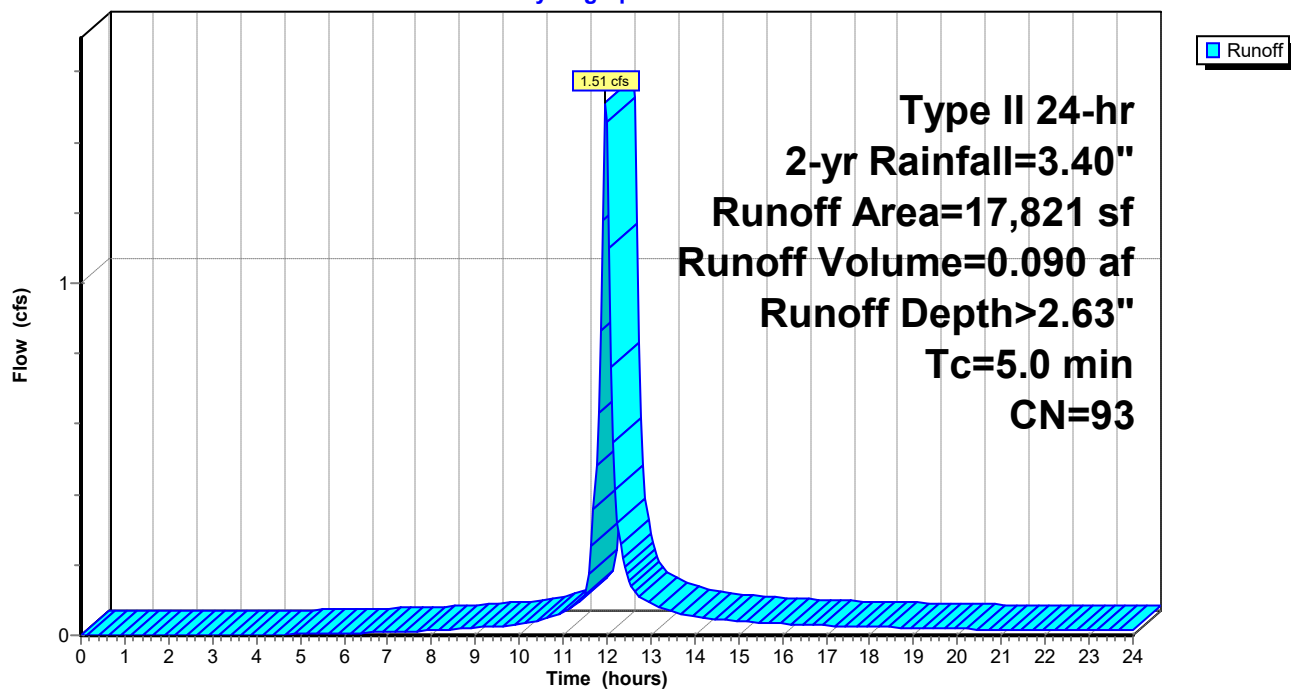
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 14

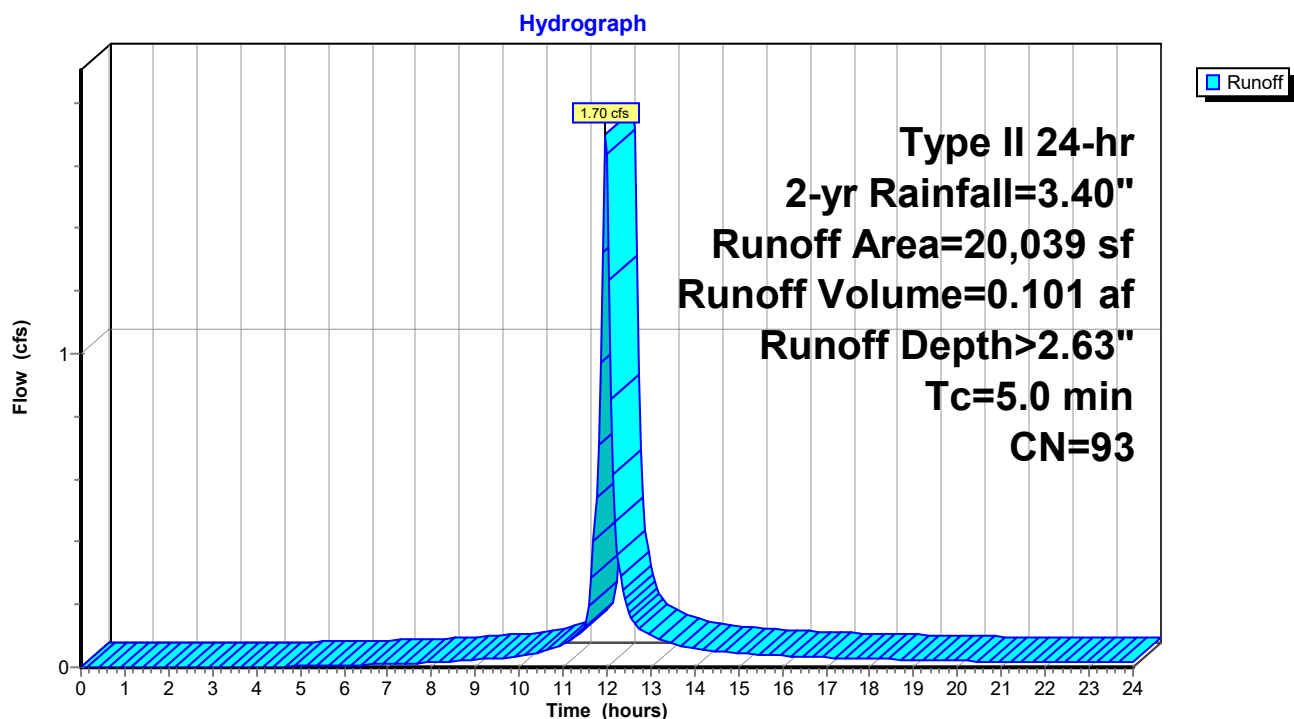
Summary for Subcatchment PR-5: Dumpster & Portion of Loading Area

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 15

Summary for Subcatchment PR-6: Warehouse Roof

Runoff = 1.55 cfs @ 11.97 hrs, Volume= 0.092 af, Depth> 2.63"

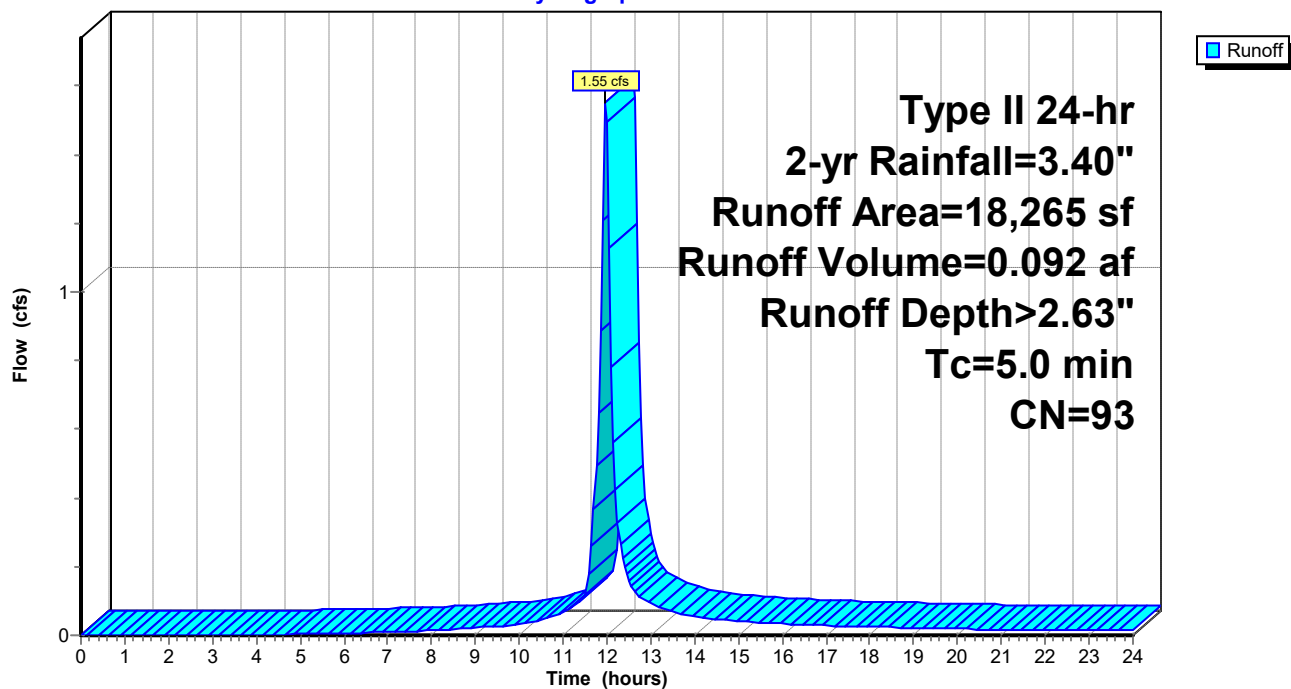
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 16

Summary for Subcatchment PR-7: Loading Area

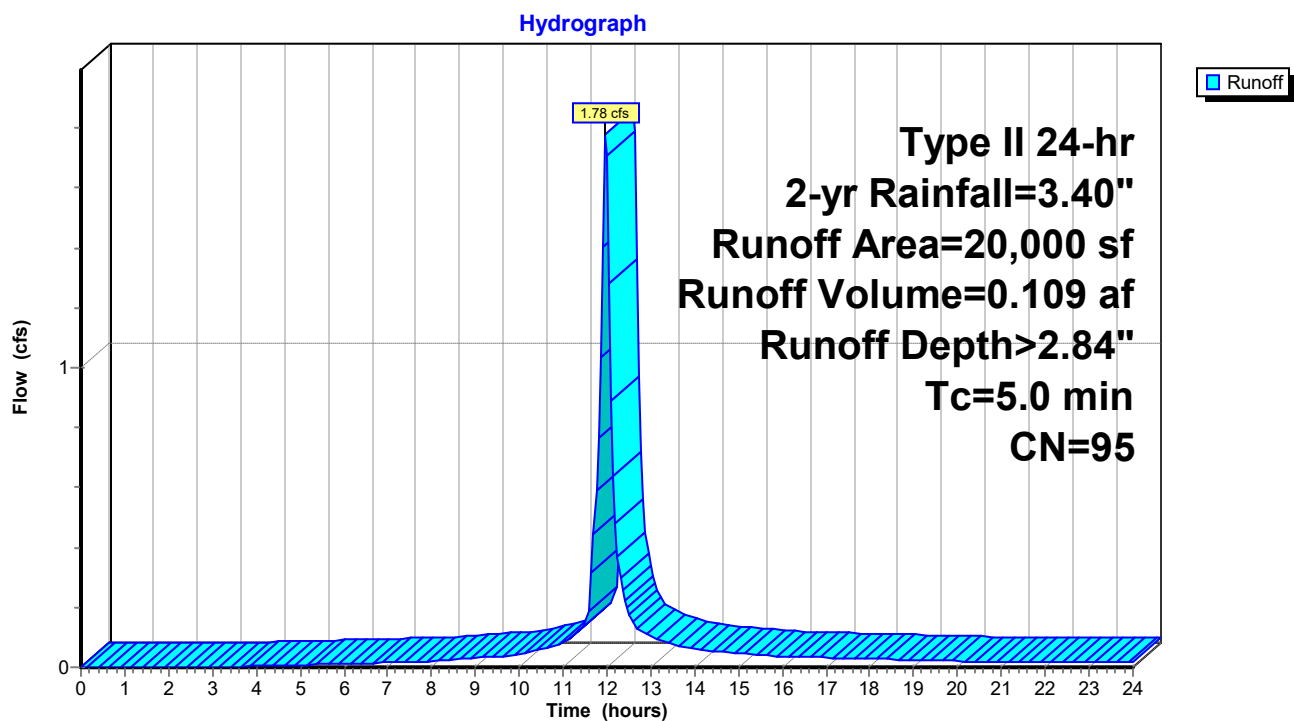
Runoff = 1.78 cfs @ 11.97 hrs, Volume= 0.109 af, Depth> 2.84"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 17

Summary for Subcatchment PR-8: Warehouse Roof

Runoff = 1.70 cfs @ 11.97 hrs, Volume= 0.102 af, Depth> 2.73"

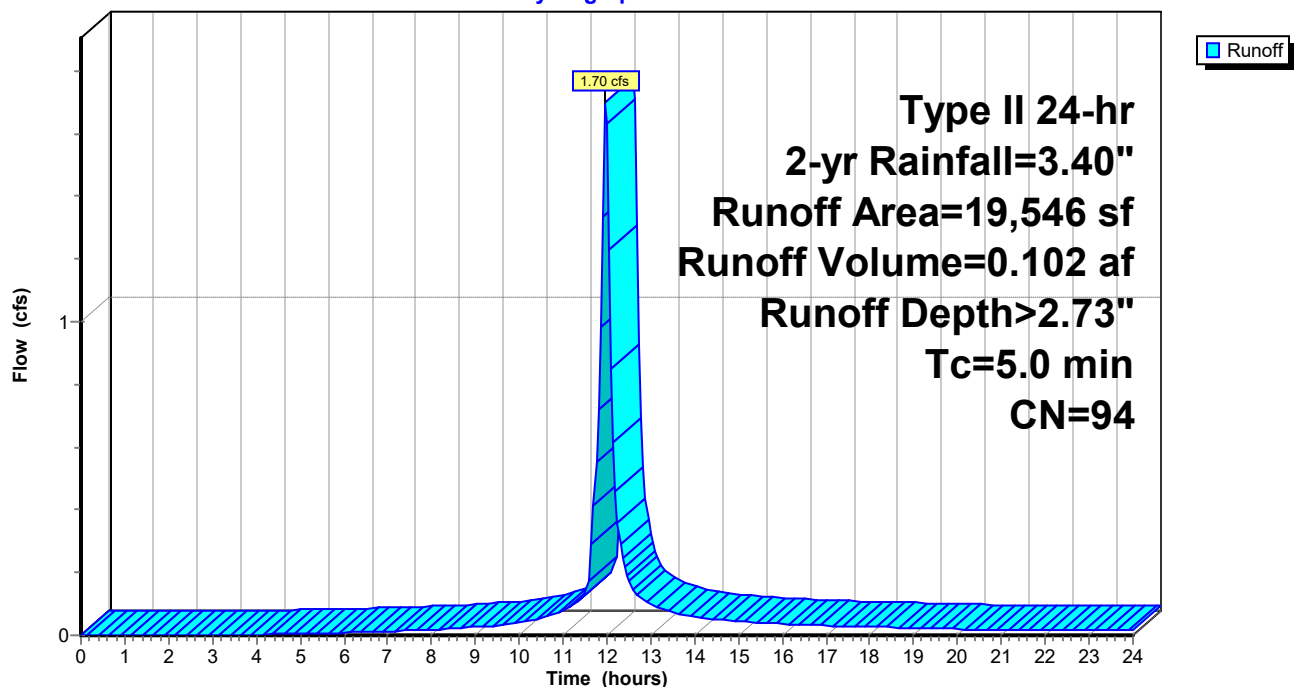
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 18

Summary for Subcatchment PR-9: Loading Area

Runoff = 1.80 cfs @ 11.97 hrs, Volume= 0.110 af, Depth> 2.84"

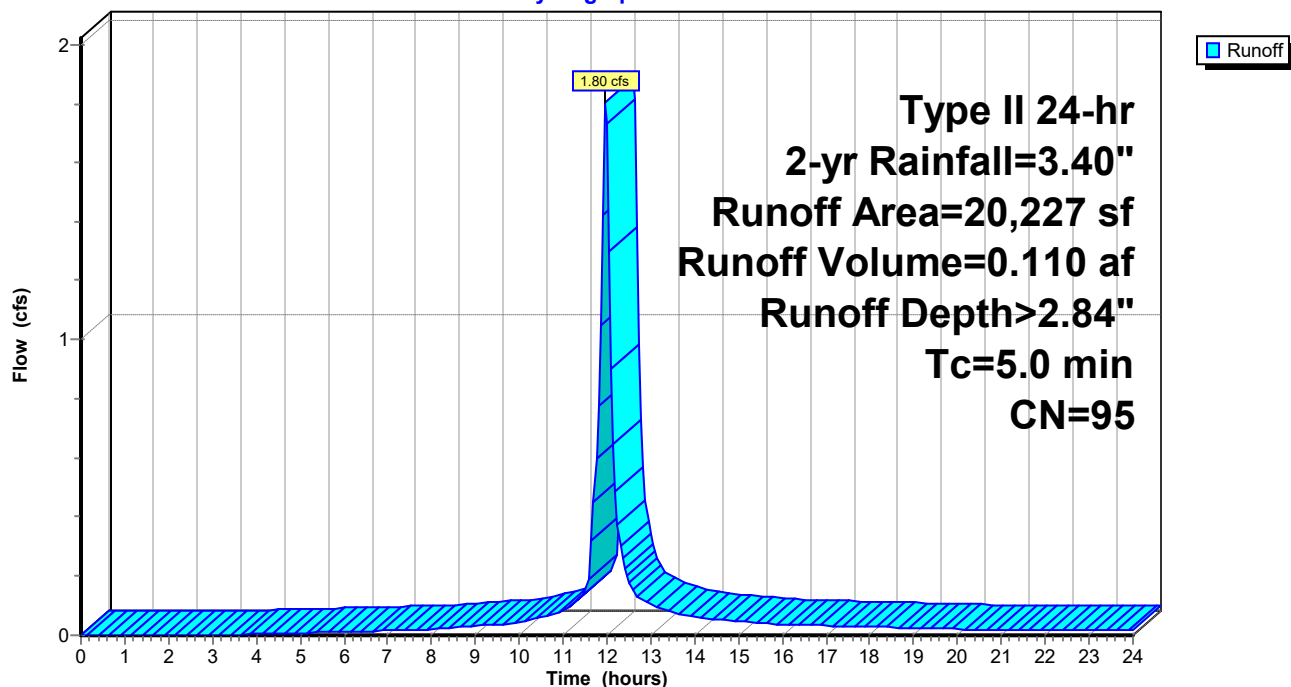
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 19

Summary for Subcatchment RD-1: Residue of Parcel

Runoff = 0.78 cfs @ 11.98 hrs, Volume= 0.044 af, Depth> 1.55"

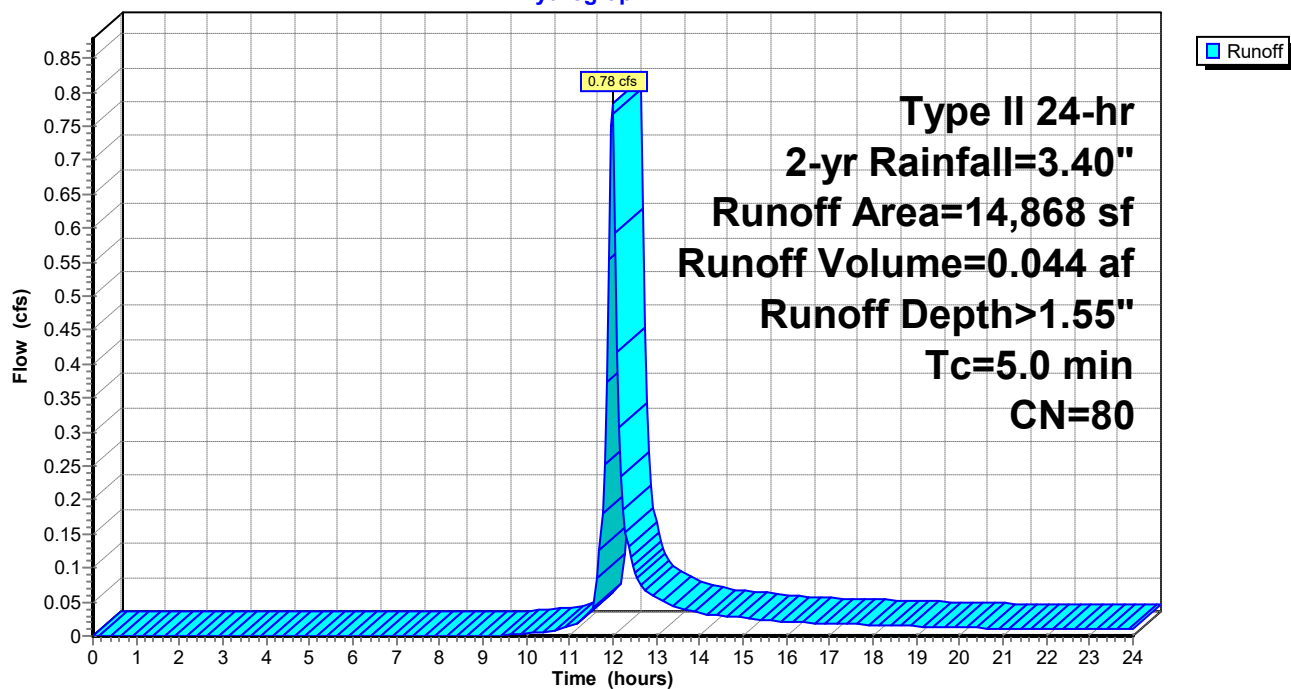
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 20

Summary for Subcatchment RD-2: Residue of Parcel

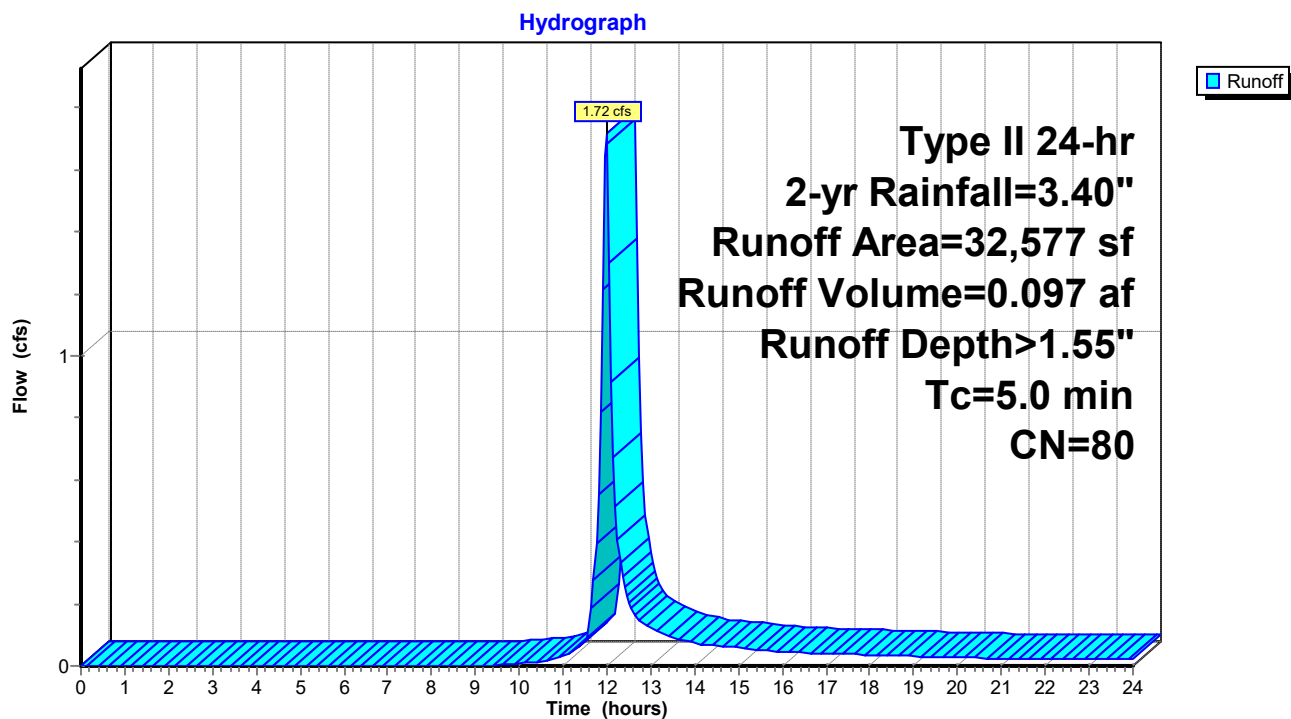
Runoff = 1.72 cfs @ 11.98 hrs, Volume= 0.097 af, Depth> 1.55"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 21

Summary for Subcatchment RD-3: Residue of Parcel

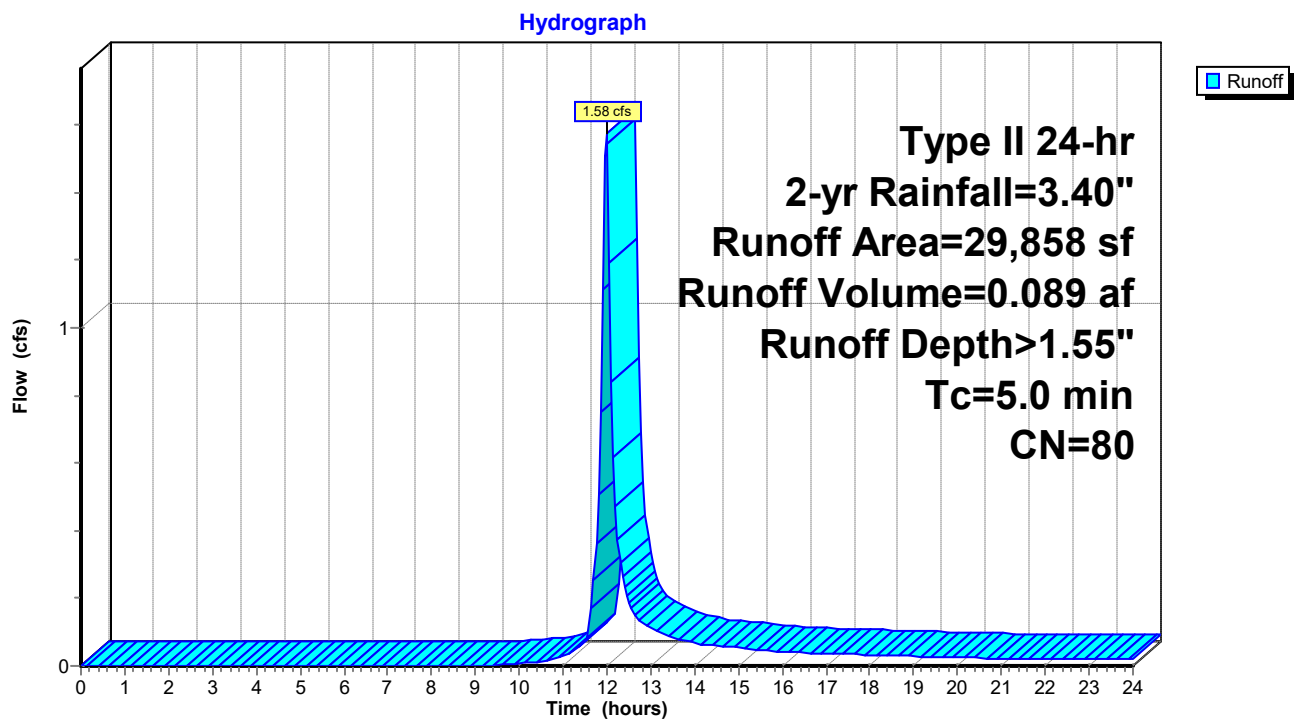
Runoff = 1.58 cfs @ 11.98 hrs, Volume= 0.089 af, Depth> 1.55"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 22

Summary for Subcatchment RD-4: Residue of Parcel

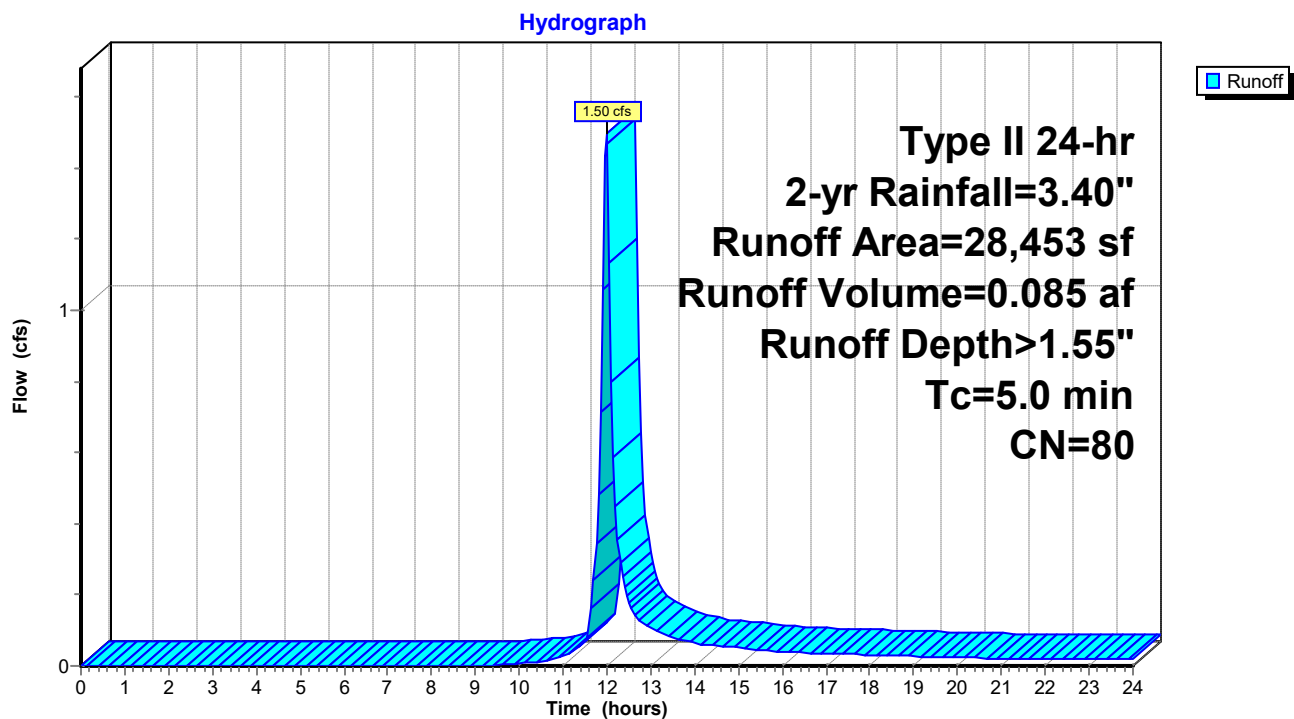
Runoff = 1.50 cfs @ 11.98 hrs, Volume= 0.085 af, Depth> 1.55"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 23

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 ' 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)

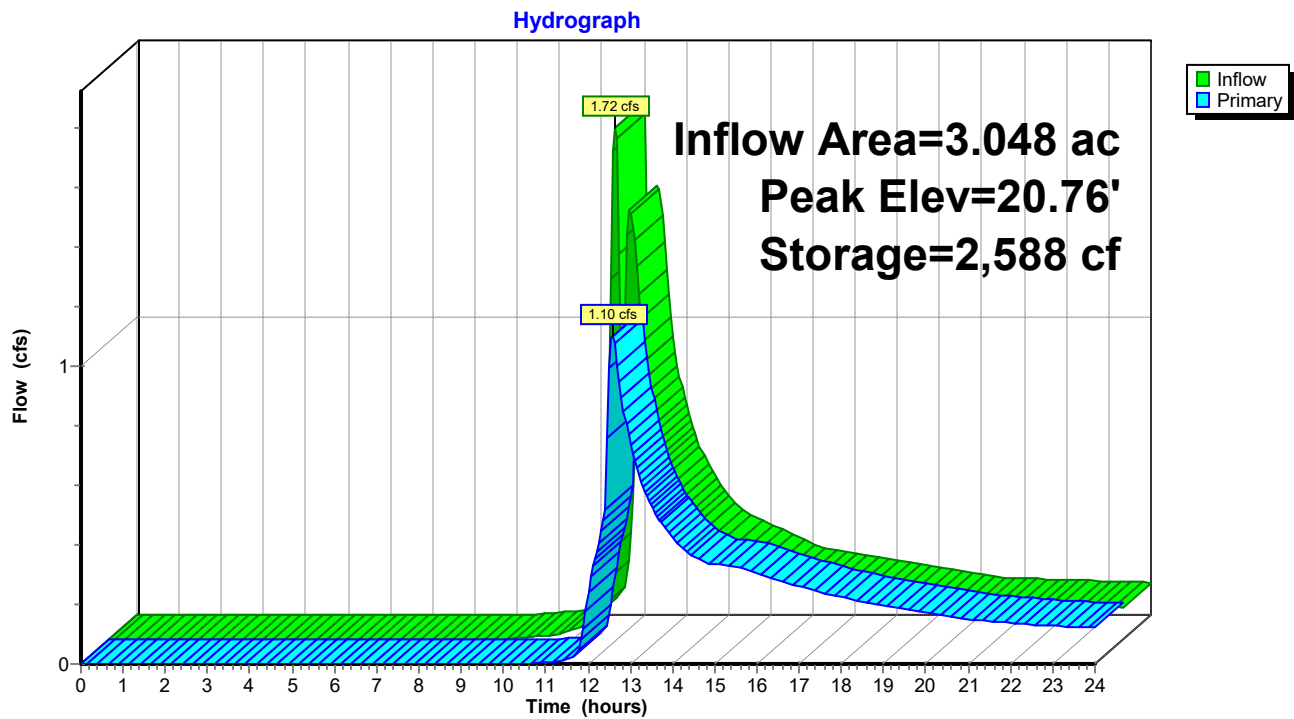
Primary OutFlow Max=1.09 cfs @ 12.58 hrs HW=20.76' TW=20.17' (Dynamic Tailwater)

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)



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 25

Stage-Area-Storage for Pond 1P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.70	1,369	0	22.25	10,234	11,628
19.75	1,453	71	22.30	12,020	12,184
19.80	1,539	145	22.35	13,951	12,832
19.85	1,627	224	22.40	16,024	13,581
19.90	1,719	308	22.45	18,242	14,437
19.95	1,812	396	22.50	20,603	15,408
20.00	1,908	489	22.55	23,108	16,500
20.05	2,007	587	22.60	25,756	17,721
20.10	2,108	690	22.65	28,548	19,078
20.15	2,211	798	22.70	31,484	20,578
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			

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

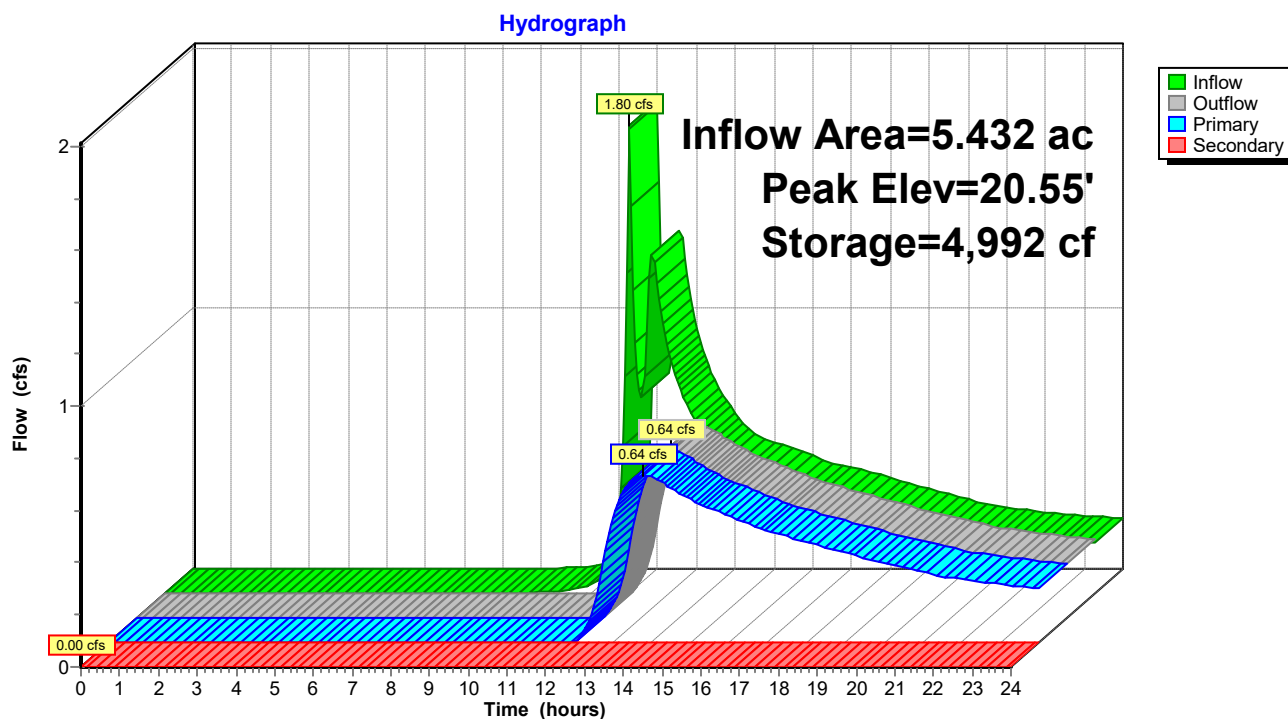
Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	18.0" Round 18" N-12 Culvert L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.70' / 16.25' S= 0.0598 ' S= 0.0598 ' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	19.70'	2.0" W x 6.0" H Vert. Orifice/Grate C= 0.600
#3	Device 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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 28

Stage-Area-Storage for Pond 4P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.70	1,059	0	21.25	6,844	9,055
18.75	1,124	55	21.30	6,959	9,400
18.80	1,192	112	21.35	7,074	9,751
18.85	1,261	174	21.40	7,191	10,107
18.90	1,332	239	21.45	7,308	10,470
18.95	1,406	307	21.50	7,427	10,838
19.00	1,481	379	21.55	7,547	11,213
19.05	1,558	455	21.60	7,667	11,593
19.10	1,637	535	21.65	7,788	11,979
19.15	1,718	619	21.70	7,911	12,372
19.20	1,801	707	21.75	8,034	12,770
19.25	1,886	799	21.80	8,158	13,175
19.30	1,973	896	21.85	8,284	13,586
19.35	2,062	996	21.90	8,410	14,004
19.40	2,153	1,102	21.95	8,537	14,427
19.45	2,246	1,212	22.00	8,665	14,857
19.50	2,341	1,326	22.05	8,794	15,294
19.55	2,437	1,446	22.10	8,924	15,737
19.60	2,536	1,570	22.15	9,055	16,186
19.65	2,637	1,700	22.20	9,187	16,642
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 29

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)

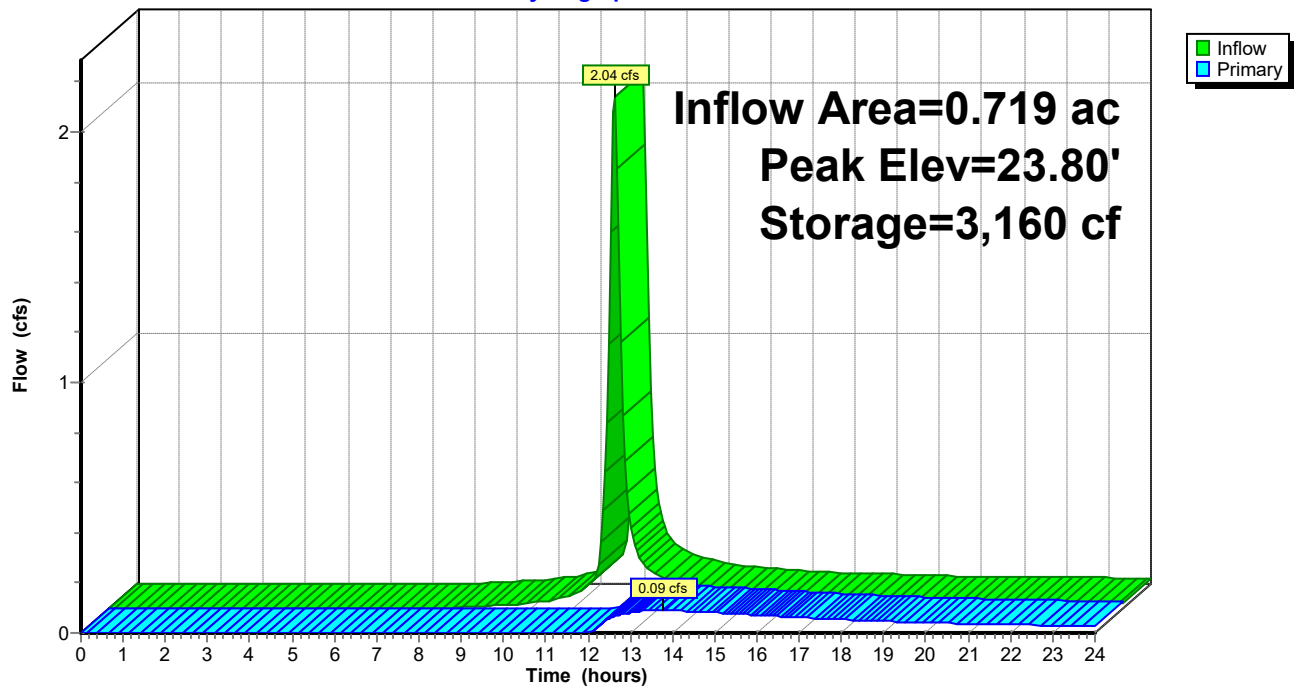
Volume	Invert	Avail.Storage	Storage Description			
#1	20.99'	5,615 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.99	1,517	393.0	0.0	0	0	1,517
21.00	1,517	393.0	40.0	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 ' 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)

Pond 8P: BioSwale

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 31

Stage-Area-Storage for Pond 8P: BioSwale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,517	0	23.54	2,774	2,385
21.04	1,517	30	23.59	2,832	2,525
21.09	1,517	61	23.64	2,890	2,669
21.14	1,517	91	23.69	2,950	2,815
21.19	1,517	121	23.74	3,009	2,964
21.24	1,517	152	23.79	3,070	3,115
21.29	1,517	182	23.84	3,131	3,270
21.34	1,517	212	23.89	3,192	3,429
21.39	1,517	243	23.94	3,254	3,590
21.44	1,517	273	23.99	3,317	3,754
21.49	1,517	303	24.04	3,380	3,921
21.54	1,517	334	24.09	3,444	4,092
21.59	1,517	364	24.14	3,509	4,266
21.64	1,517	394	24.19	3,574	4,443
21.69	1,517	425	24.24	3,640	4,623
21.74	1,517	455	24.29	3,706	4,807
21.79	1,517	485	24.34	3,773	4,994
21.84	1,517	516	24.39	3,840	5,184
21.89	1,517	546	24.44	3,908	5,378
21.94	1,517	576	24.49	3,977	5,575
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 32

Summary for Pond MBR-1: Parking Lot Micro-Bioretenion

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 ' 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)

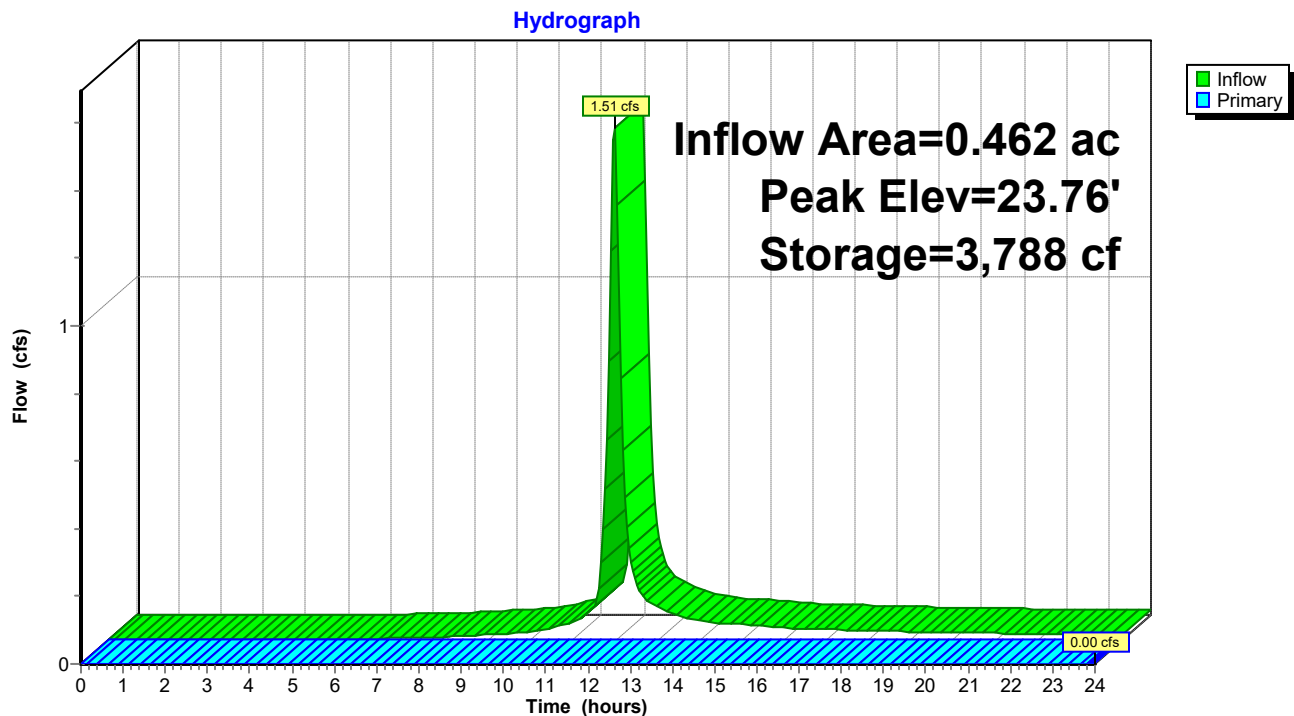
Primary OutFlow Max=0.00 cfs @ 24.00 hrs HW=23.76' TW=0.00' (Dynamic Tailwater)

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 34

Stage-Area-Storage for Pond MBR-1: Parking Lot Micro-Bioretenction

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,868	0	23.29	2,287	2,633
20.79	1,868	37	23.34	2,328	2,748
20.84	1,868	75	23.39	2,370	2,866
20.89	1,868	112	23.44	2,411	2,985
20.94	1,868	149	23.49	2,453	3,107
20.99	1,868	187	23.54	2,496	3,231
21.04	1,868	224	23.59	2,539	3,357
21.09	1,868	262	23.64	2,582	3,485
21.14	1,868	299	23.69	2,625	3,615
21.19	1,868	336	23.74	2,669	3,747
21.24	1,868	374	23.79	2,712	3,882
21.29	1,868	411	23.84	2,755	4,018
21.34	1,868	448	23.89	2,798	4,157
21.39	1,868	486	23.94	2,841	4,298
21.44	1,868	523	23.99	2,884	4,441
21.49	1,868	560	24.04	2,928	4,587
21.54	1,868	598	24.09	2,973	4,734
21.59	1,868	635	24.14	3,017	4,884
21.64	1,868	672	24.19	3,062	5,036
21.69	1,868	710	24.24	3,108	5,190
21.74	1,868	747	24.29	3,153	5,347
21.79	1,868	785	24.34	3,199	5,506
21.84	1,868	822	24.39	3,246	5,667
21.89	1,868	859	24.44	3,292	5,830
21.94	1,868	897	24.49	3,339	5,996
21.99	1,868	934	24.54	3,387	6,164
22.04	1,868	971	24.59	3,434	6,335
22.09	1,868	1,009	24.64	3,482	6,507
22.14	1,868	1,046	24.69	3,531	6,683
22.19	1,868	1,083	24.74	3,579	6,861
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 35

Summary for Pond MBR-10: Micro-Bioretenion #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

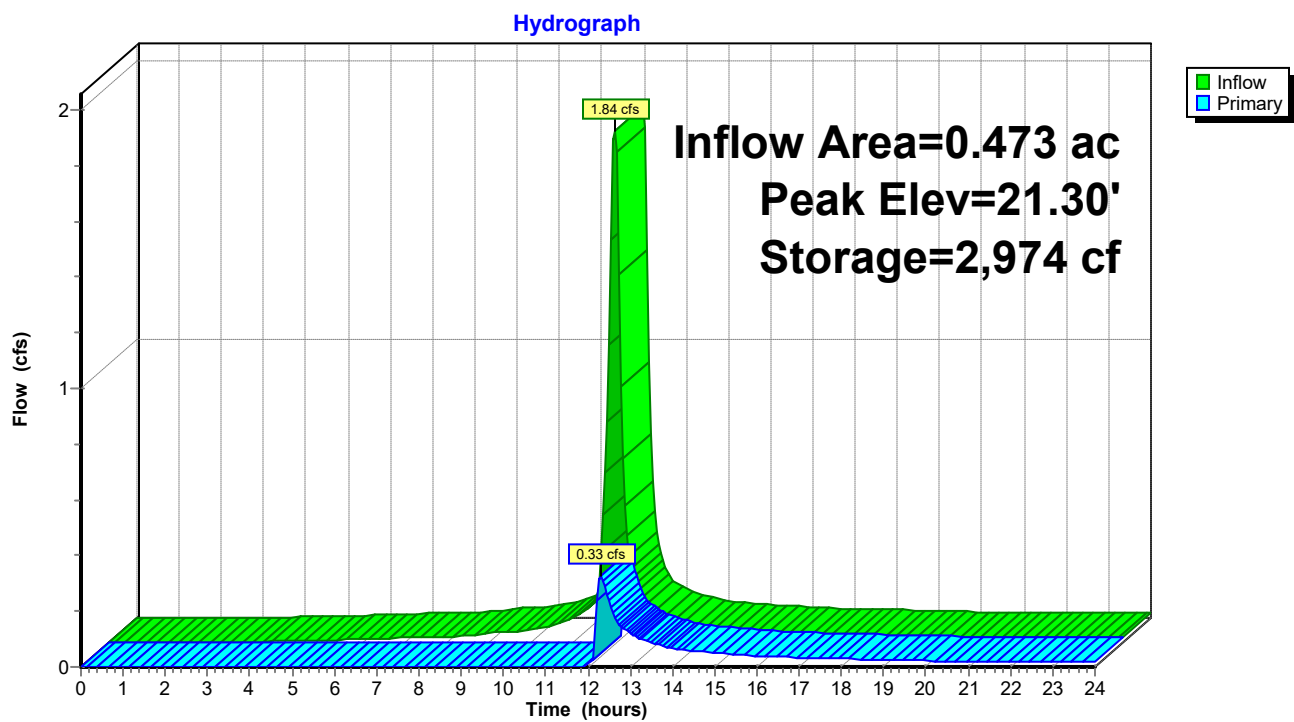
Plug-Flow detention time= 279.5 min calculated for 0.047 af (42% of inflow)

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 ' 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-Bioretenion #10

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 37

Stage-Area-Storage for Pond MBR-10: Micro-Bioretenention #10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 38

Summary for Pond MBR-11: Micro-Bioretenion #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)

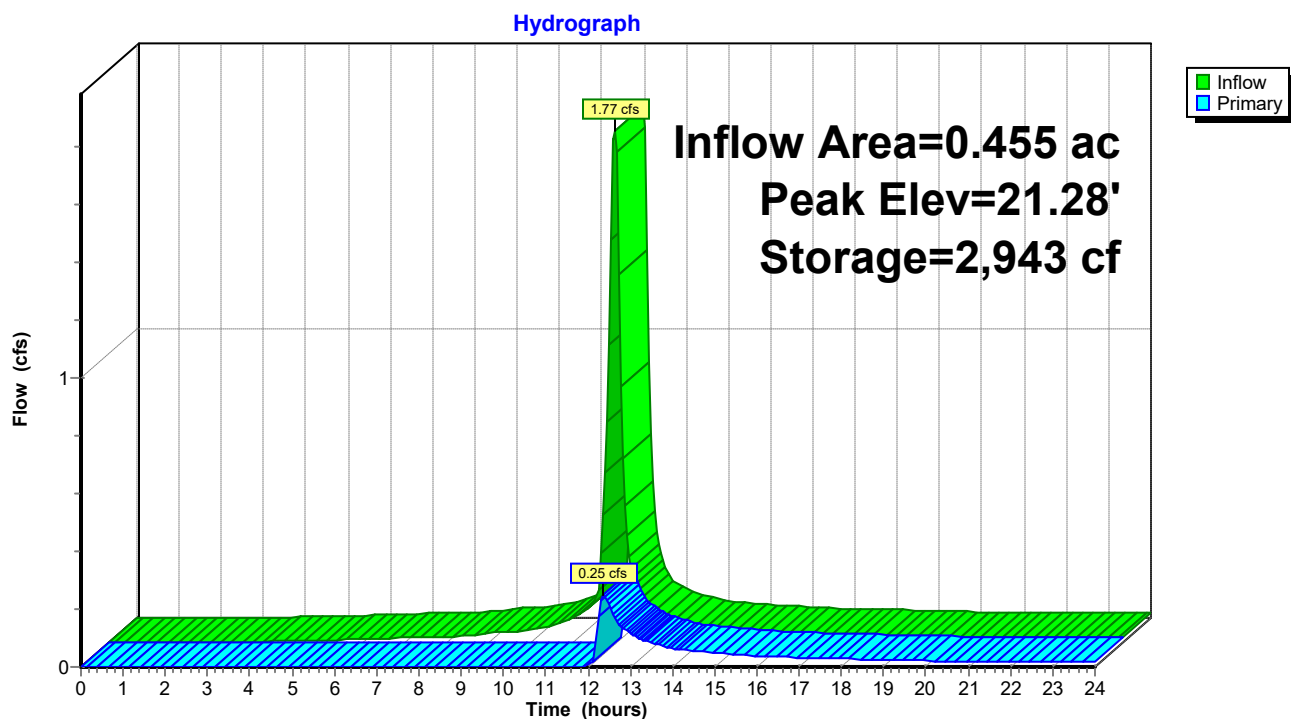
Center-of-Mass det. time= 165.1 min (942.1 - 776.9)

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 ' 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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 40

Stage-Area-Storage for Pond MBR-11: Micro-Bioretenction #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 41

Summary for Pond MBR-14: Future Office Building Micro-Bioretenction

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

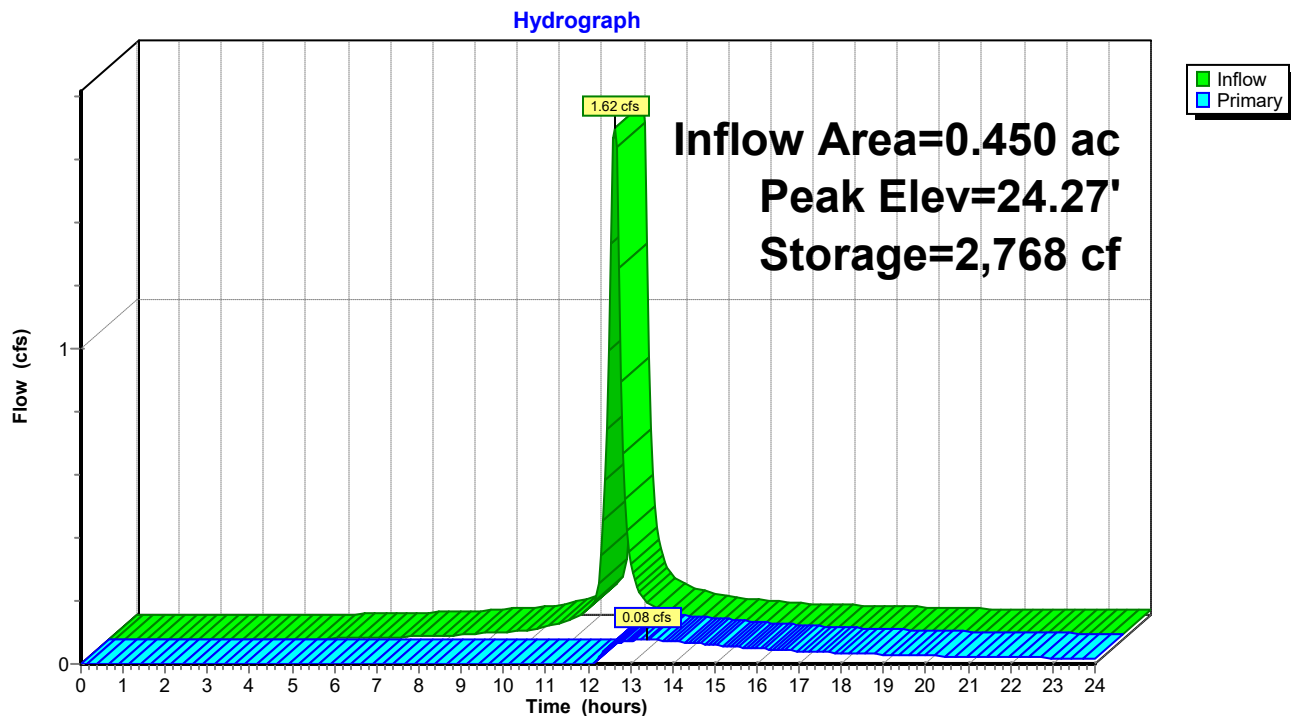
230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 42

Pond MBR-14: Future Office Building Micro-Bioretentation



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 43

Stage-Area-Storage for Pond MBR-14: Future Office Building Micro-Bioretenion

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,099	0	23.54	1,407	1,565
21.04	1,099	22	23.59	1,437	1,636
21.09	1,099	44	23.64	1,468	1,709
21.14	1,099	66	23.69	1,499	1,783
21.19	1,099	88	23.74	1,530	1,859
21.24	1,099	110	23.79	1,562	1,936
21.29	1,099	132	23.84	1,594	2,015
21.34	1,099	154	23.89	1,627	2,095
21.39	1,099	176	23.94	1,659	2,178
21.44	1,099	198	23.99	1,692	2,261
21.49	1,099	220	24.04	1,725	2,347
21.54	1,099	242	24.09	1,757	2,434
21.59	1,099	264	24.14	1,790	2,523
21.64	1,099	286	24.19	1,822	2,613
21.69	1,099	308	24.24	1,856	2,705
21.74	1,099	330	24.29	1,889	2,798
21.79	1,099	352	24.34	1,923	2,894
21.84	1,099	374	24.39	1,957	2,991
21.89	1,099	396	24.44	1,991	3,089
21.94	1,099	418	24.49	2,026	3,190
21.99	1,099	440	24.54	2,061	3,292
22.04	1,099	462	24.59	2,096	3,396
22.09	1,099	484	24.64	2,132	3,502
22.14	1,099	506	24.69	2,168	3,609
22.19	1,099	528	24.74	2,204	3,718
22.24	1,099	549	24.79	2,240	3,830
22.29	1,099	571	24.84	2,277	3,942
22.34	1,099	593	24.89	2,314	4,057
22.39	1,099	615	24.94	2,352	4,174
22.44	1,099	637	24.99	2,389	4,292
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 44

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 ' 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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

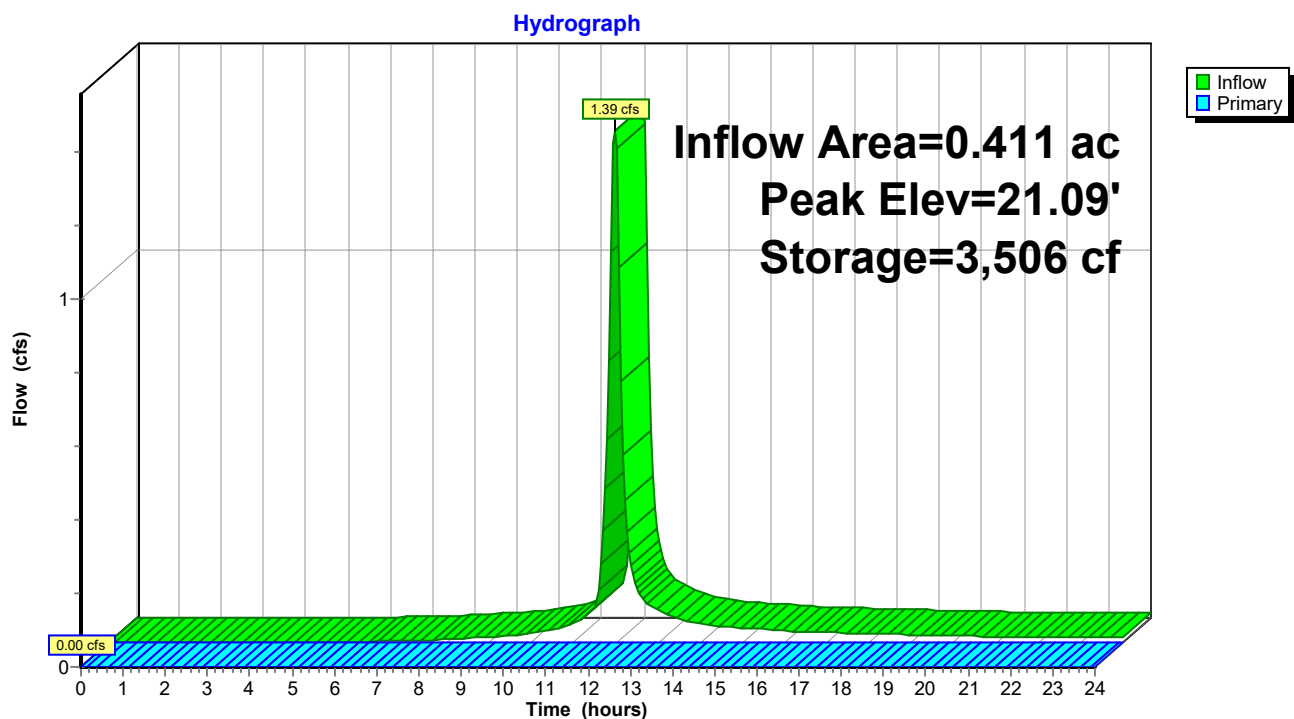
230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 45

Pond MBR-15: Access Road Microbioretention



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 46

Stage-Area-Storage for Pond MBR-15: Access Road Microbioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0	20.74	2,307	2,649
18.24	1,878	38	20.79	2,349	2,766
18.29	1,878	75	20.84	2,392	2,884
18.34	1,878	113	20.89	2,435	3,005
18.39	1,878	150	20.94	2,478	3,128
18.44	1,878	188	20.99	2,521	3,253
18.49	1,878	225	21.04	2,565	3,380
18.54	1,878	263	21.09	2,609	3,509
18.59	1,878	300	21.14	2,654	3,641
18.64	1,878	338	21.19	2,699	3,775
18.69	1,878	376	21.24	2,743	3,911
18.74	1,878	413	21.29	2,786	4,049
18.79	1,878	451	21.34	2,830	4,189
18.84	1,878	488	21.39	2,874	4,332
18.89	1,878	526	21.44	2,919	4,477
18.94	1,878	563	21.49	2,964	4,624
18.99	1,878	601	21.54	3,009	4,773
19.04	1,878	639	21.59	3,055	4,925
19.09	1,878	676	21.64	3,101	5,079
19.14	1,878	714	21.69	3,147	5,235
19.19	1,878	751	21.74	3,194	5,393
19.24	1,878	789	21.79	3,241	5,554
19.29	1,878	826	21.84	3,288	5,717
19.34	1,878	864	21.89	3,336	5,883
19.39	1,878	901	21.94	3,384	6,051
19.44	1,878	939	21.99	3,432	6,221
19.49	1,878	977	22.04	3,481	6,394
19.54	1,878	1,014	22.09	3,530	6,569
19.59	1,878	1,052	22.14	3,579	6,747
19.64	1,878	1,089	22.19	3,629	6,927
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 47

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)

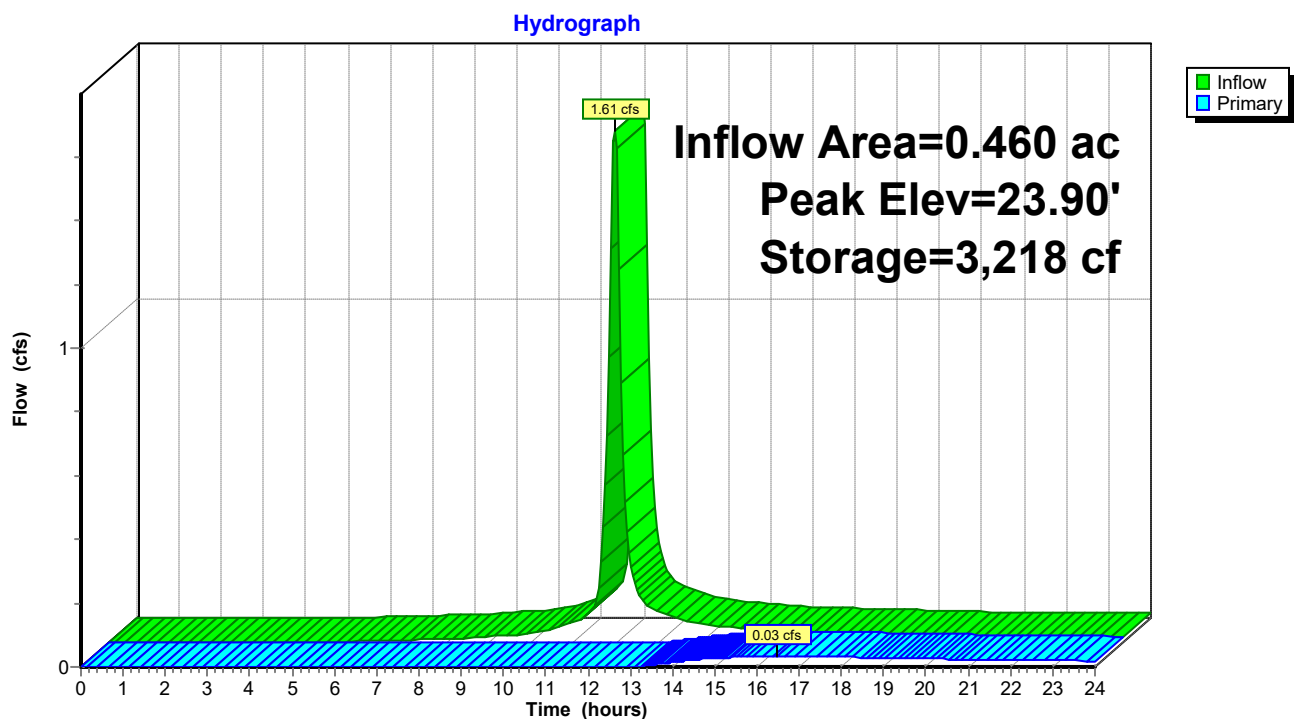
Center-of-Mass det. time= 316.3 min (1,114.6 - 798.3)

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)

Pond MBR-2: Parking Lot Micro-Bioretention



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 49

Stage-Area-Storage for Pond MBR-2: Parking Lot Micro-Bioretenention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,385	0	23.29	1,777	1,973
20.79	1,385	28	23.34	1,816	2,063
20.84	1,385	55	23.39	1,855	2,155
20.89	1,385	83	23.44	1,895	2,249
20.94	1,385	111	23.49	1,935	2,345
20.99	1,385	139	23.54	1,975	2,442
21.04	1,385	166	23.59	2,016	2,542
21.09	1,385	194	23.64	2,058	2,644
21.14	1,385	222	23.69	2,099	2,748
21.19	1,385	249	23.74	2,142	2,854
21.24	1,385	277	23.79	2,182	2,962
21.29	1,385	305	23.84	2,222	3,072
21.34	1,385	332	23.89	2,262	3,184
21.39	1,385	360	23.94	2,303	3,298
21.44	1,385	388	23.99	2,344	3,415
21.49	1,385	416	24.04	2,386	3,533
21.54	1,385	443	24.09	2,428	3,653
21.59	1,385	471	24.14	2,470	3,776
21.64	1,385	499	24.19	2,513	3,900
21.69	1,385	526	24.24	2,556	4,027
21.74	1,385	554	24.29	2,599	4,156
21.79	1,385	582	24.34	2,643	4,287
21.84	1,385	609	24.39	2,687	4,420
21.89	1,385	637	24.44	2,731	4,555
21.94	1,385	665	24.49	2,776	4,693
21.99	1,385	693	24.54	2,821	4,833
22.04	1,385	720	24.59	2,867	4,975
22.09	1,385	748	24.64	2,913	5,120
22.14	1,385	776	24.69	2,959	5,267
22.19	1,385	803	24.74	3,006	5,416
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 50

Summary for Pond MBR-3: Office Building Micro-Bioretenion

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)

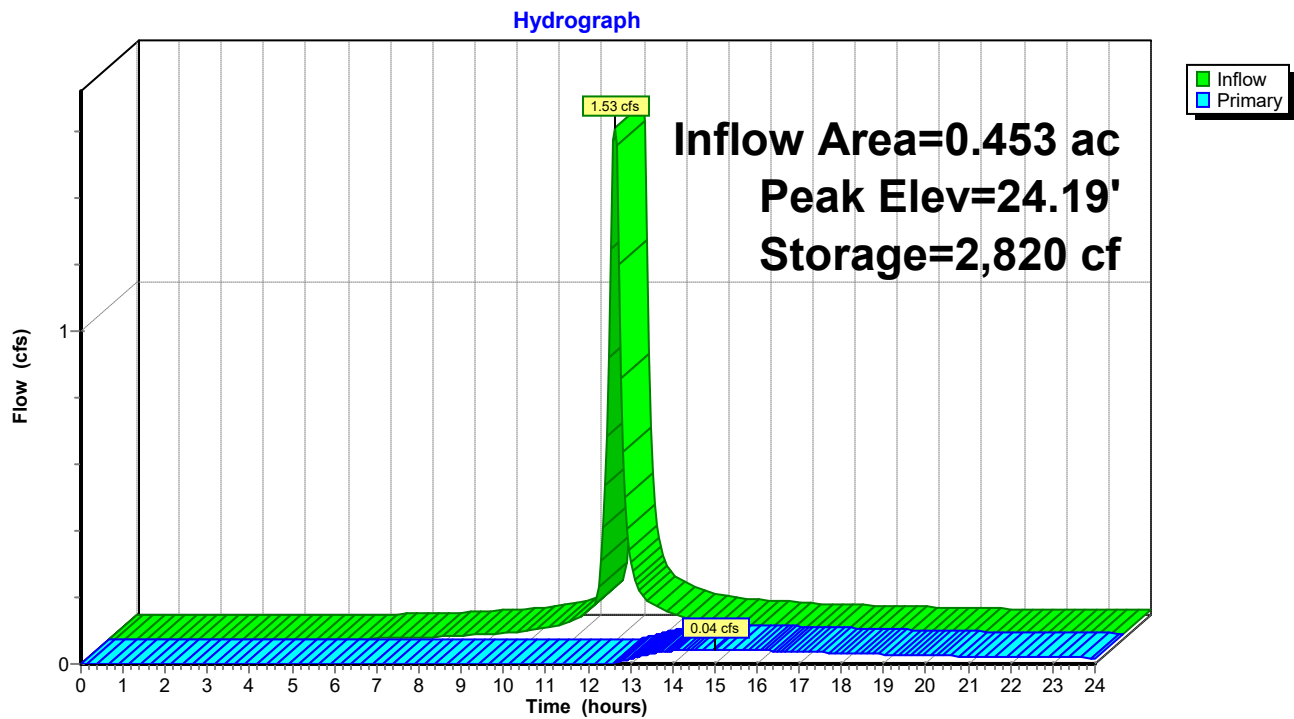
Center-of-Mass det. time= 260.0 min (1,062.6 - 802.6)

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)

Pond MBR-3: Office Building Micro-Bioretenction



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 52

Stage-Area-Storage for Pond MBR-3: Office Building Micro-Bioretenion

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,193	0	23.54	1,518	1,697
21.04	1,193	24	23.59	1,550	1,773
21.09	1,193	48	23.64	1,583	1,852
21.14	1,193	72	23.69	1,615	1,932
21.19	1,193	95	23.74	1,649	2,013
21.24	1,193	119	23.79	1,682	2,096
21.29	1,193	143	23.84	1,716	2,181
21.34	1,193	167	23.89	1,750	2,268
21.39	1,193	191	23.94	1,784	2,356
21.44	1,193	215	23.99	1,819	2,446
21.49	1,193	239	24.04	1,853	2,538
21.54	1,193	262	24.09	1,887	2,632
21.59	1,193	286	24.14	1,921	2,727
21.64	1,193	310	24.19	1,956	2,824
21.69	1,193	334	24.24	1,991	2,923
21.74	1,193	358	24.29	2,026	3,023
21.79	1,193	382	24.34	2,061	3,125
21.84	1,193	406	24.39	2,097	3,229
21.89	1,193	429	24.44	2,133	3,335
21.94	1,193	453	24.49	2,170	3,442
21.99	1,193	477	24.54	2,206	3,552
22.04	1,193	501	24.59	2,244	3,663
22.09	1,193	525	24.64	2,281	3,776
22.14	1,193	549	24.69	2,319	3,891
22.19	1,193	573	24.74	2,357	4,008
22.24	1,193	597	24.79	2,395	4,127
22.29	1,193	620	24.84	2,433	4,248
22.34	1,193	644	24.89	2,472	4,370
22.39	1,193	668	24.94	2,512	4,495
22.44	1,193	692	24.99	2,551	4,621
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 53

Summary for Pond MBR-4: Micro-Bioretenion #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

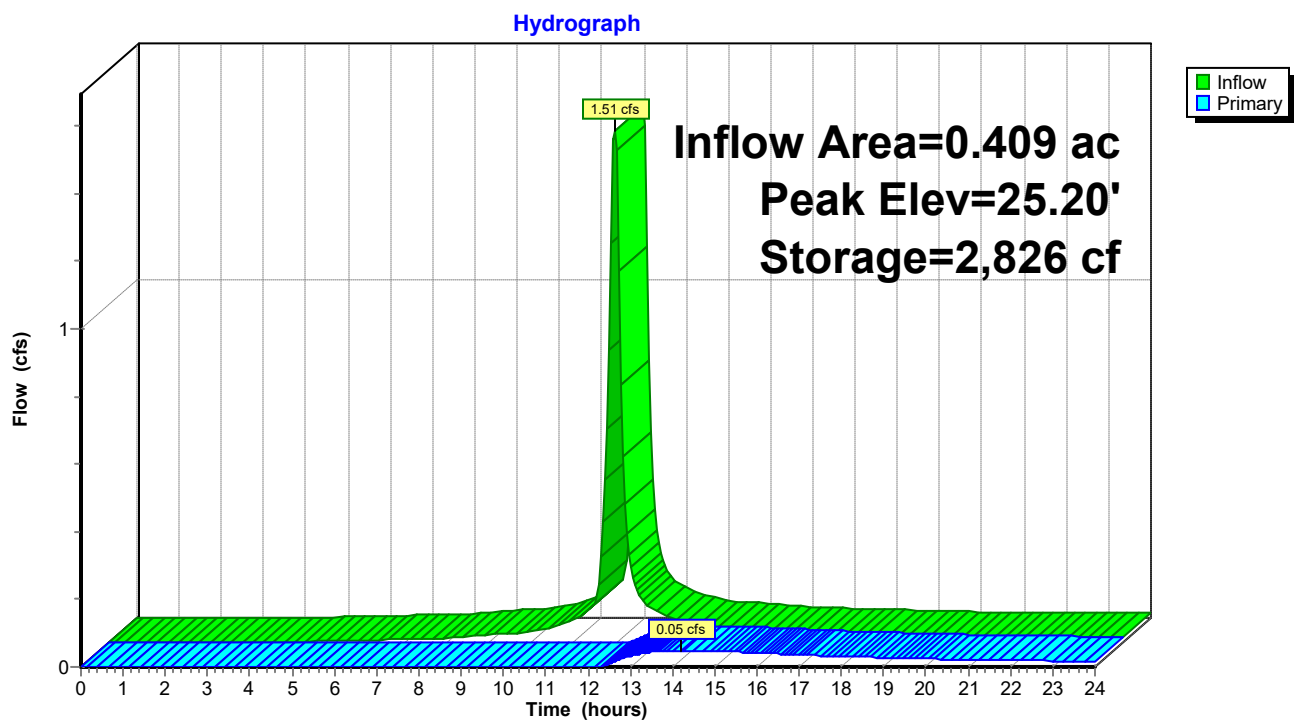
Device	Routing	Invert	Outlet Devices
#1	Primary	22.00'	12.0" Round 12" N-12 L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.00' / 20.45' S= 0.0250 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.00'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 1	25.50'	10.7' long 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 55

Stage-Area-Storage for Pond MBR-4: Micro-Bioretenion #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
21.99	1,196	0	24.54	1,500	1,695
22.04	1,196	24	24.59	1,530	1,771
22.09	1,196	48	24.64	1,560	1,848
22.14	1,196	72	24.69	1,590	1,927
22.19	1,196	96	24.74	1,621	2,007
22.24	1,196	120	24.79	1,652	2,089
22.29	1,196	144	24.84	1,684	2,172
22.34	1,196	167	24.89	1,715	2,257
22.39	1,196	191	24.94	1,747	2,344
22.44	1,196	215	24.99	1,780	2,432
22.49	1,196	239	25.04	1,811	2,522
22.54	1,196	263	25.09	1,843	2,613
22.59	1,196	287	25.14	1,876	2,706
22.64	1,196	311	25.19	1,908	2,801
22.69	1,196	335	25.24	1,941	2,897
22.74	1,196	359	25.29	1,974	2,995
22.79	1,196	383	25.34	2,008	3,094
22.84	1,196	407	25.39	2,041	3,196
22.89	1,196	431	25.44	2,075	3,299
22.94	1,196	454	25.49	2,110	3,403
22.99	1,196	478	25.54	2,144	3,510
23.04	1,196	502	25.59	2,179	3,618
23.09	1,196	526	25.64	2,214	3,727
23.14	1,196	550	25.69	2,249	3,839
23.19	1,196	574	25.74	2,285	3,952
23.24	1,196	598	25.79	2,321	4,068
23.29	1,196	622	25.84	2,357	4,185
23.34	1,196	646	25.89	2,394	4,303
23.39	1,196	670	25.94	2,430	4,424
23.44	1,196	694	25.99	2,468	4,546
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 56

Summary for Pond MBR-5: Access Road Micro-Bioretenion #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)

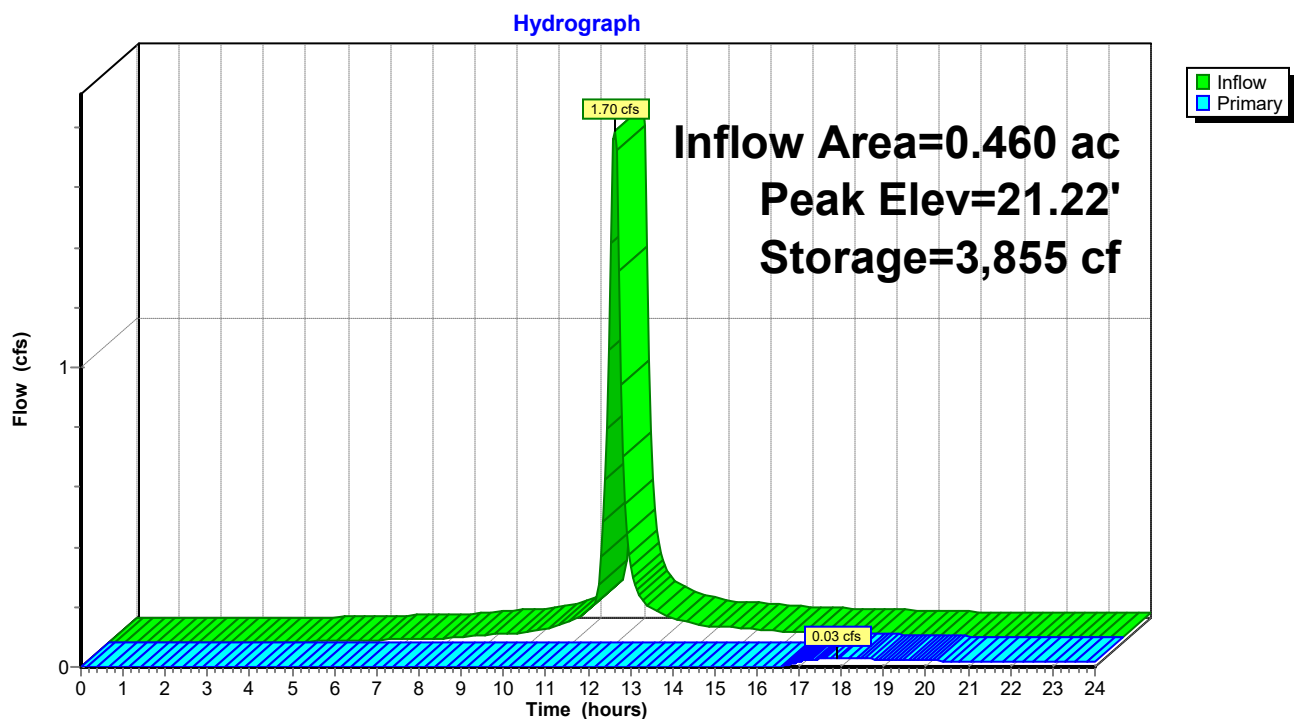
Center-of-Mass det. time= 418.6 min (1,207.1 - 788.6)

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 ' 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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 58

Stage-Area-Storage for Pond MBR-5: Access Road Micro-Bioretenion #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0	20.74	2,307	2,649
18.24	1,878	38	20.79	2,349	2,766
18.29	1,878	75	20.84	2,392	2,884
18.34	1,878	113	20.89	2,435	3,005
18.39	1,878	150	20.94	2,478	3,128
18.44	1,878	188	20.99	2,521	3,253
18.49	1,878	225	21.04	2,565	3,380
18.54	1,878	263	21.09	2,609	3,509
18.59	1,878	300	21.14	2,654	3,641
18.64	1,878	338	21.19	2,699	3,775
18.69	1,878	376	21.24	2,743	3,911
18.74	1,878	413	21.29	2,786	4,049
18.79	1,878	451	21.34	2,830	4,189
18.84	1,878	488	21.39	2,874	4,332
18.89	1,878	526	21.44	2,919	4,477
18.94	1,878	563	21.49	2,964	4,624
18.99	1,878	601	21.54	3,009	4,773
19.04	1,878	639	21.59	3,055	4,925
19.09	1,878	676	21.64	3,101	5,079
19.14	1,878	714	21.69	3,147	5,235
19.19	1,878	751	21.74	3,194	5,393
19.24	1,878	789	21.79	3,241	5,554
19.29	1,878	826	21.84	3,288	5,717
19.34	1,878	864	21.89	3,336	5,883
19.39	1,878	901	21.94	3,384	6,051
19.44	1,878	939	21.99	3,432	6,221
19.49	1,878	977	22.04	3,481	6,394
19.54	1,878	1,014	22.09	3,530	6,569
19.59	1,878	1,052	22.14	3,579	6,747
19.64	1,878	1,089	22.19	3,629	6,927
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 59

Summary for Pond MBR-6: Micro-Bioretenion #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

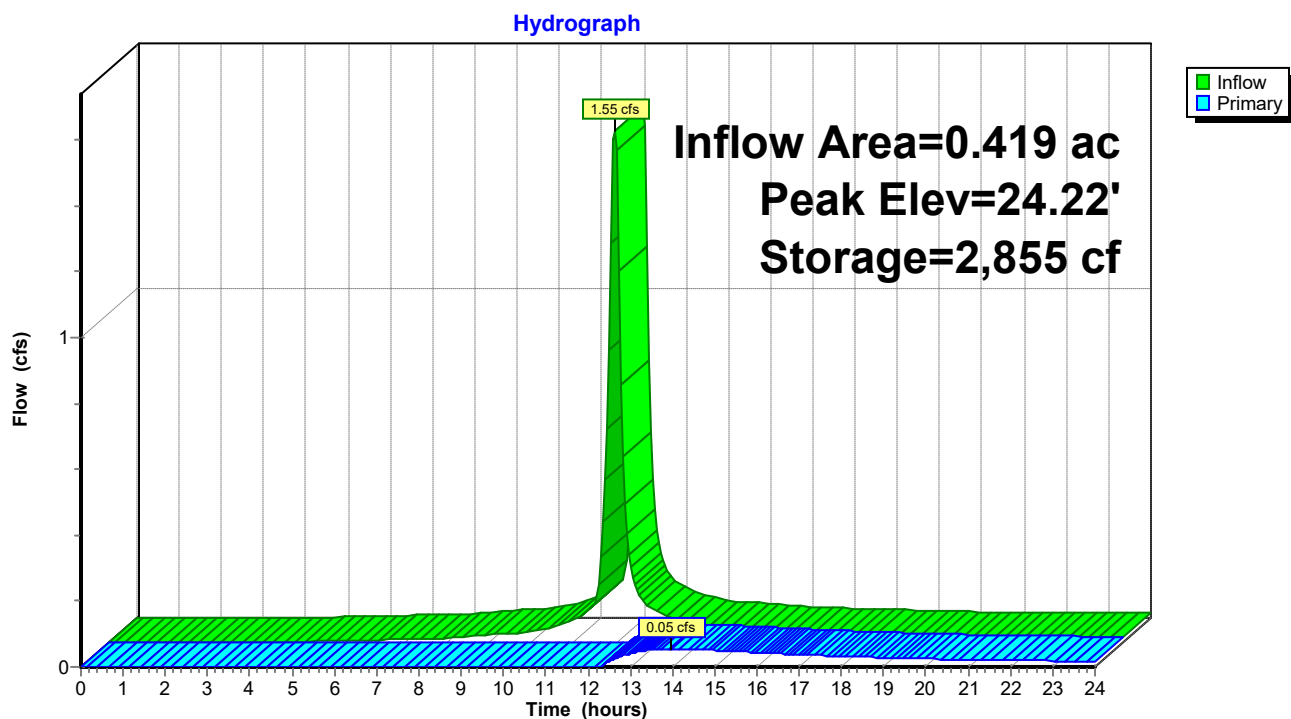
Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	12.0" Round 12" N-12 Culvert L= 26.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.45' S= 0.0205 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 1	24.50'	10.7' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 61

Stage-Area-Storage for Pond MBR-6: Micro-Bioretenion #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,196	0	23.54	1,500	1,695
21.04	1,196	24	23.59	1,530	1,771
21.09	1,196	48	23.64	1,560	1,848
21.14	1,196	72	23.69	1,590	1,927
21.19	1,196	96	23.74	1,621	2,007
21.24	1,196	120	23.79	1,652	2,089
21.29	1,196	144	23.84	1,684	2,172
21.34	1,196	167	23.89	1,715	2,257
21.39	1,196	191	23.94	1,747	2,344
21.44	1,196	215	23.99	1,780	2,432
21.49	1,196	239	24.04	1,811	2,522
21.54	1,196	263	24.09	1,843	2,613
21.59	1,196	287	24.14	1,876	2,706
21.64	1,196	311	24.19	1,908	2,801
21.69	1,196	335	24.24	1,941	2,897
21.74	1,196	359	24.29	1,974	2,995
21.79	1,196	383	24.34	2,008	3,094
21.84	1,196	407	24.39	2,041	3,196
21.89	1,196	431	24.44	2,075	3,299
21.94	1,196	454	24.49	2,110	3,403
21.99	1,196	478	24.54	2,144	3,510
22.04	1,196	502	24.59	2,179	3,618
22.09	1,196	526	24.64	2,214	3,727
22.14	1,196	550	24.69	2,249	3,839
22.19	1,196	574	24.74	2,285	3,952
22.24	1,196	598	24.79	2,321	4,068
22.29	1,196	622	24.84	2,357	4,185
22.34	1,196	646	24.89	2,394	4,303
22.39	1,196	670	24.94	2,430	4,424
22.44	1,196	694	24.99	2,468	4,546
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 62

Summary for Pond MBR-7: Micro-Bioretenion #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

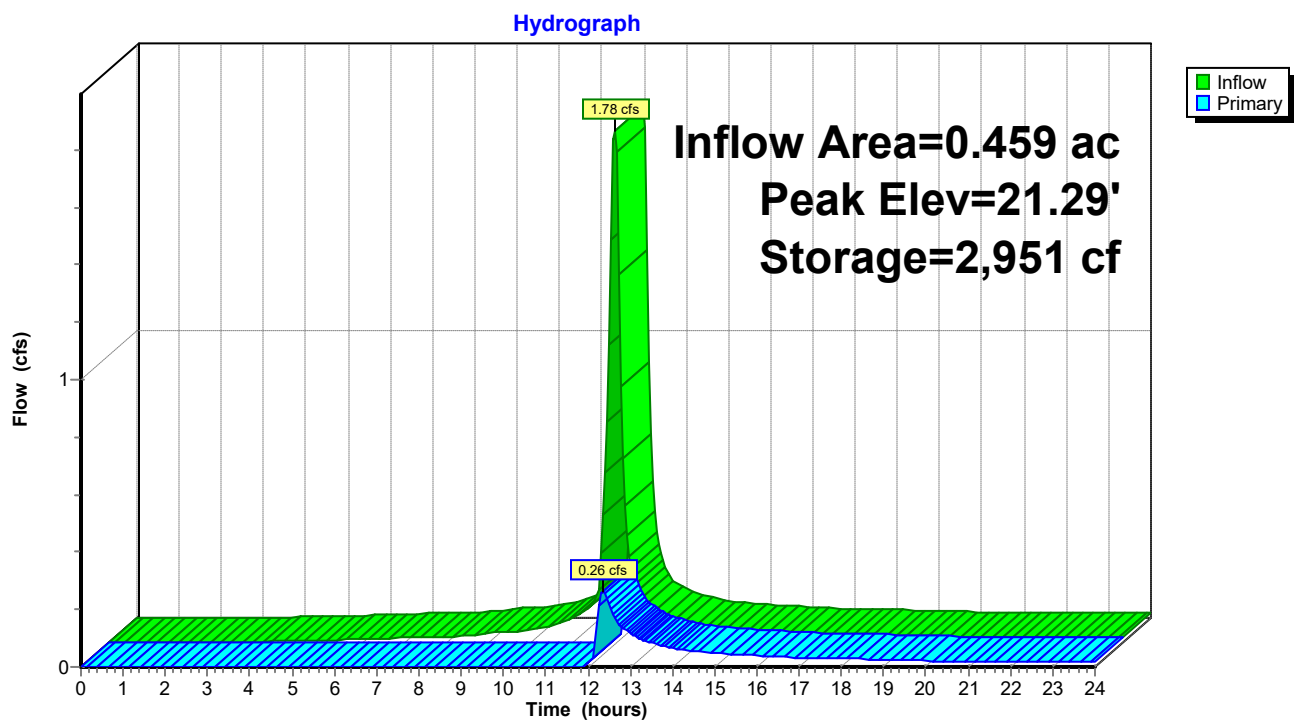
Plug-Flow detention time= 290.7 min calculated for 0.044 af (40% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 64

Stage-Area-Storage for Pond MBR-7: Micro-Bioretenention #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 65

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)

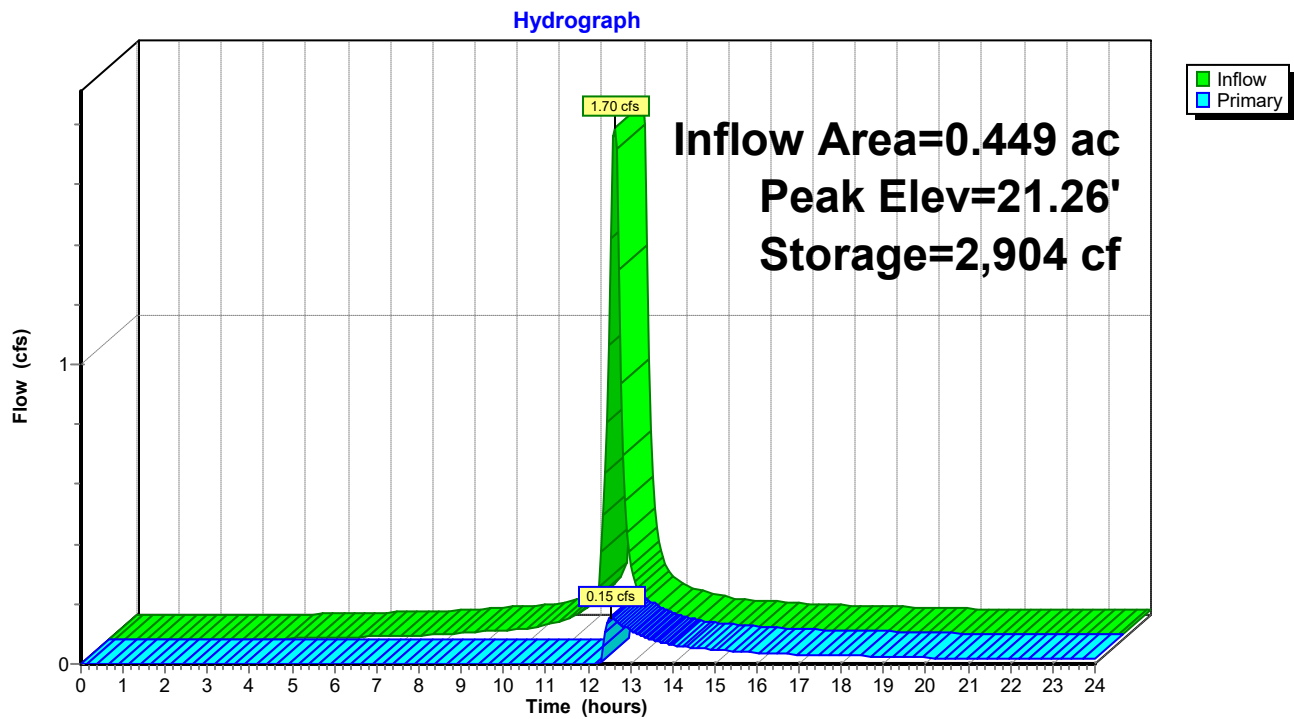
Center-of-Mass det. time= 182.0 min (965.1 - 783.0)

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 67

Stage-Area-Storage for Pond MBR-8: Micro-Bioretenction #8

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 68

Summary for Pond MBR-9: Micro-Bioretenion #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)

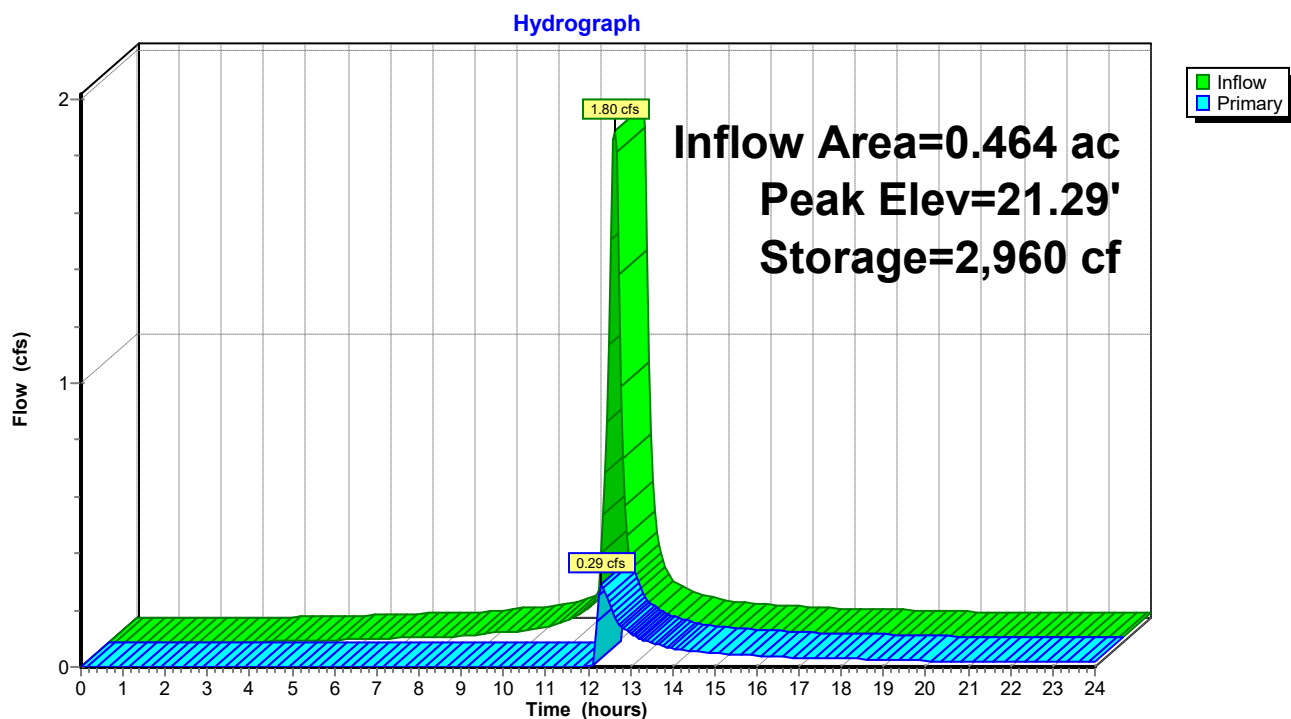
Center-of-Mass det. time= 158.9 min (935.8 - 776.9)

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 ' 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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 70

Stage-Area-Storage for Pond MBR-9: Micro-Bioretenction #9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 71

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

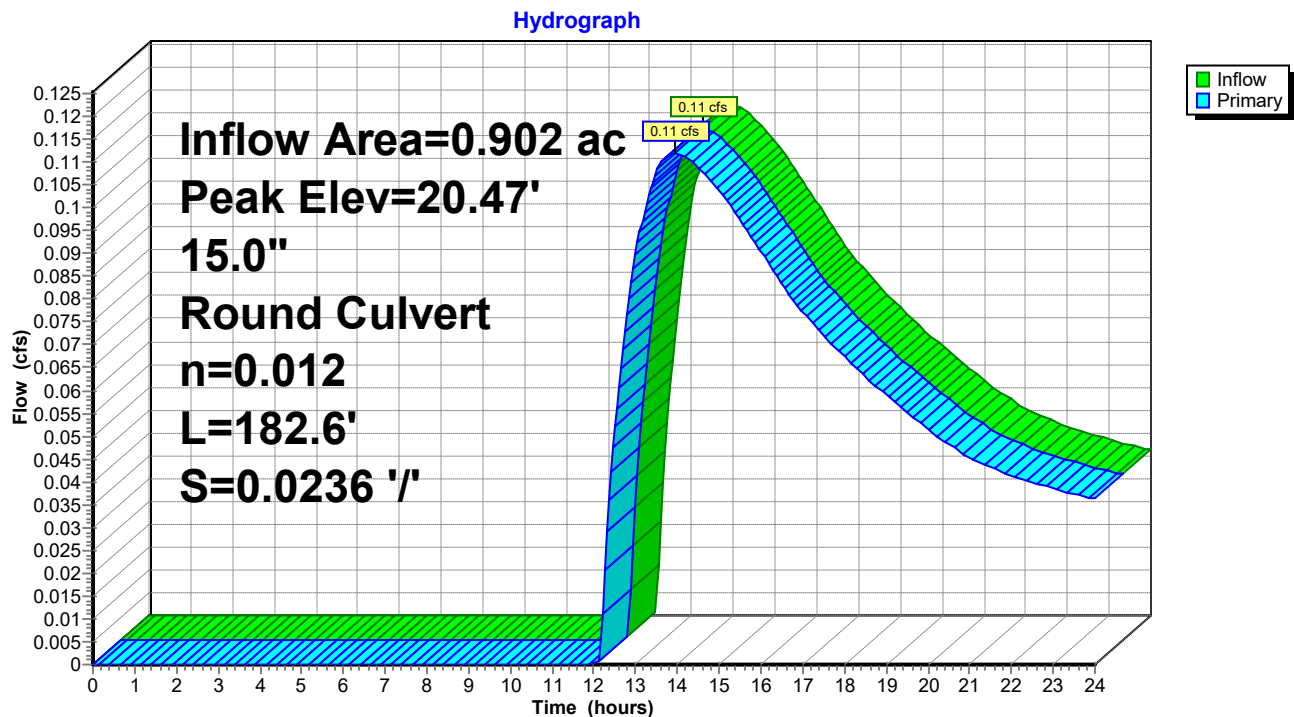
Peak Elev= 20.47' @ 13.95 hrs

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 72

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		

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 73

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

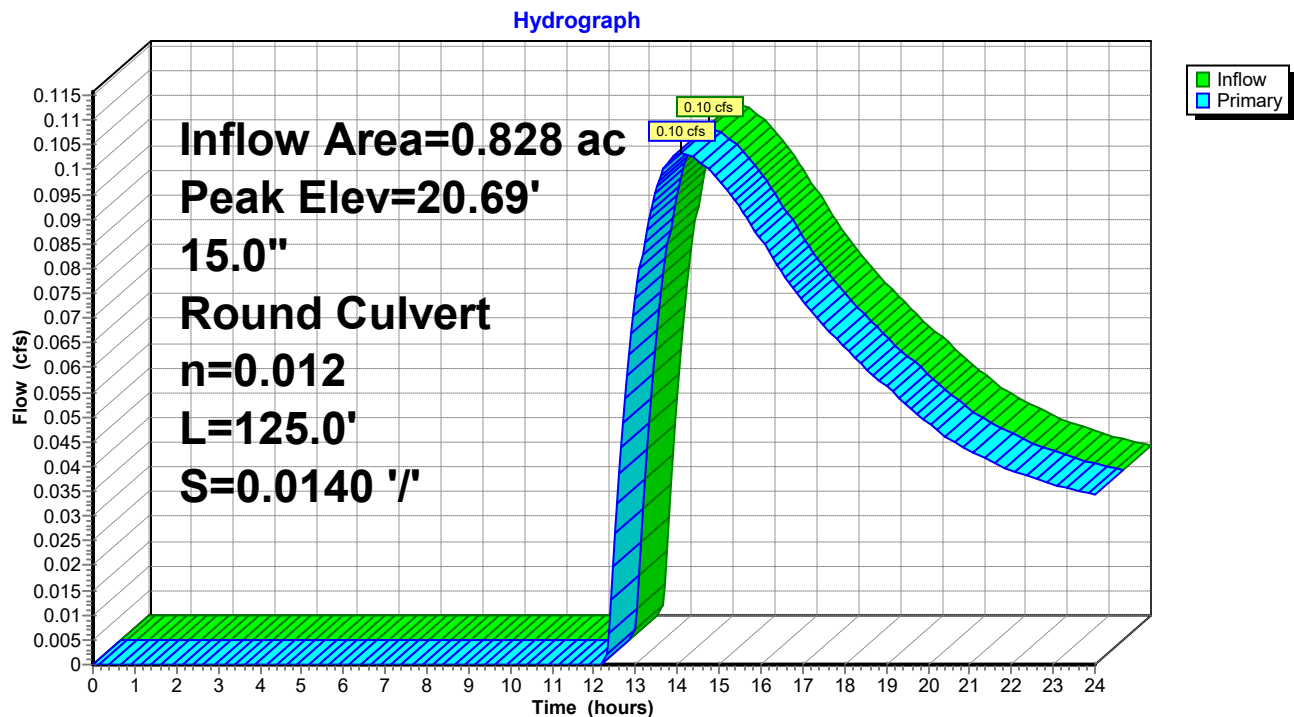
Peak Elev= 20.69' @ 13.93 hrs

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 74

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 75

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)

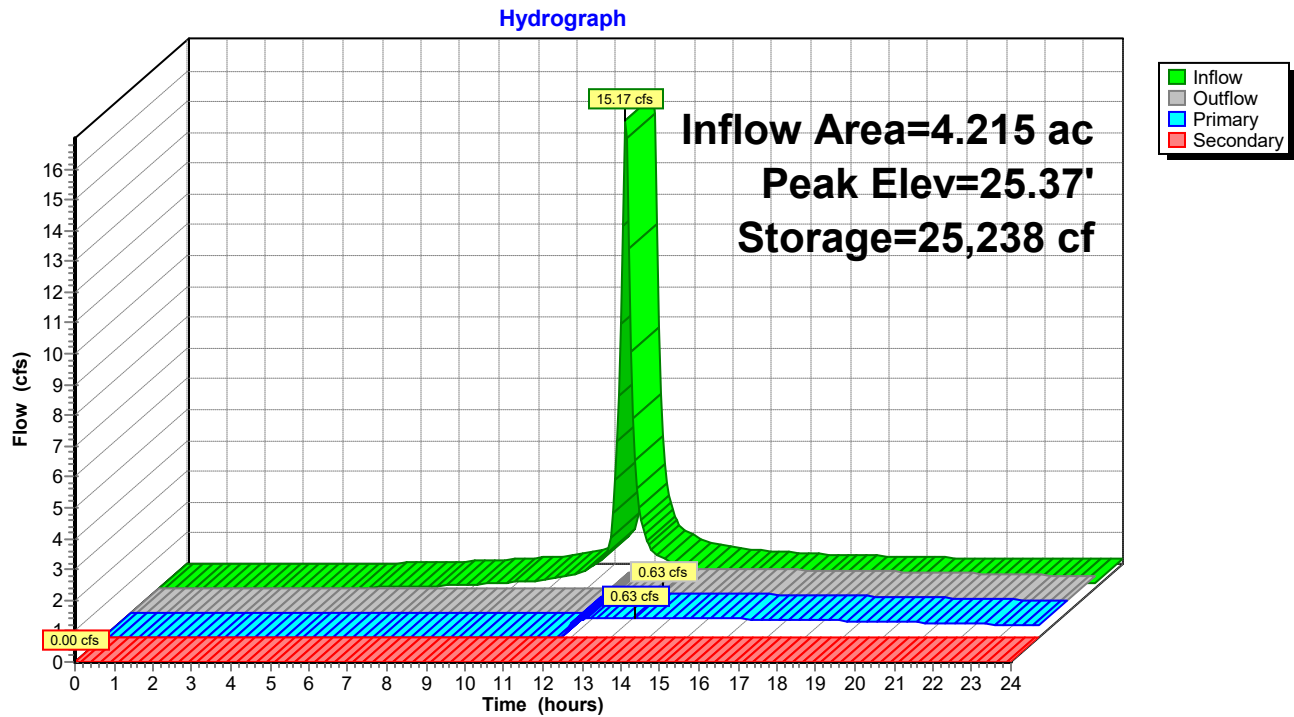
↑ **1=18" N-12 Culvert** (Passes 0.63 cfs of 7.67 cfs potential flow)

↑ **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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/30/2023

Page 77

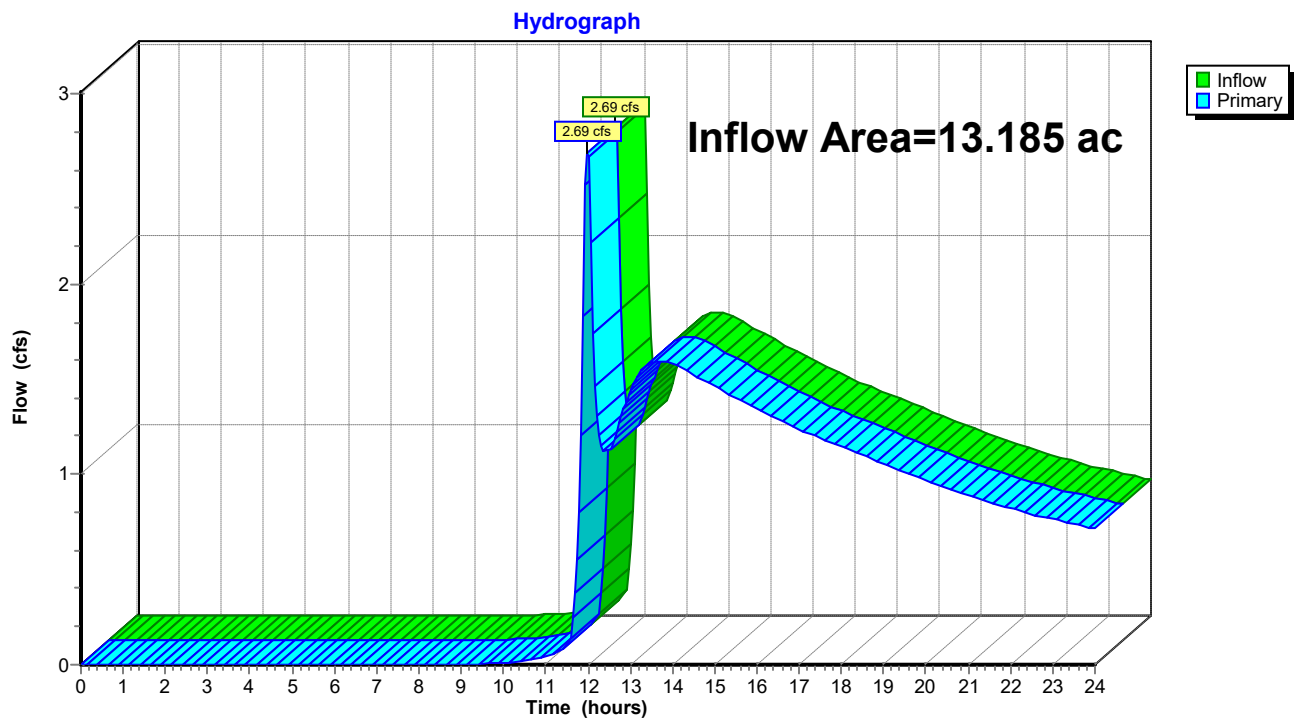
Stage-Area-Storage for Pond SGW-1: (Future) Submerged Gravel Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
23.50	11,511	0	26.05	17,332	36,523
23.55	11,614	578	26.10	17,458	37,393
23.60	11,717	1,161	26.15	17,585	38,269
23.65	11,821	1,750	26.20	17,712	39,151
23.70	11,925	2,343	26.25	17,839	40,040
23.75	12,029	2,942	26.30	17,967	40,935
23.80	12,134	3,546	26.35	18,095	41,837
23.85	12,240	4,156	26.40	18,224	42,745
23.90	12,346	4,770	26.45	18,353	43,659
23.95	12,452	5,390	26.50	18,483	44,580
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			

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

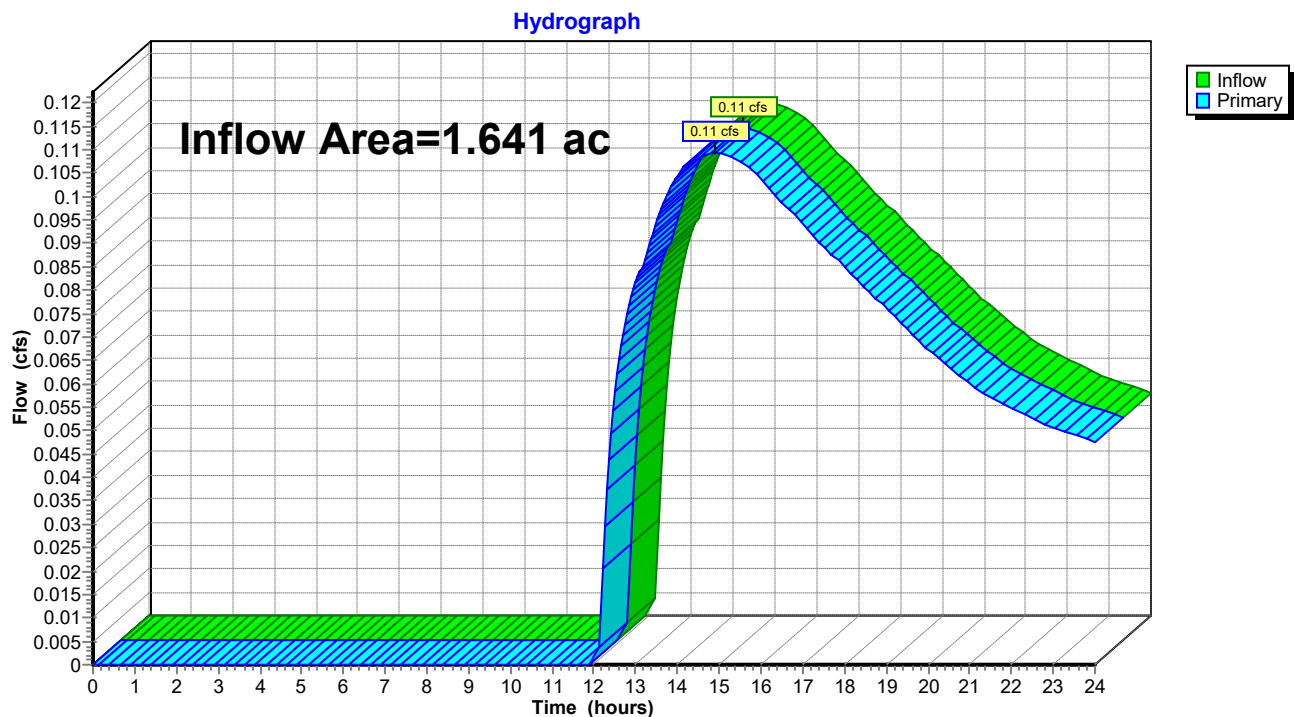
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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

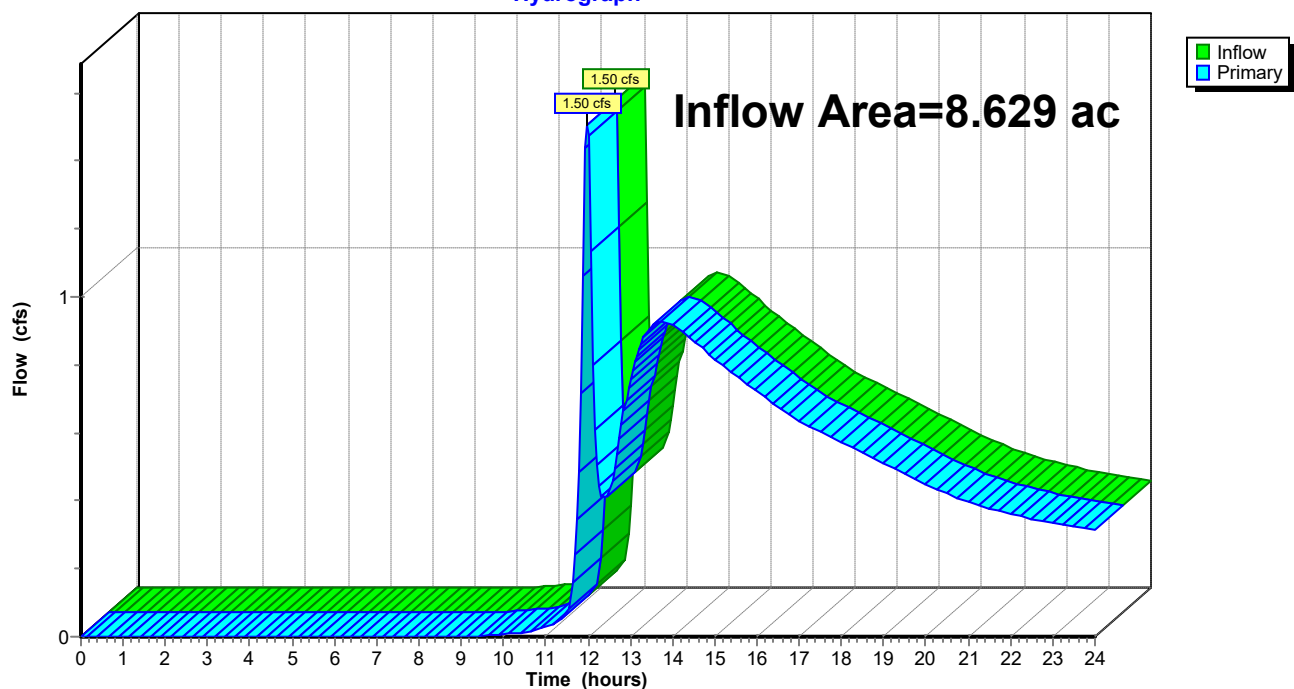
Summary for Link 3L: POI #1

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

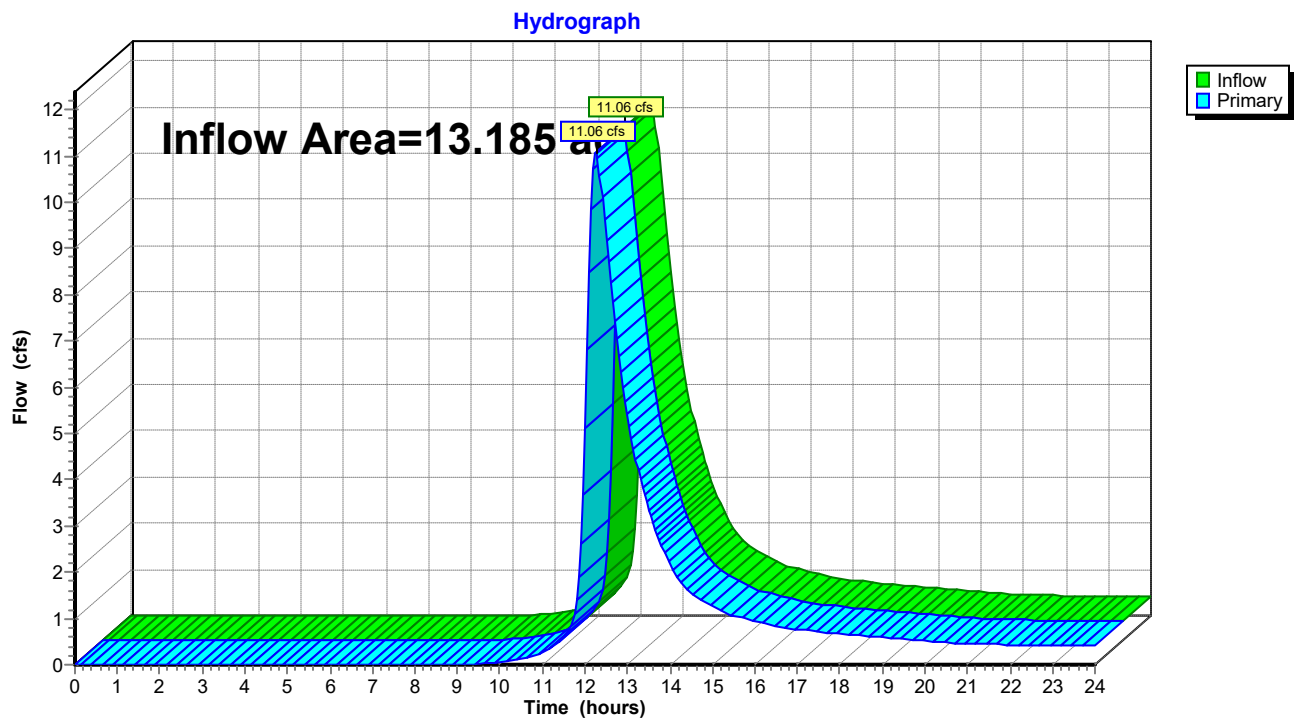
Hydrograph



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

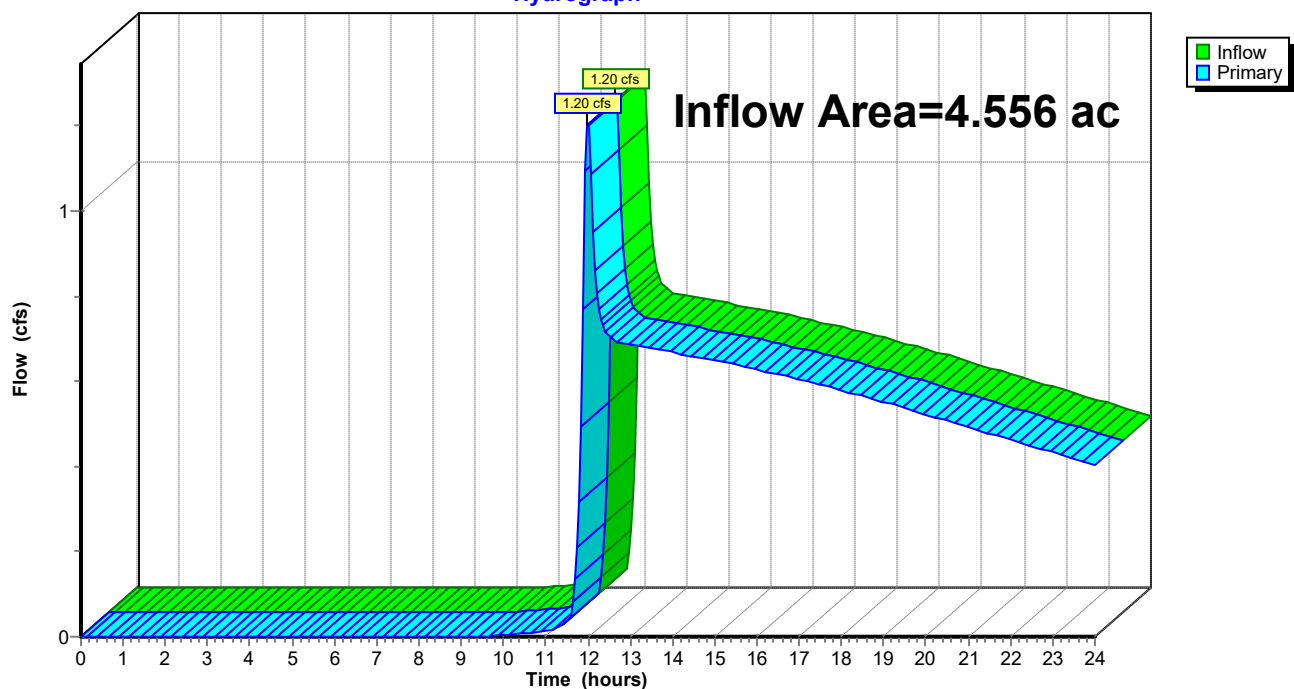
Summary for Link 6L: POI#2

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 83

Summary for Subcatchment EX-1: Predevelopment (POI#1)

Runoff = 17.12 cfs @ 12.27 hrs, Volume= 2.594 af, Depth> 3.21"

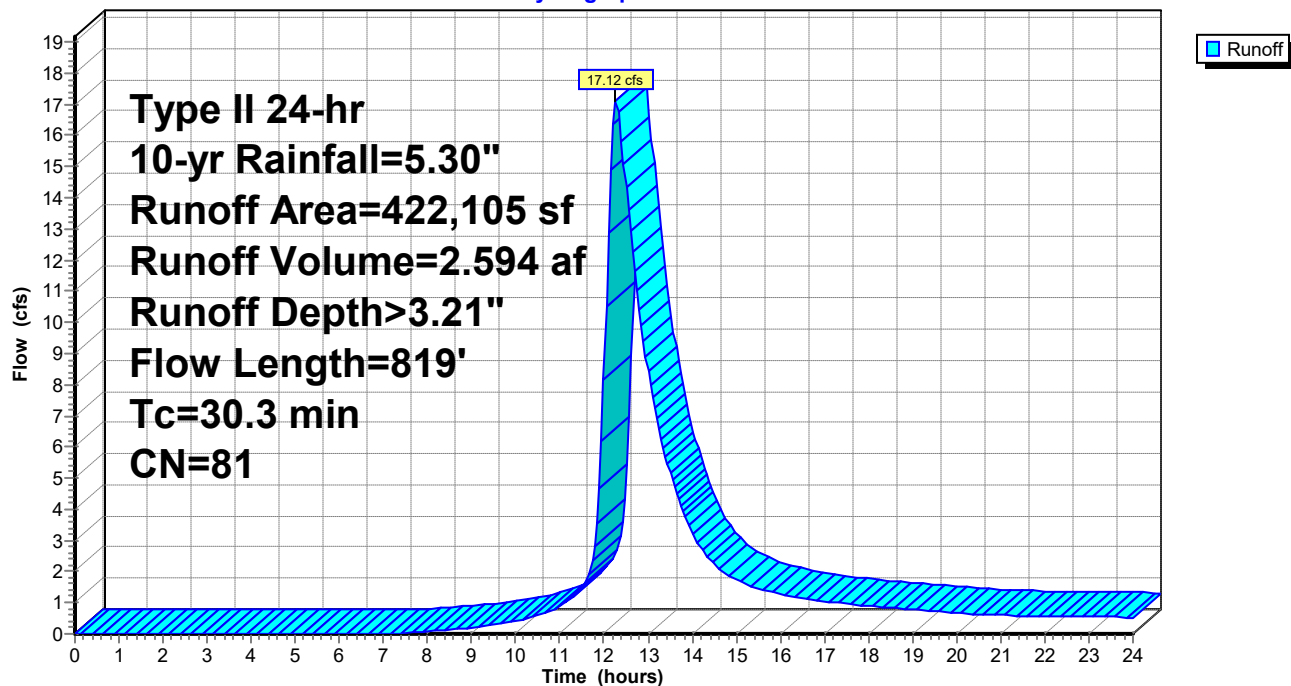
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

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)

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 84

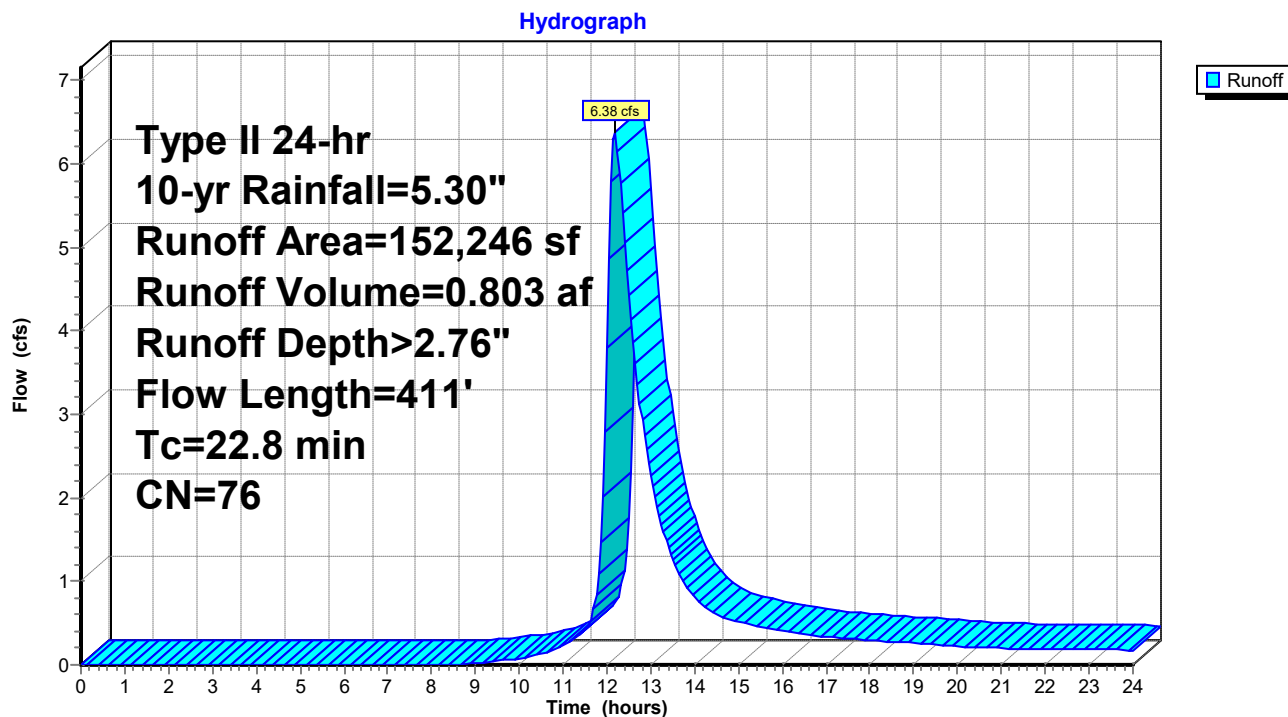
Summary for Subcatchment EX-2: Predevelopment (POI#2)

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 85

Summary for Subcatchment FT-13: Future Warehouse

Runoff = 25.37 cfs @ 11.97 hrs, Volume= 1.537 af, Depth> 4.38"

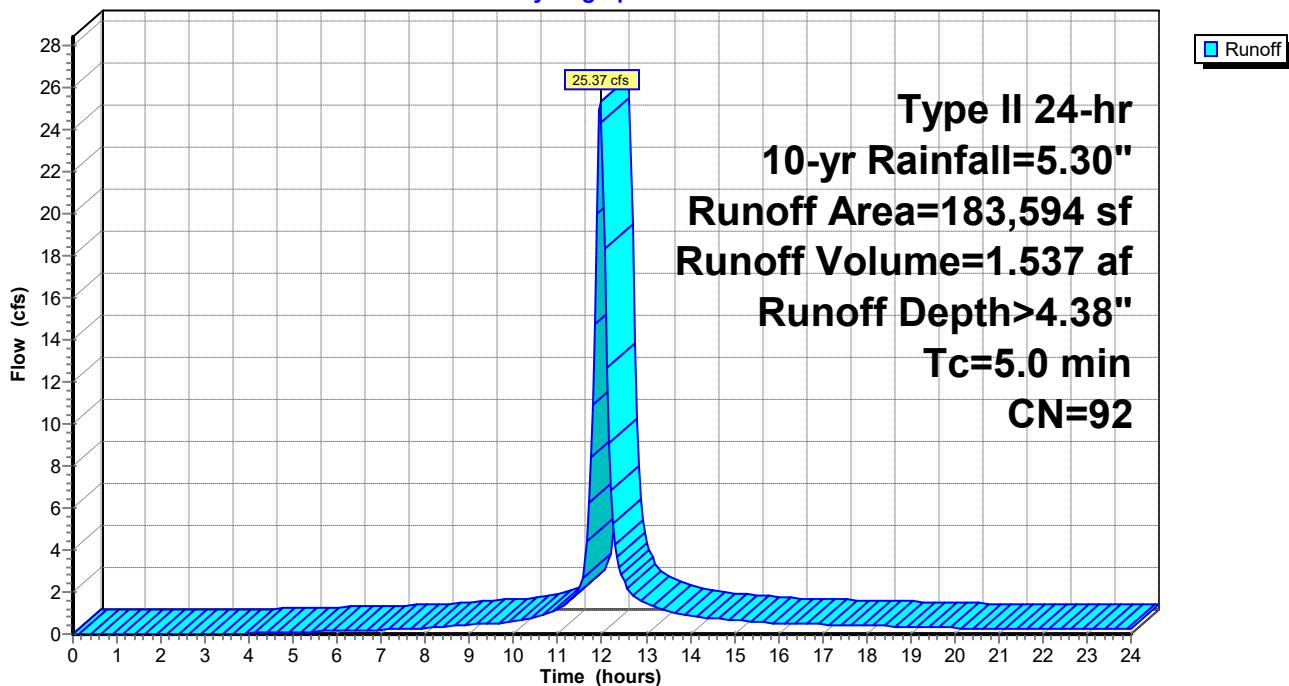
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 86

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"

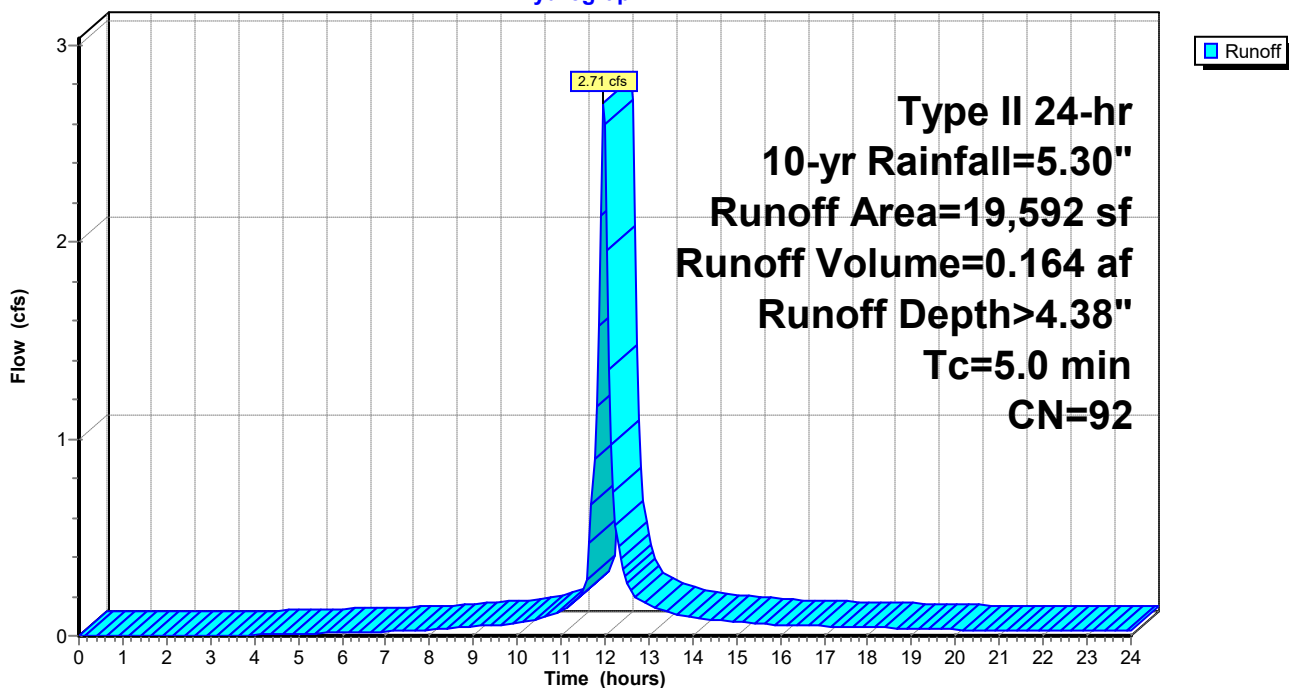
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 87

Summary for Subcatchment FT-15: Access Road & Half Future Parking

Runoff = 2.39 cfs @ 11.97 hrs, Volume= 0.143 af, Depth> 4.16"

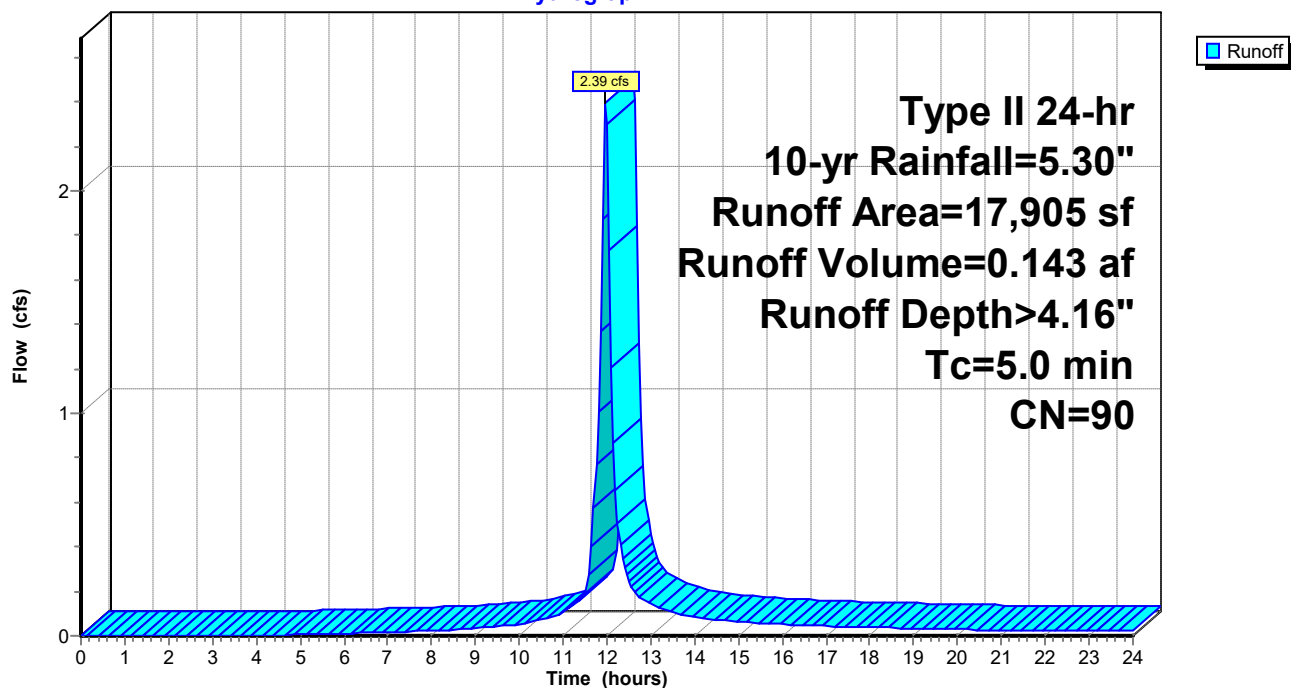
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 88

Summary for Subcatchment PR-1: Front Parking Lot

Runoff = 2.64 cfs @ 11.97 hrs, Volume= 0.156 af, Depth> 4.05"

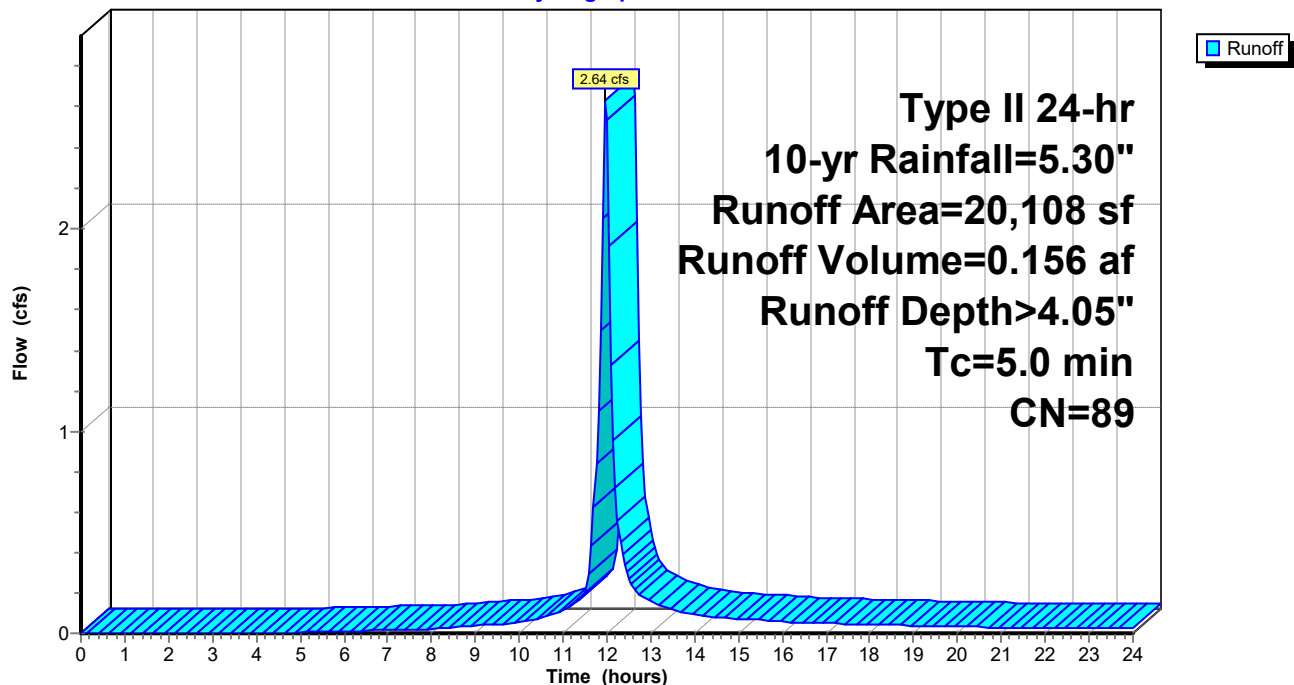
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



Summary for Subcatchment PR-10: Loading Area

Runoff = 2.96 cfs @ 11.97 hrs, Volume= 0.186 af, Depth> 4.71"

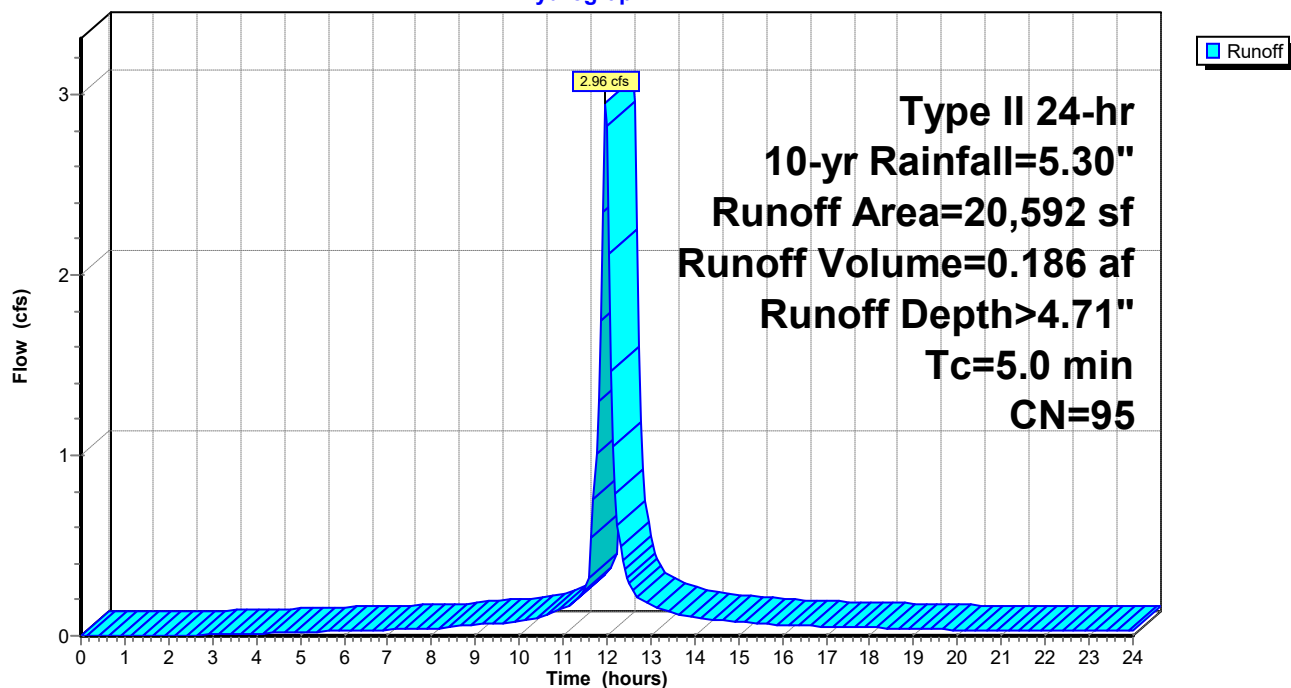
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 90

Summary for Subcatchment PR-11: Loading Area

Runoff = 2.85 cfs @ 11.97 hrs, Volume= 0.179 af, Depth> 4.71"

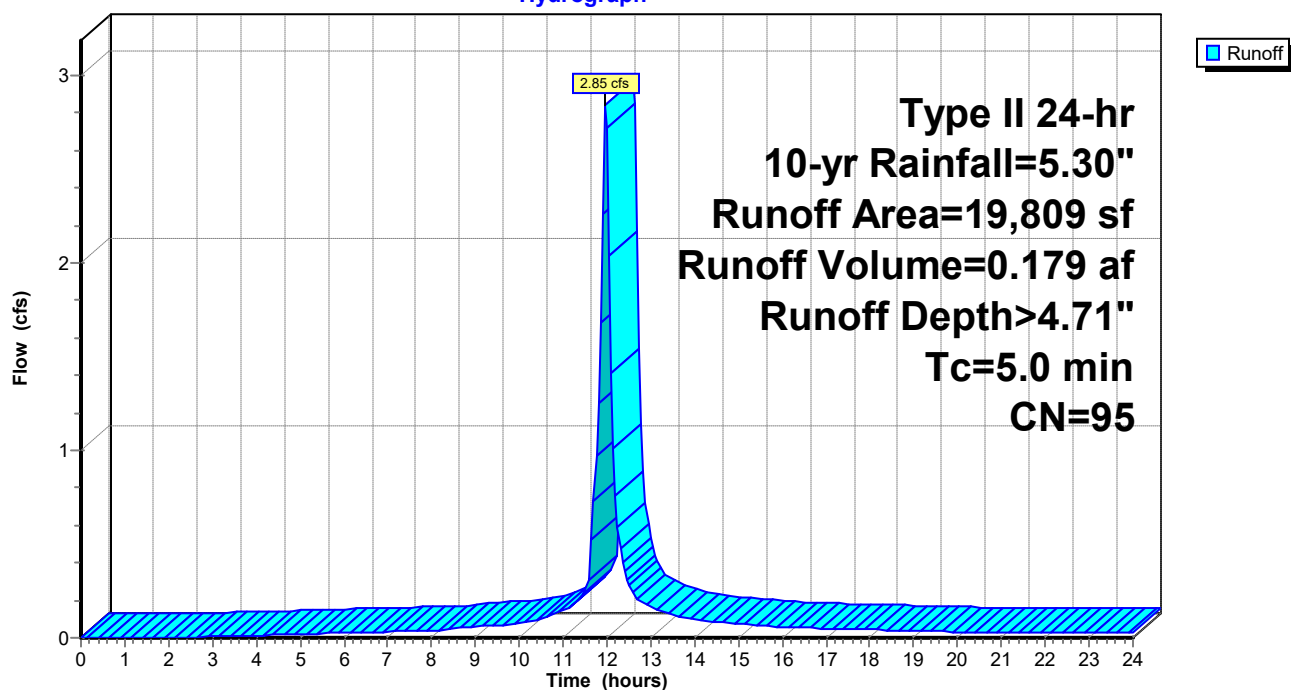
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 91

Summary for Subcatchment PR-12: PR-12

Runoff = 3.78 cfs @ 11.97 hrs, Volume= 0.218 af, Depth> 3.64"

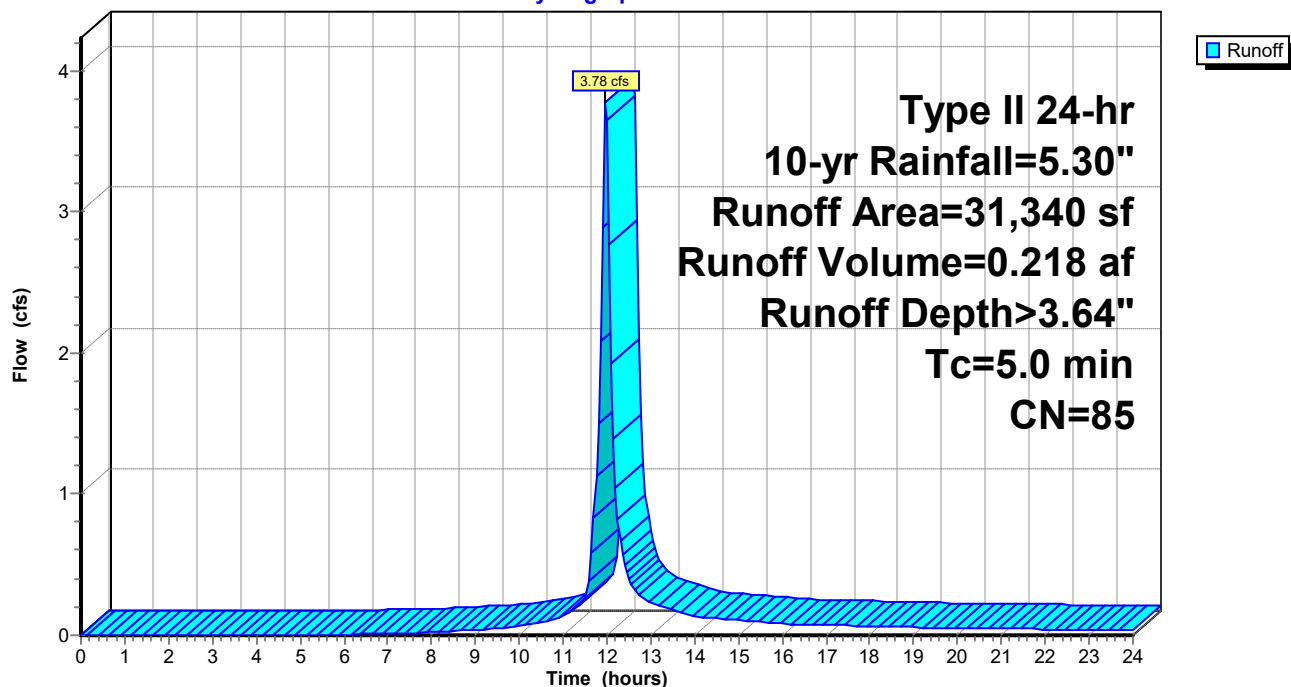
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 92

Summary for Subcatchment PR-2: Front Parking Lot

Runoff = 2.72 cfs @ 11.97 hrs, Volume= 0.164 af, Depth> 4.27"

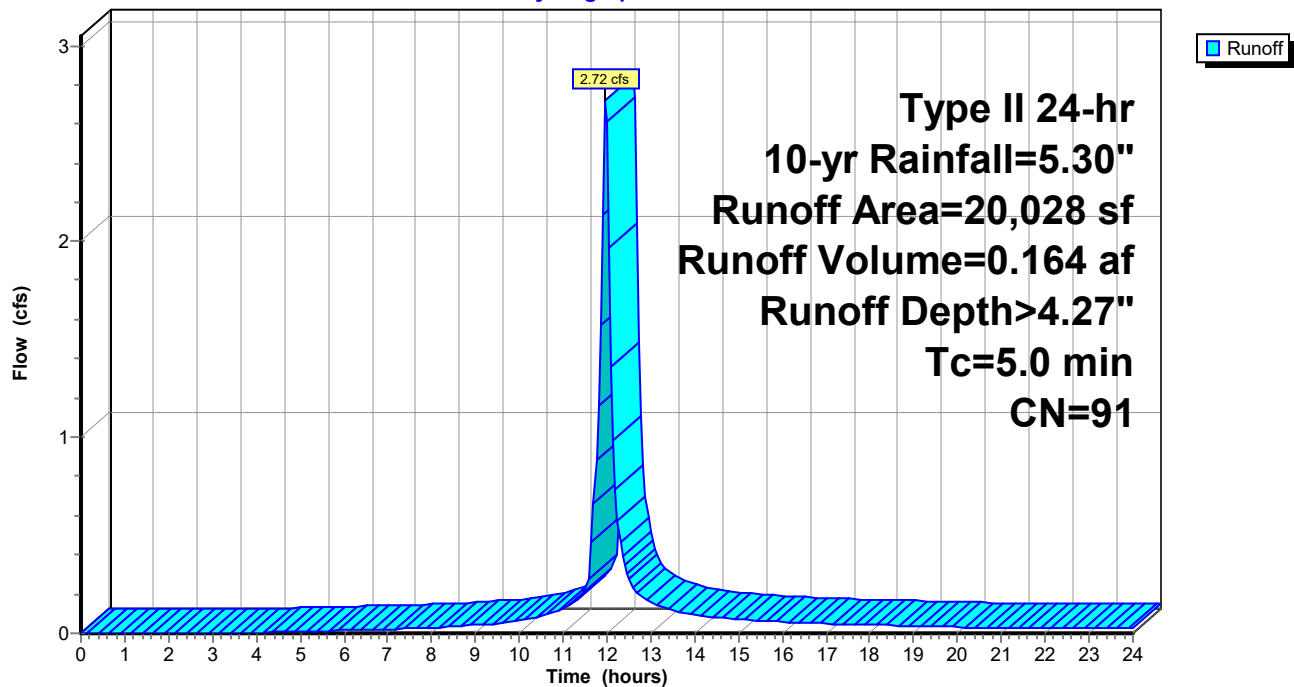
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 93

Summary for Subcatchment PR-3: Phase 1 Office Roof

Runoff = 2.64 cfs @ 11.97 hrs, Volume= 0.157 af, Depth> 4.16"

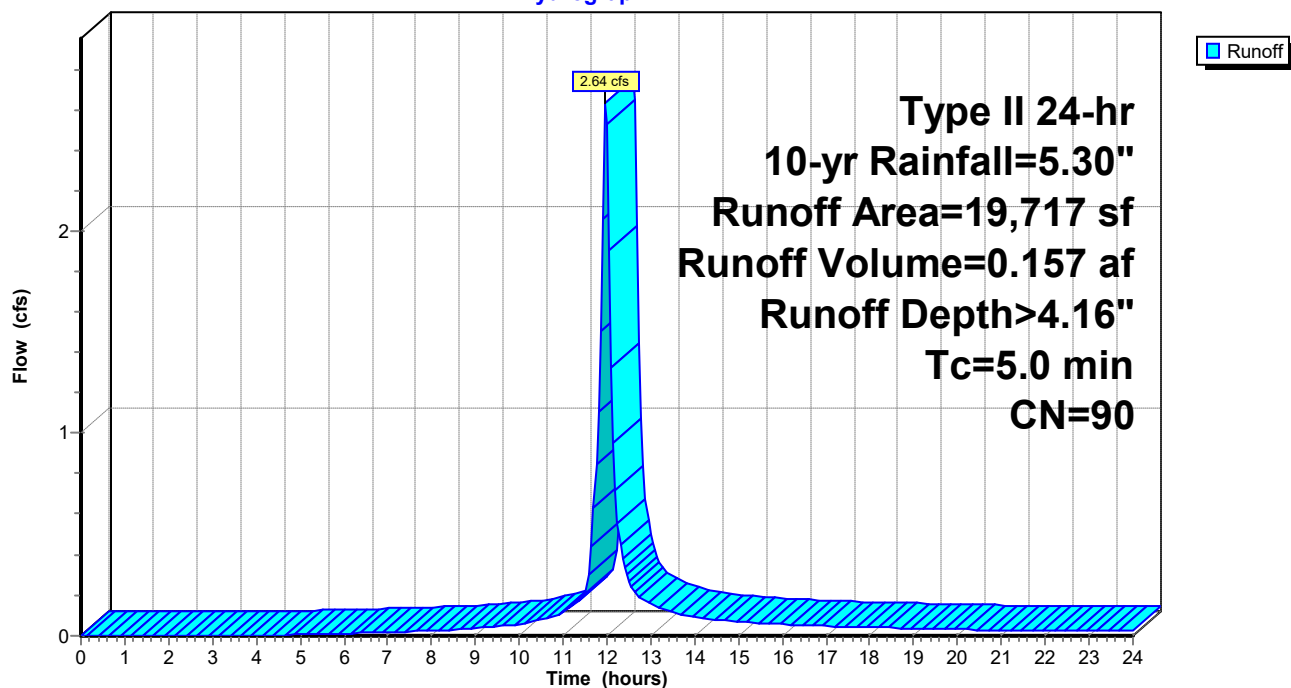
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 94

Summary for Subcatchment PR-4: Warehouse Roof

Runoff = 2.50 cfs @ 11.97 hrs, Volume= 0.153 af, Depth> 4.49"

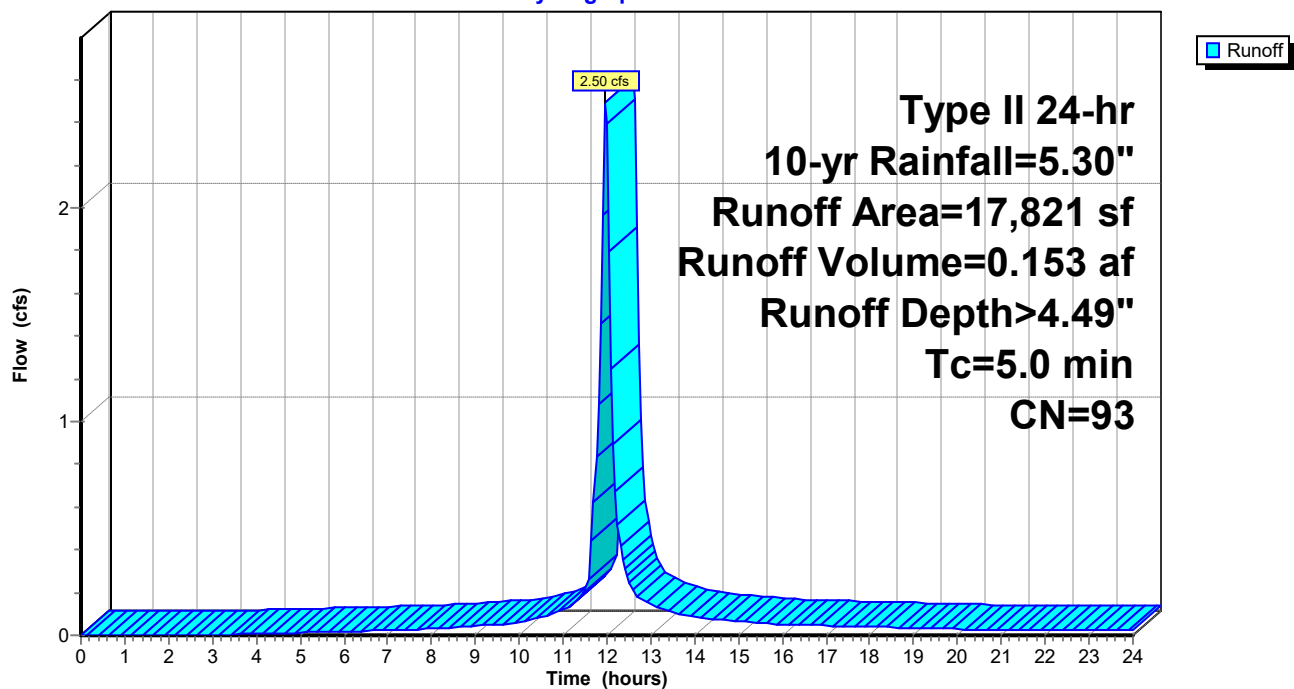
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 95

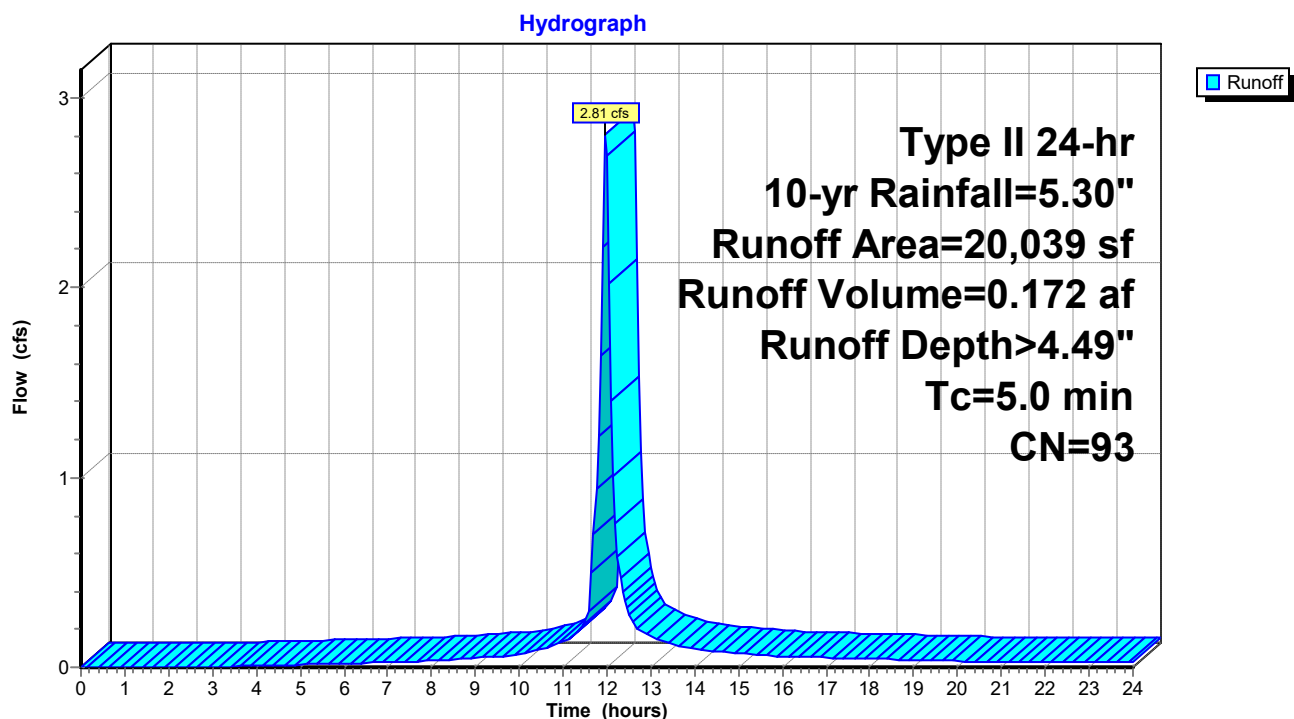
Summary for Subcatchment PR-5: Dumpster & Portion of Loading Area

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 96

Summary for Subcatchment PR-6: Warehouse Roof

Runoff = 2.56 cfs @ 11.97 hrs, Volume= 0.157 af, Depth> 4.49"

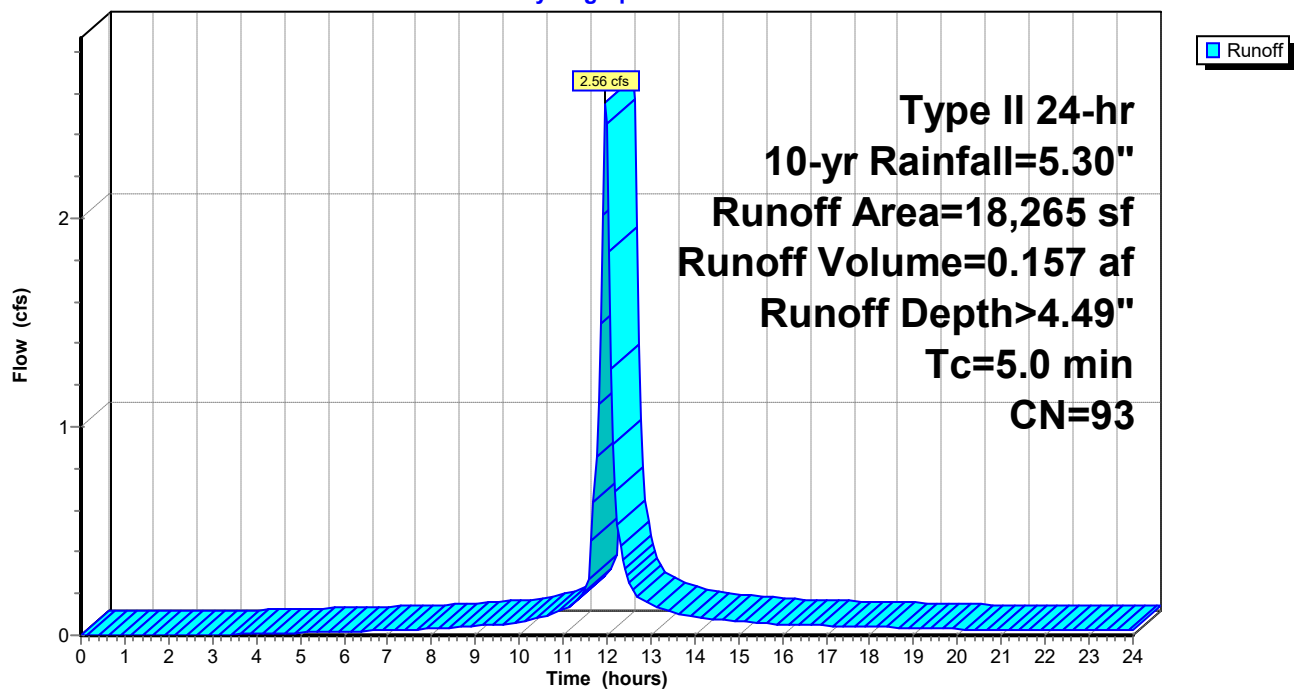
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 97

Summary for Subcatchment PR-7: Loading Area

Runoff = 2.88 cfs @ 11.97 hrs, Volume= 0.180 af, Depth> 4.71"

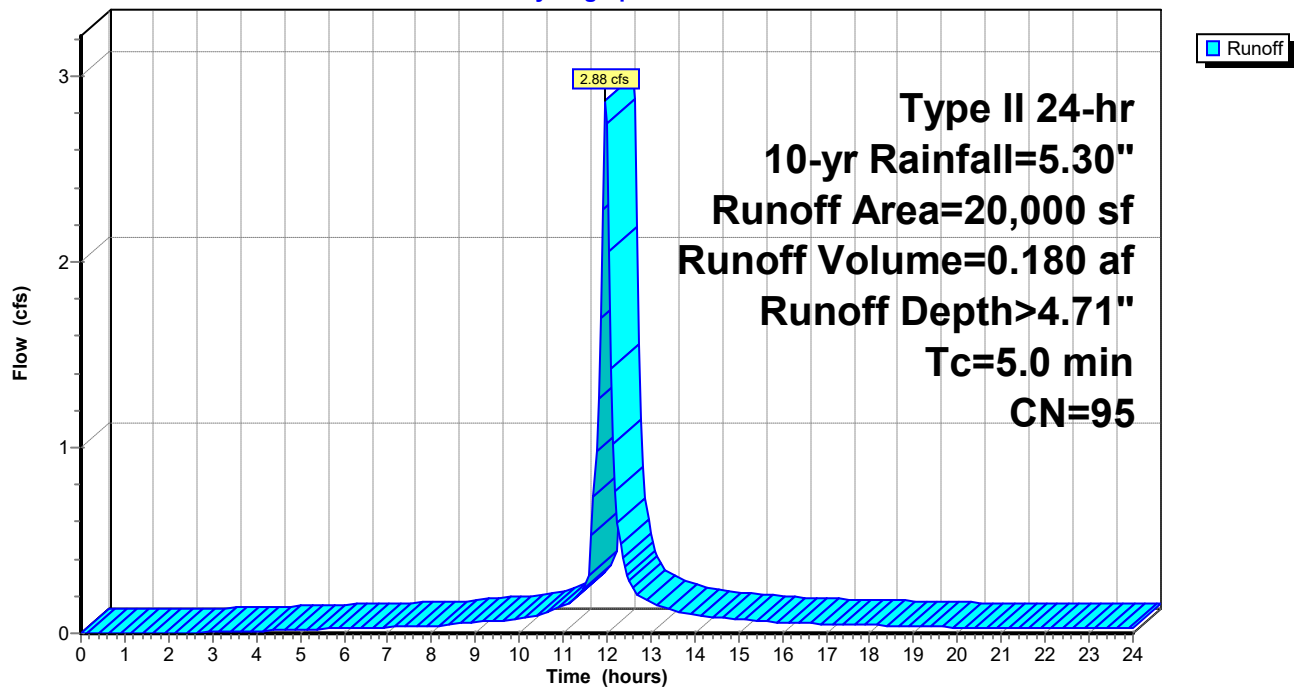
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 98

Summary for Subcatchment PR-8: Warehouse Roof

Runoff = 2.78 cfs @ 11.97 hrs, Volume= 0.172 af, Depth> 4.60"

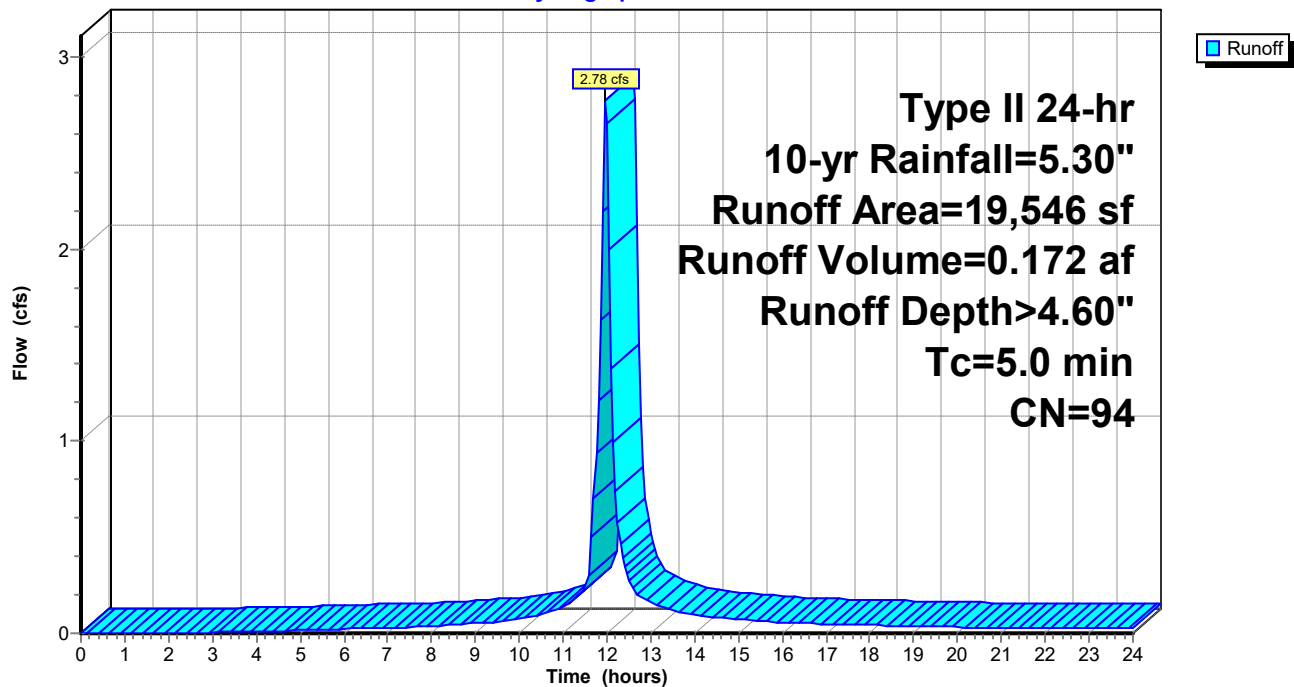
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 99

Summary for Subcatchment PR-9: Loading Area

Runoff = 2.91 cfs @ 11.97 hrs, Volume= 0.182 af, Depth> 4.71"

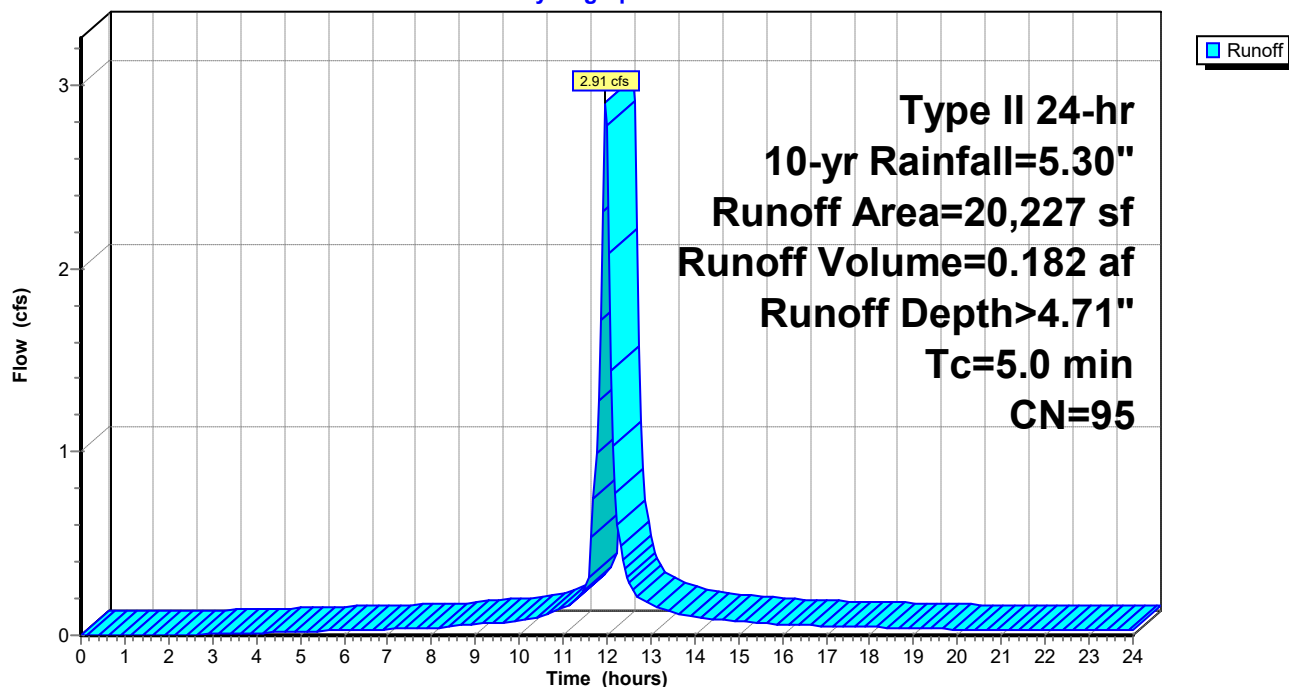
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 100

Summary for Subcatchment RD-1: Residue of Parcel

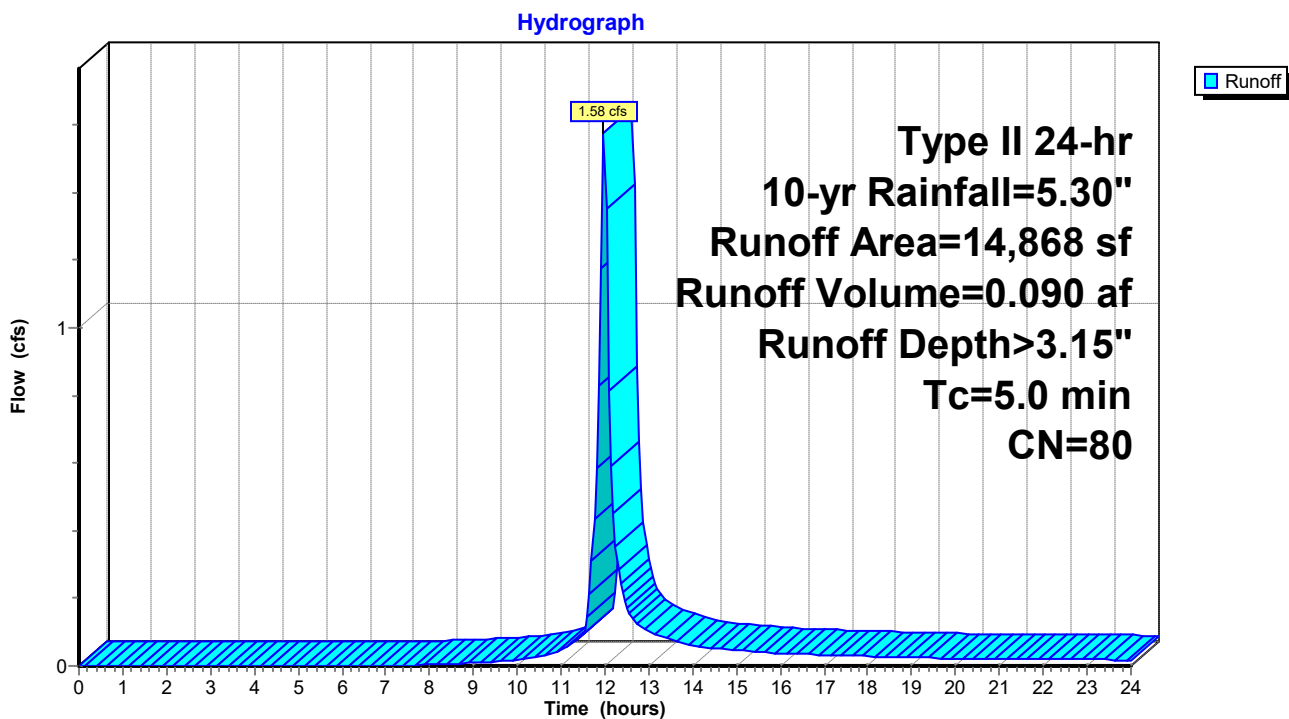
Runoff = 1.58 cfs @ 11.98 hrs, Volume= 0.090 af, Depth> 3.15"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 101

Summary for Subcatchment RD-2: Residue of Parcel

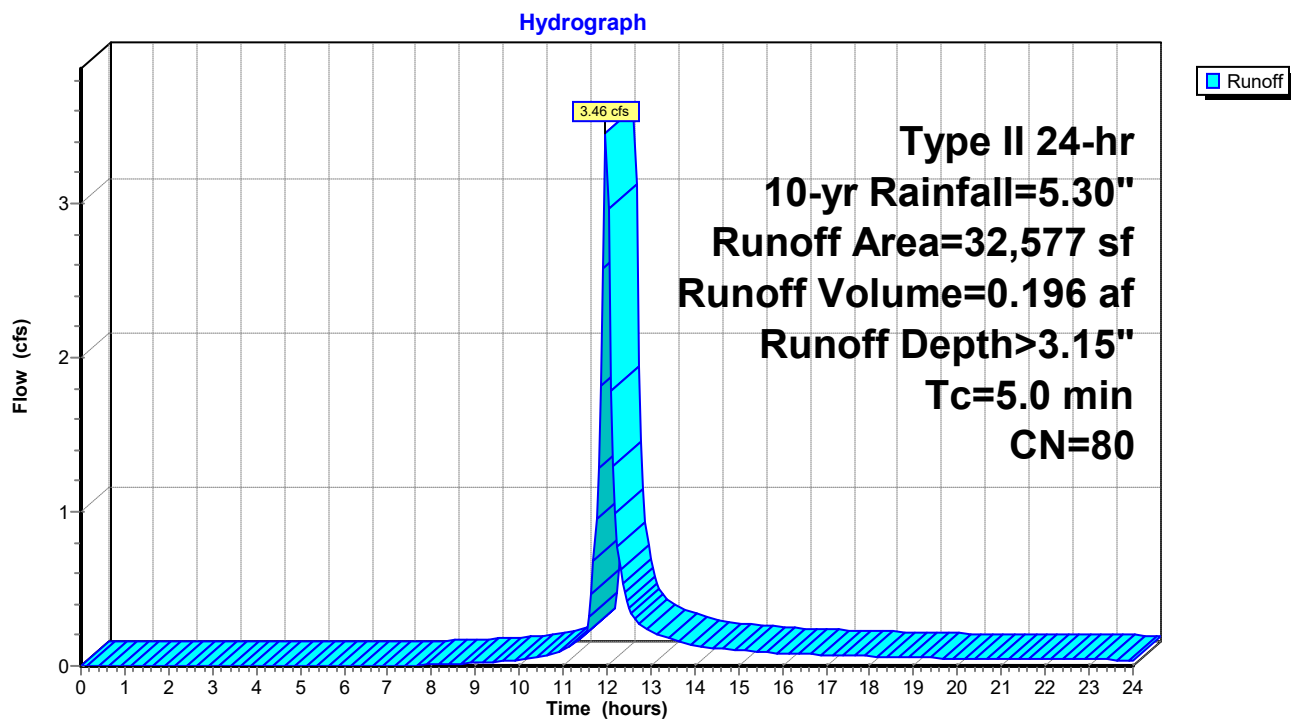
Runoff = 3.46 cfs @ 11.98 hrs, Volume= 0.196 af, Depth> 3.15"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 102

Summary for Subcatchment RD-3: Residue of Parcel

Runoff = 3.17 cfs @ 11.98 hrs, Volume= 0.180 af, Depth> 3.15"

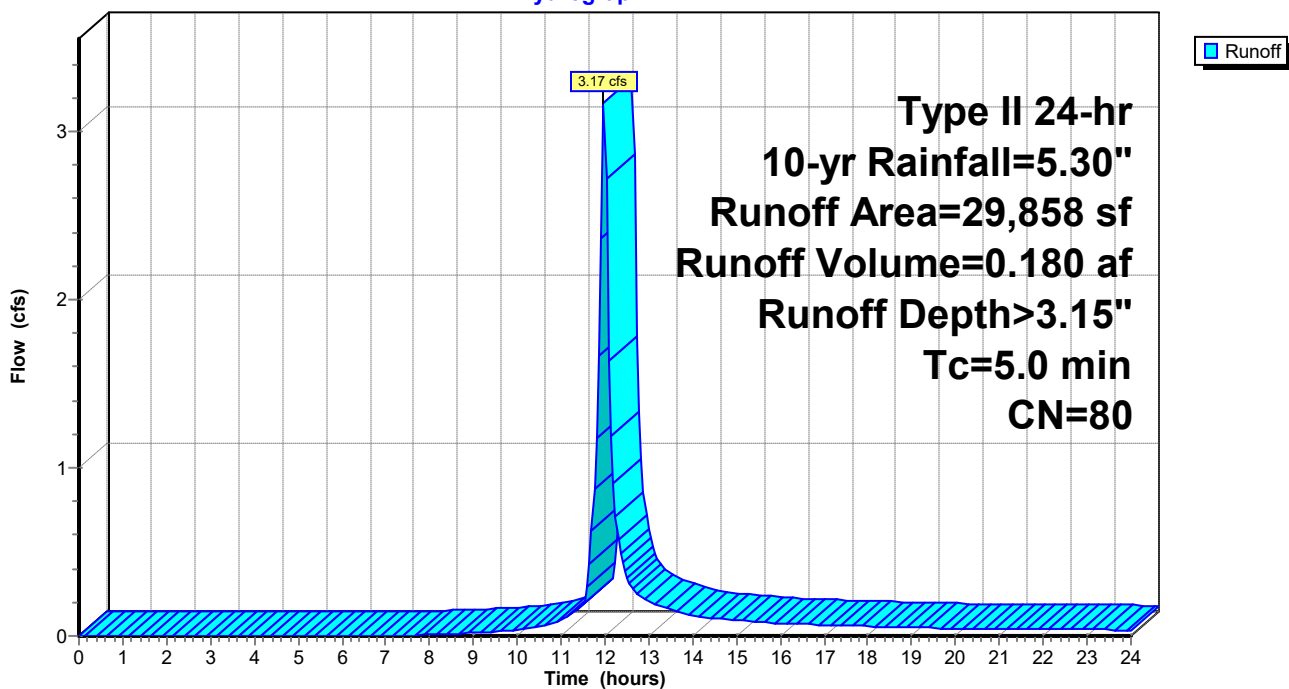
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 103

Summary for Subcatchment RD-4: Residue of Parcel

Runoff = 3.02 cfs @ 11.98 hrs, Volume= 0.172 af, Depth> 3.15"

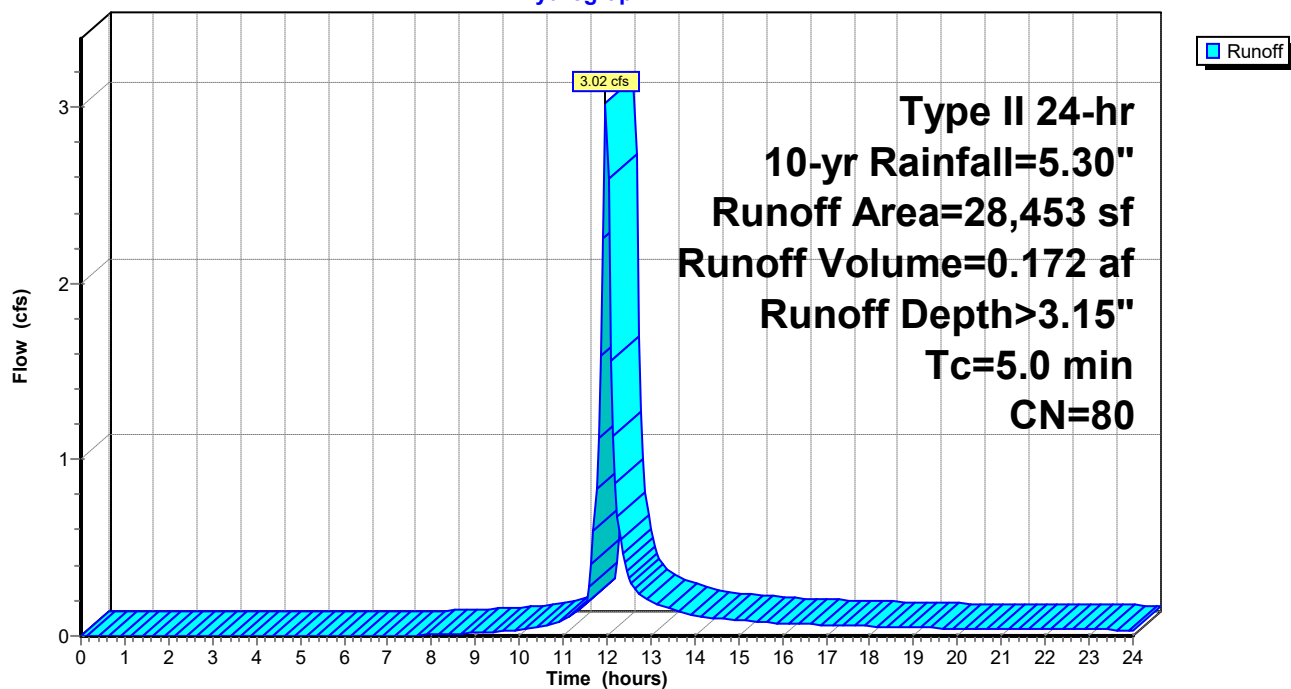
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 104

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)

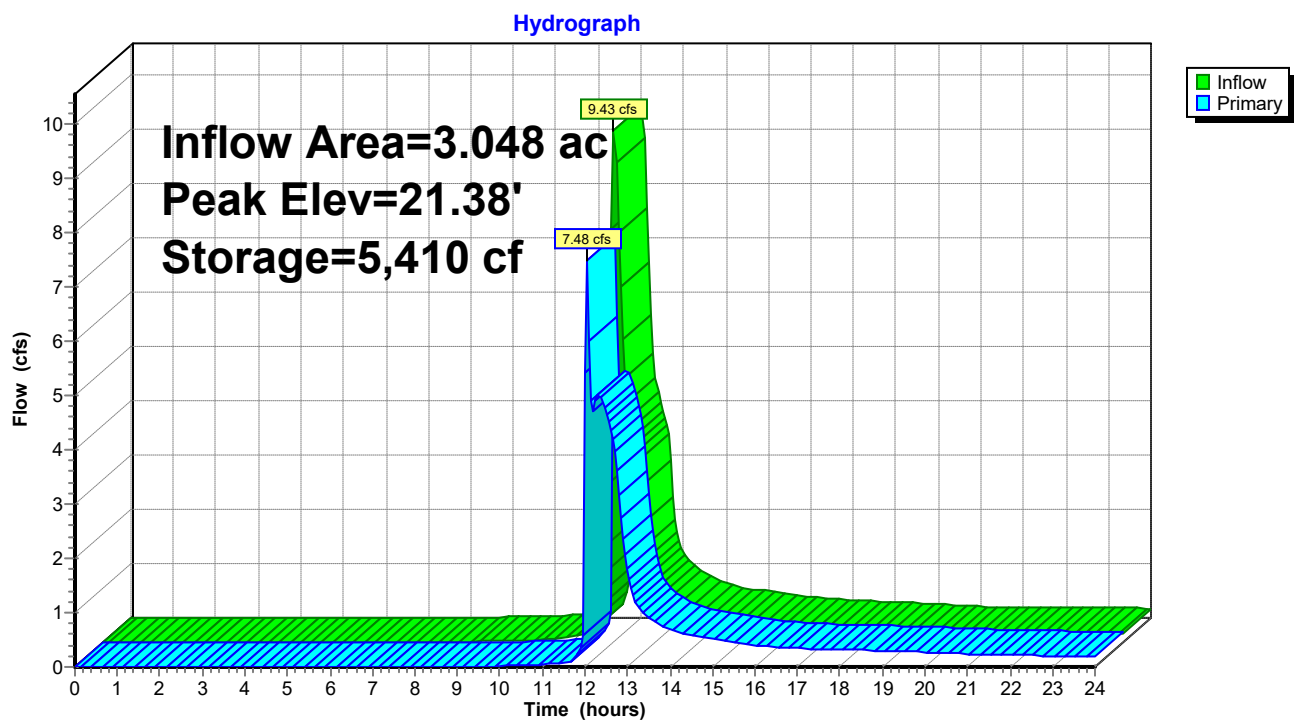
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.70	1,369	691.0	0	0	1,369
22.20	8,591	754.0	11,158	11,158	8,835
22.70	31,484	911.0	9,420	20,578	29,641

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 ' 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)



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 106

Stage-Area-Storage for Pond 1P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.70	1,369	0	22.25	10,234	11,628
19.75	1,453	71	22.30	12,020	12,184
19.80	1,539	145	22.35	13,951	12,832
19.85	1,627	224	22.40	16,024	13,581
19.90	1,719	308	22.45	18,242	14,437
19.95	1,812	396	22.50	20,603	15,408
20.00	1,908	489	22.55	23,108	16,500
20.05	2,007	587	22.60	25,756	17,721
20.10	2,108	690	22.65	28,548	19,078
20.15	2,211	798	22.70	31,484	20,578
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 107

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)

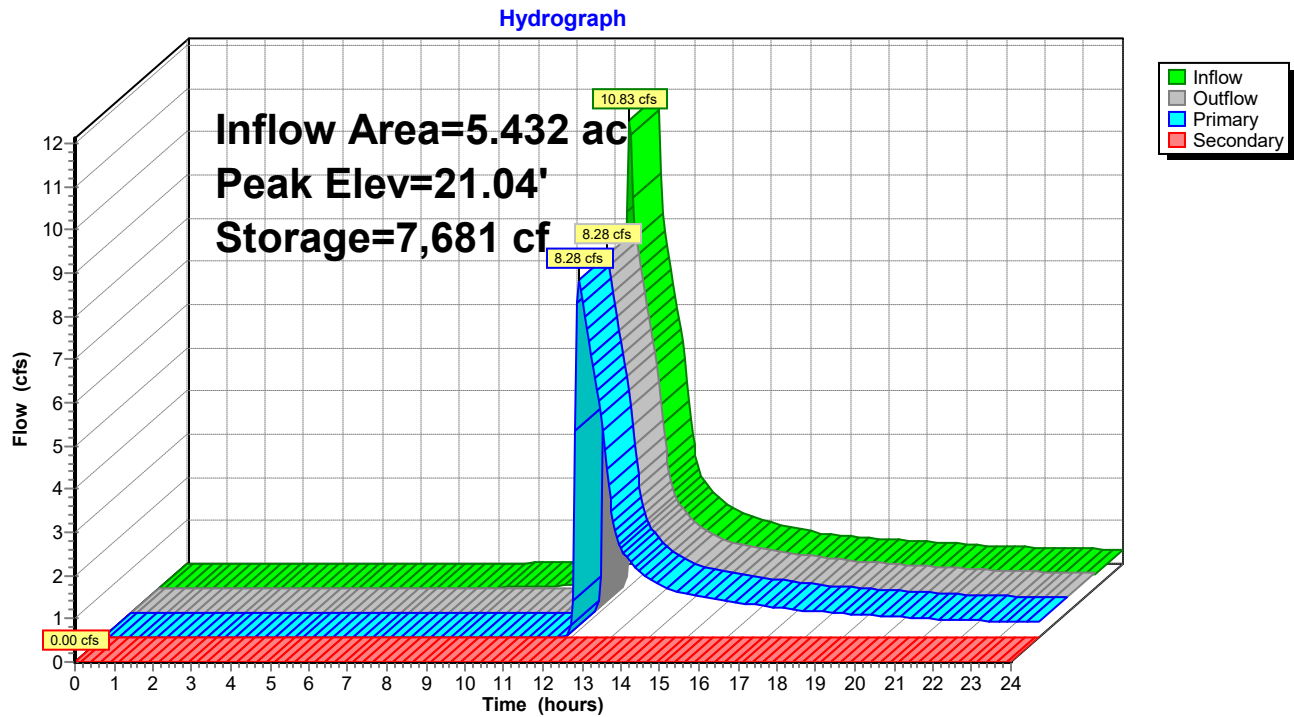
Center-of-Mass det. time= 30.1 min (905.9 - 875.8)

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 ' 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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 109

Stage-Area-Storage for Pond 4P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.70	1,059	0	21.25	6,844	9,055
18.75	1,124	55	21.30	6,959	9,400
18.80	1,192	112	21.35	7,074	9,751
18.85	1,261	174	21.40	7,191	10,107
18.90	1,332	239	21.45	7,308	10,470
18.95	1,406	307	21.50	7,427	10,838
19.00	1,481	379	21.55	7,547	11,213
19.05	1,558	455	21.60	7,667	11,593
19.10	1,637	535	21.65	7,788	11,979
19.15	1,718	619	21.70	7,911	12,372
19.20	1,801	707	21.75	8,034	12,770
19.25	1,886	799	21.80	8,158	13,175
19.30	1,973	896	21.85	8,284	13,586
19.35	2,062	996	21.90	8,410	14,004
19.40	2,153	1,102	21.95	8,537	14,427
19.45	2,246	1,212	22.00	8,665	14,857
19.50	2,341	1,326	22.05	8,794	15,294
19.55	2,437	1,446	22.10	8,924	15,737
19.60	2,536	1,570	22.15	9,055	16,186
19.65	2,637	1,700	22.20	9,187	16,642
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 110

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

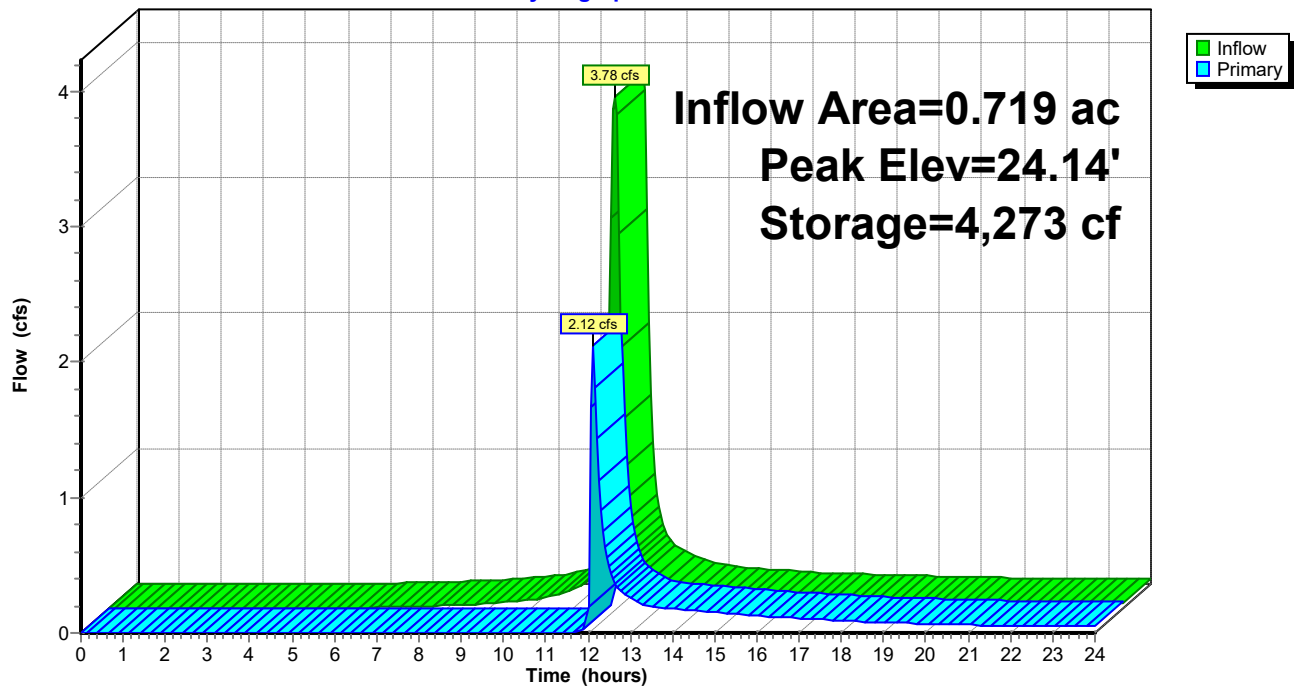
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 111

Pond 8P: BioSwale

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 112

Stage-Area-Storage for Pond 8P: BioSwale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,517	0	23.54	2,774	2,385
21.04	1,517	30	23.59	2,832	2,525
21.09	1,517	61	23.64	2,890	2,669
21.14	1,517	91	23.69	2,950	2,815
21.19	1,517	121	23.74	3,009	2,964
21.24	1,517	152	23.79	3,070	3,115
21.29	1,517	182	23.84	3,131	3,270
21.34	1,517	212	23.89	3,192	3,429
21.39	1,517	243	23.94	3,254	3,590
21.44	1,517	273	23.99	3,317	3,754
21.49	1,517	303	24.04	3,380	3,921
21.54	1,517	334	24.09	3,444	4,092
21.59	1,517	364	24.14	3,509	4,266
21.64	1,517	394	24.19	3,574	4,443
21.69	1,517	425	24.24	3,640	4,623
21.74	1,517	455	24.29	3,706	4,807
21.79	1,517	485	24.34	3,773	4,994
21.84	1,517	516	24.39	3,840	5,184
21.89	1,517	546	24.44	3,908	5,378
21.94	1,517	576	24.49	3,977	5,575
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 113

Summary for Pond MBR-1: Parking Lot Micro-Bioretenion

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)

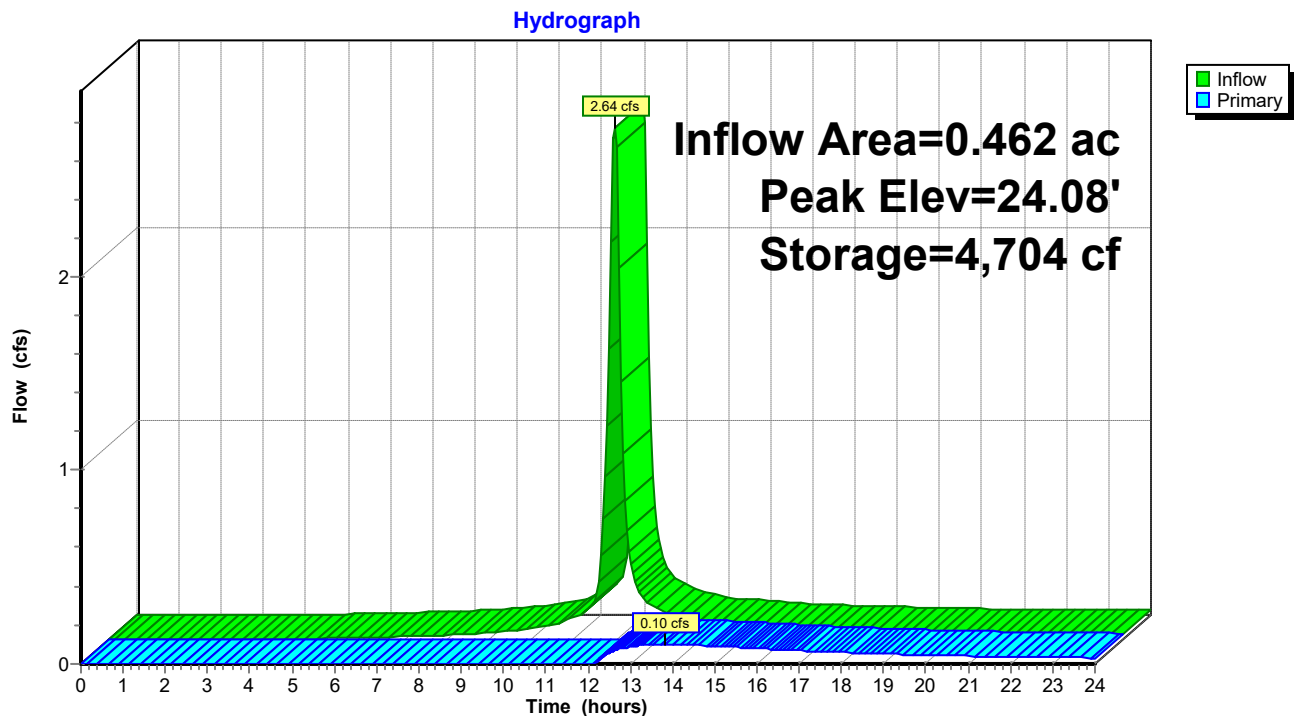
Center-of-Mass det. time= 229.2 min (1,019.5 - 790.3)

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 ' 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)

Pond MBR-1: Parking Lot Micro-Bioretention



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 115

Stage-Area-Storage for Pond MBR-1: Parking Lot Micro-Bioretenction

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,868	0	23.29	2,287	2,633
20.79	1,868	37	23.34	2,328	2,748
20.84	1,868	75	23.39	2,370	2,866
20.89	1,868	112	23.44	2,411	2,985
20.94	1,868	149	23.49	2,453	3,107
20.99	1,868	187	23.54	2,496	3,231
21.04	1,868	224	23.59	2,539	3,357
21.09	1,868	262	23.64	2,582	3,485
21.14	1,868	299	23.69	2,625	3,615
21.19	1,868	336	23.74	2,669	3,747
21.24	1,868	374	23.79	2,712	3,882
21.29	1,868	411	23.84	2,755	4,018
21.34	1,868	448	23.89	2,798	4,157
21.39	1,868	486	23.94	2,841	4,298
21.44	1,868	523	23.99	2,884	4,441
21.49	1,868	560	24.04	2,928	4,587
21.54	1,868	598	24.09	2,973	4,734
21.59	1,868	635	24.14	3,017	4,884
21.64	1,868	672	24.19	3,062	5,036
21.69	1,868	710	24.24	3,108	5,190
21.74	1,868	747	24.29	3,153	5,347
21.79	1,868	785	24.34	3,199	5,506
21.84	1,868	822	24.39	3,246	5,667
21.89	1,868	859	24.44	3,292	5,830
21.94	1,868	897	24.49	3,339	5,996
21.99	1,868	934	24.54	3,387	6,164
22.04	1,868	971	24.59	3,434	6,335
22.09	1,868	1,009	24.64	3,482	6,507
22.14	1,868	1,046	24.69	3,531	6,683
22.19	1,868	1,083	24.74	3,579	6,861
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 116

Summary for Pond MBR-10: Micro-Bioretenion #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)

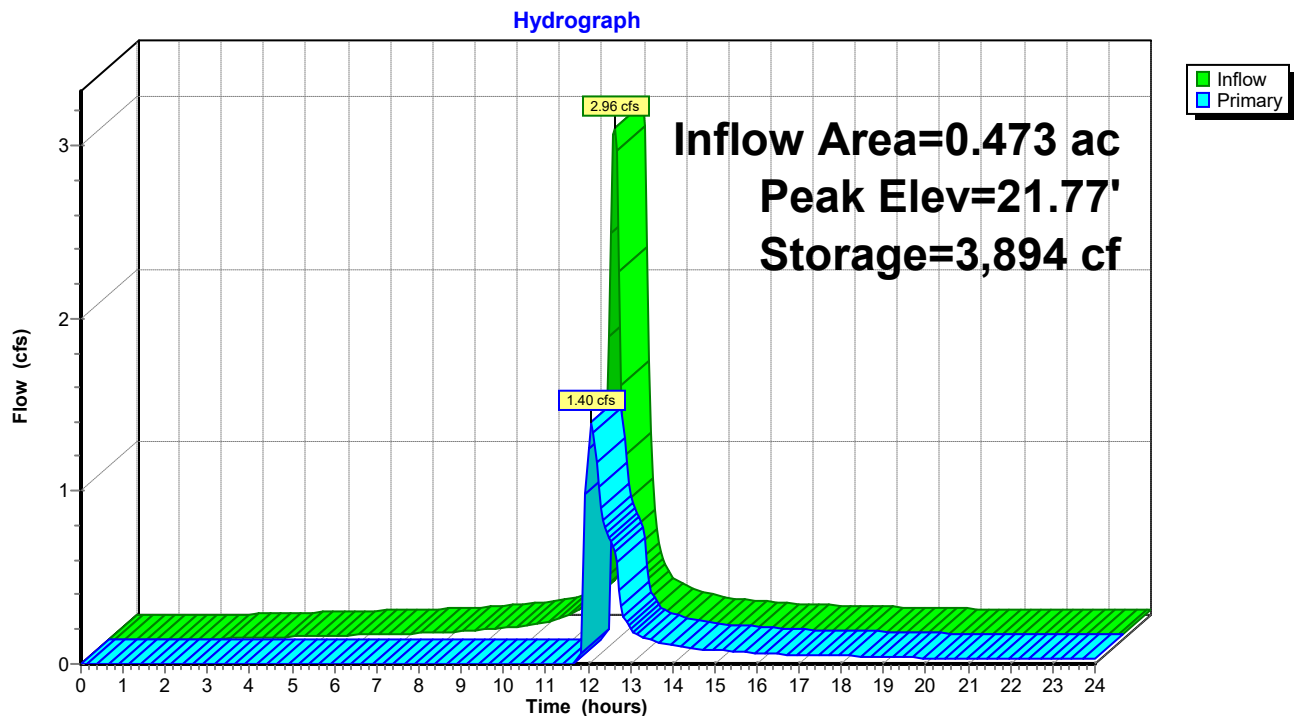
Center-of-Mass det. time= 90.0 min (854.4 - 764.3)

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 ' 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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 118

Stage-Area-Storage for Pond MBR-10: Micro-Bioretenction #10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 119

Summary for Pond MBR-11: Micro-Bioretenion #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)

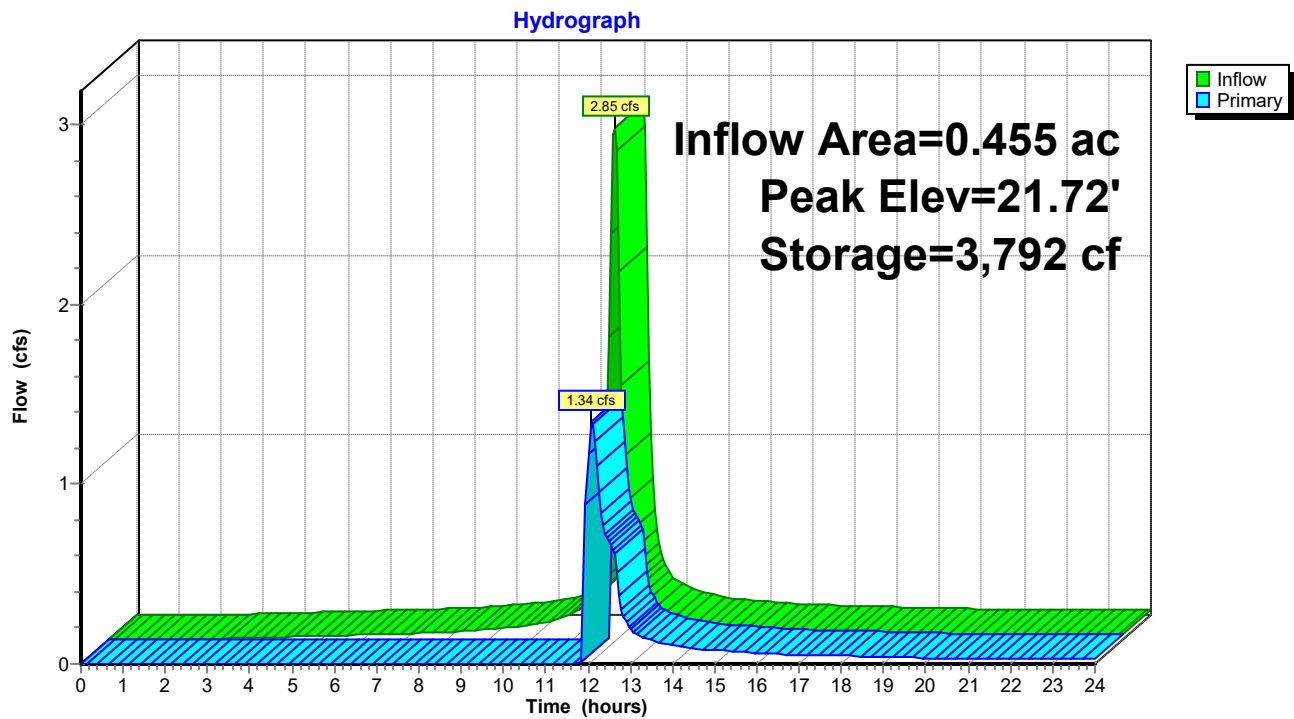
Center-of-Mass det. time= 92.6 min (857.0 - 764.3)

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 ' 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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 121

Stage-Area-Storage for Pond MBR-11: Micro-Bioretenention #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 122

Summary for Pond MBR-14: Future Office Building Micro-Bioretenion

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

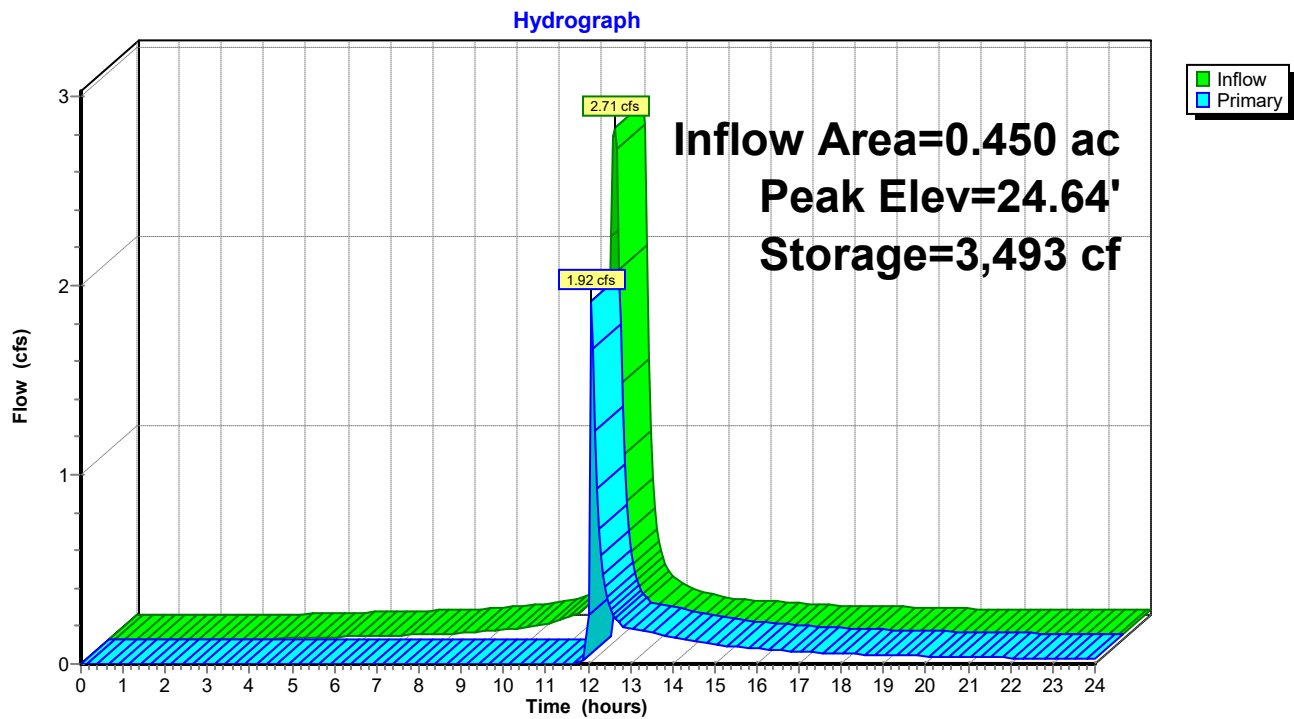
230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 123

Pond MBR-14: Future Office Building Micro-Bioretentation



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 124

Stage-Area-Storage for Pond MBR-14: Future Office Building Micro-Bioretenion

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,099	0	23.54	1,407	1,565
21.04	1,099	22	23.59	1,437	1,636
21.09	1,099	44	23.64	1,468	1,709
21.14	1,099	66	23.69	1,499	1,783
21.19	1,099	88	23.74	1,530	1,859
21.24	1,099	110	23.79	1,562	1,936
21.29	1,099	132	23.84	1,594	2,015
21.34	1,099	154	23.89	1,627	2,095
21.39	1,099	176	23.94	1,659	2,178
21.44	1,099	198	23.99	1,692	2,261
21.49	1,099	220	24.04	1,725	2,347
21.54	1,099	242	24.09	1,757	2,434
21.59	1,099	264	24.14	1,790	2,523
21.64	1,099	286	24.19	1,822	2,613
21.69	1,099	308	24.24	1,856	2,705
21.74	1,099	330	24.29	1,889	2,798
21.79	1,099	352	24.34	1,923	2,894
21.84	1,099	374	24.39	1,957	2,991
21.89	1,099	396	24.44	1,991	3,089
21.94	1,099	418	24.49	2,026	3,190
21.99	1,099	440	24.54	2,061	3,292
22.04	1,099	462	24.59	2,096	3,396
22.09	1,099	484	24.64	2,132	3,502
22.14	1,099	506	24.69	2,168	3,609
22.19	1,099	528	24.74	2,204	3,718
22.24	1,099	549	24.79	2,240	3,830
22.29	1,099	571	24.84	2,277	3,942
22.34	1,099	593	24.89	2,314	4,057
22.39	1,099	615	24.94	2,352	4,174
22.44	1,099	637	24.99	2,389	4,292
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 125

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)

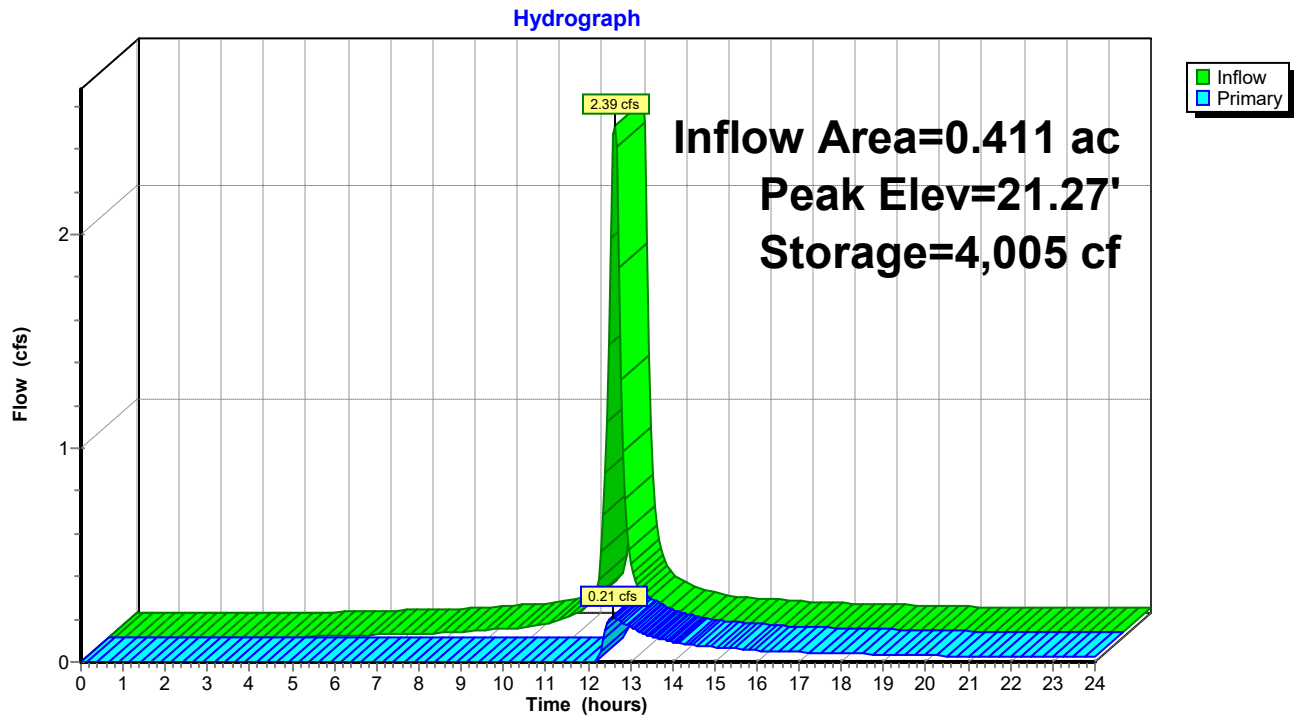
Volume	Invert	Avail.Storage	Storage Description			
#1	18.19'	6,964 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.19	1,878	195.0	0.0	0	0	1,878
18.20	1,878	195.0	40.0	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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 127

Stage-Area-Storage for Pond MBR-15: Access Road Microbioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0	20.74	2,307	2,649
18.24	1,878	38	20.79	2,349	2,766
18.29	1,878	75	20.84	2,392	2,884
18.34	1,878	113	20.89	2,435	3,005
18.39	1,878	150	20.94	2,478	3,128
18.44	1,878	188	20.99	2,521	3,253
18.49	1,878	225	21.04	2,565	3,380
18.54	1,878	263	21.09	2,609	3,509
18.59	1,878	300	21.14	2,654	3,641
18.64	1,878	338	21.19	2,699	3,775
18.69	1,878	376	21.24	2,743	3,911
18.74	1,878	413	21.29	2,786	4,049
18.79	1,878	451	21.34	2,830	4,189
18.84	1,878	488	21.39	2,874	4,332
18.89	1,878	526	21.44	2,919	4,477
18.94	1,878	563	21.49	2,964	4,624
18.99	1,878	601	21.54	3,009	4,773
19.04	1,878	639	21.59	3,055	4,925
19.09	1,878	676	21.64	3,101	5,079
19.14	1,878	714	21.69	3,147	5,235
19.19	1,878	751	21.74	3,194	5,393
19.24	1,878	789	21.79	3,241	5,554
19.29	1,878	826	21.84	3,288	5,717
19.34	1,878	864	21.89	3,336	5,883
19.39	1,878	901	21.94	3,384	6,051
19.44	1,878	939	21.99	3,432	6,221
19.49	1,878	977	22.04	3,481	6,394
19.54	1,878	1,014	22.09	3,530	6,569
19.59	1,878	1,052	22.14	3,579	6,747
19.64	1,878	1,089	22.19	3,629	6,927
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 128

Summary for Pond MBR-2: Parking Lot Micro-Bioretenion

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 ' 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)

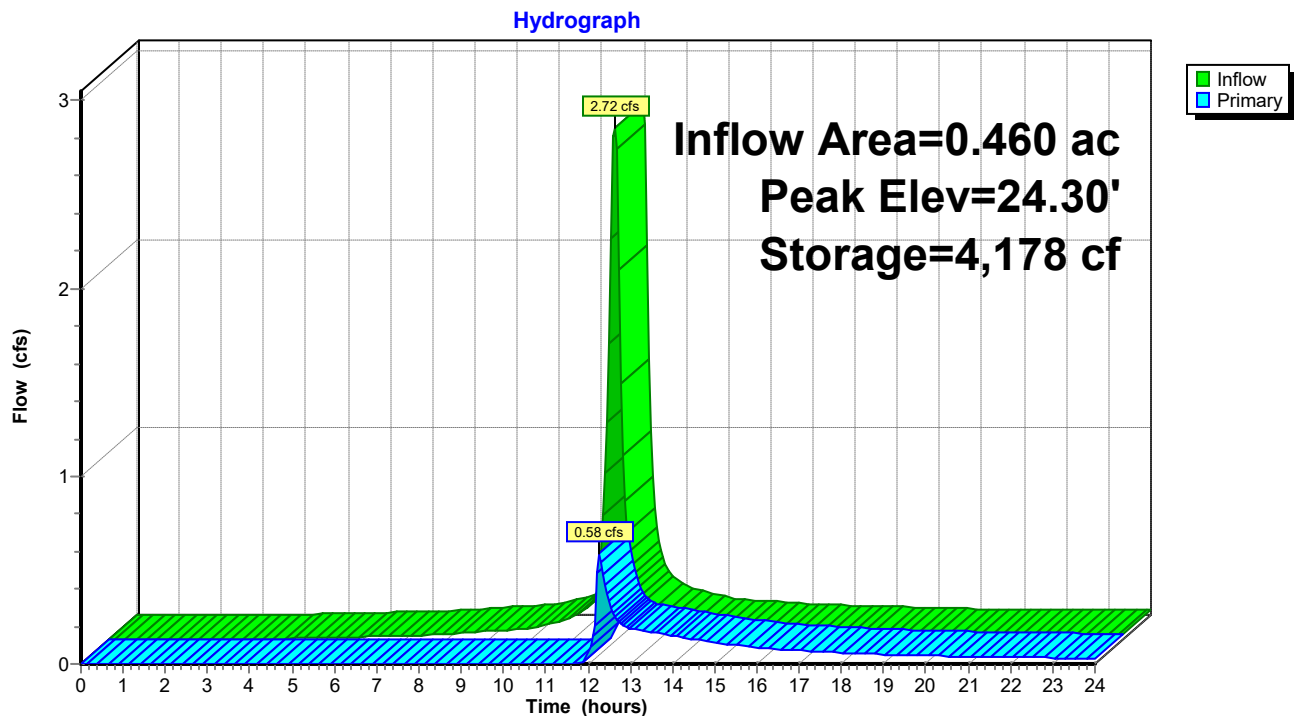
Primary OutFlow Max=0.57 cfs @ 12.26 hrs HW=24.30' TW=0.00' (Dynamic Tailwater)

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 130

Stage-Area-Storage for Pond MBR-2: Parking Lot Micro-Bioretenention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,385	0	23.29	1,777	1,973
20.79	1,385	28	23.34	1,816	2,063
20.84	1,385	55	23.39	1,855	2,155
20.89	1,385	83	23.44	1,895	2,249
20.94	1,385	111	23.49	1,935	2,345
20.99	1,385	139	23.54	1,975	2,442
21.04	1,385	166	23.59	2,016	2,542
21.09	1,385	194	23.64	2,058	2,644
21.14	1,385	222	23.69	2,099	2,748
21.19	1,385	249	23.74	2,142	2,854
21.24	1,385	277	23.79	2,182	2,962
21.29	1,385	305	23.84	2,222	3,072
21.34	1,385	332	23.89	2,262	3,184
21.39	1,385	360	23.94	2,303	3,298
21.44	1,385	388	23.99	2,344	3,415
21.49	1,385	416	24.04	2,386	3,533
21.54	1,385	443	24.09	2,428	3,653
21.59	1,385	471	24.14	2,470	3,776
21.64	1,385	499	24.19	2,513	3,900
21.69	1,385	526	24.24	2,556	4,027
21.74	1,385	554	24.29	2,599	4,156
21.79	1,385	582	24.34	2,643	4,287
21.84	1,385	609	24.39	2,687	4,420
21.89	1,385	637	24.44	2,731	4,555
21.94	1,385	665	24.49	2,776	4,693
21.99	1,385	693	24.54	2,821	4,833
22.04	1,385	720	24.59	2,867	4,975
22.09	1,385	748	24.64	2,913	5,120
22.14	1,385	776	24.69	2,959	5,267
22.19	1,385	803	24.74	3,006	5,416
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 131

Summary for Pond MBR-3: Office Building Micro-Bioretenion

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)

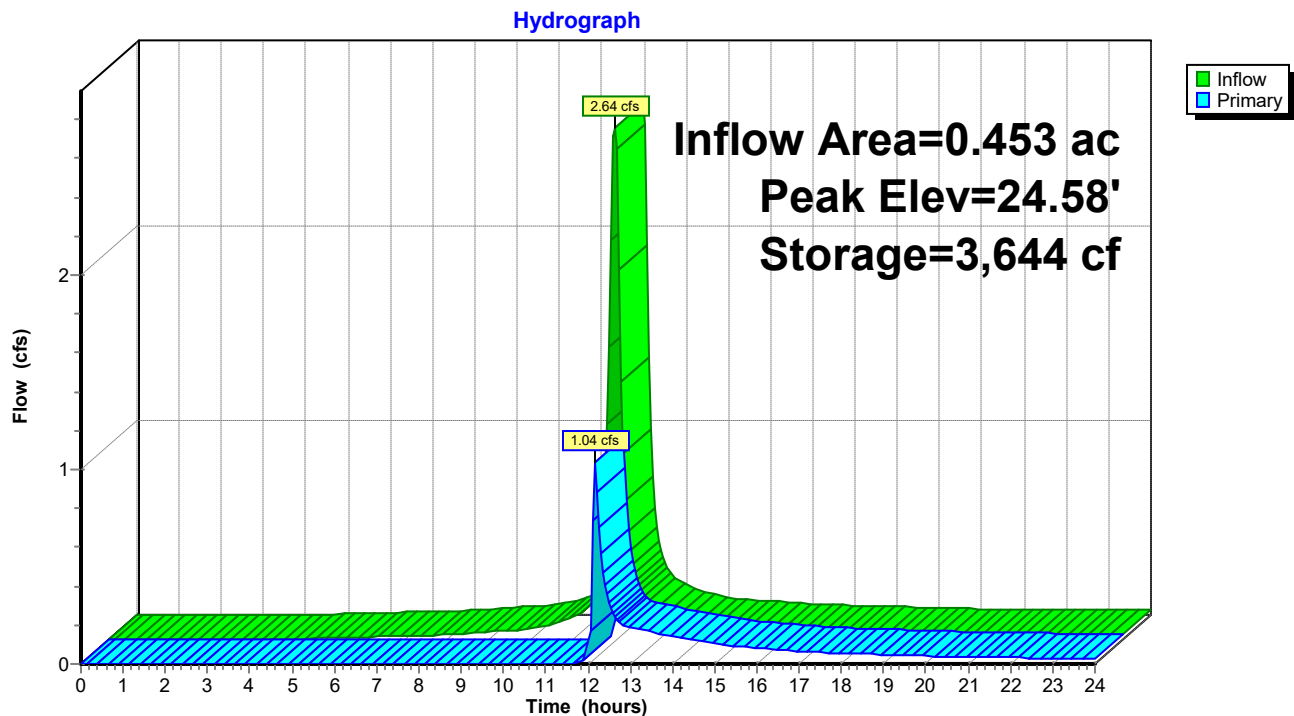
Primary OutFlow Max=1.01 cfs @ 12.16 hrs HW=24.58' TW=21.10' (Dynamic Tailwater)

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-Bioretenction



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 133

Stage-Area-Storage for Pond MBR-3: Office Building Micro-Bioretenion

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,193	0	23.54	1,518	1,697
21.04	1,193	24	23.59	1,550	1,773
21.09	1,193	48	23.64	1,583	1,852
21.14	1,193	72	23.69	1,615	1,932
21.19	1,193	95	23.74	1,649	2,013
21.24	1,193	119	23.79	1,682	2,096
21.29	1,193	143	23.84	1,716	2,181
21.34	1,193	167	23.89	1,750	2,268
21.39	1,193	191	23.94	1,784	2,356
21.44	1,193	215	23.99	1,819	2,446
21.49	1,193	239	24.04	1,853	2,538
21.54	1,193	262	24.09	1,887	2,632
21.59	1,193	286	24.14	1,921	2,727
21.64	1,193	310	24.19	1,956	2,824
21.69	1,193	334	24.24	1,991	2,923
21.74	1,193	358	24.29	2,026	3,023
21.79	1,193	382	24.34	2,061	3,125
21.84	1,193	406	24.39	2,097	3,229
21.89	1,193	429	24.44	2,133	3,335
21.94	1,193	453	24.49	2,170	3,442
21.99	1,193	477	24.54	2,206	3,552
22.04	1,193	501	24.59	2,244	3,663
22.09	1,193	525	24.64	2,281	3,776
22.14	1,193	549	24.69	2,319	3,891
22.19	1,193	573	24.74	2,357	4,008
22.24	1,193	597	24.79	2,395	4,127
22.29	1,193	620	24.84	2,433	4,248
22.34	1,193	644	24.89	2,472	4,370
22.39	1,193	668	24.94	2,512	4,495
22.44	1,193	692	24.99	2,551	4,621
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 134

Summary for Pond MBR-4: Micro-Bioretenention #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)

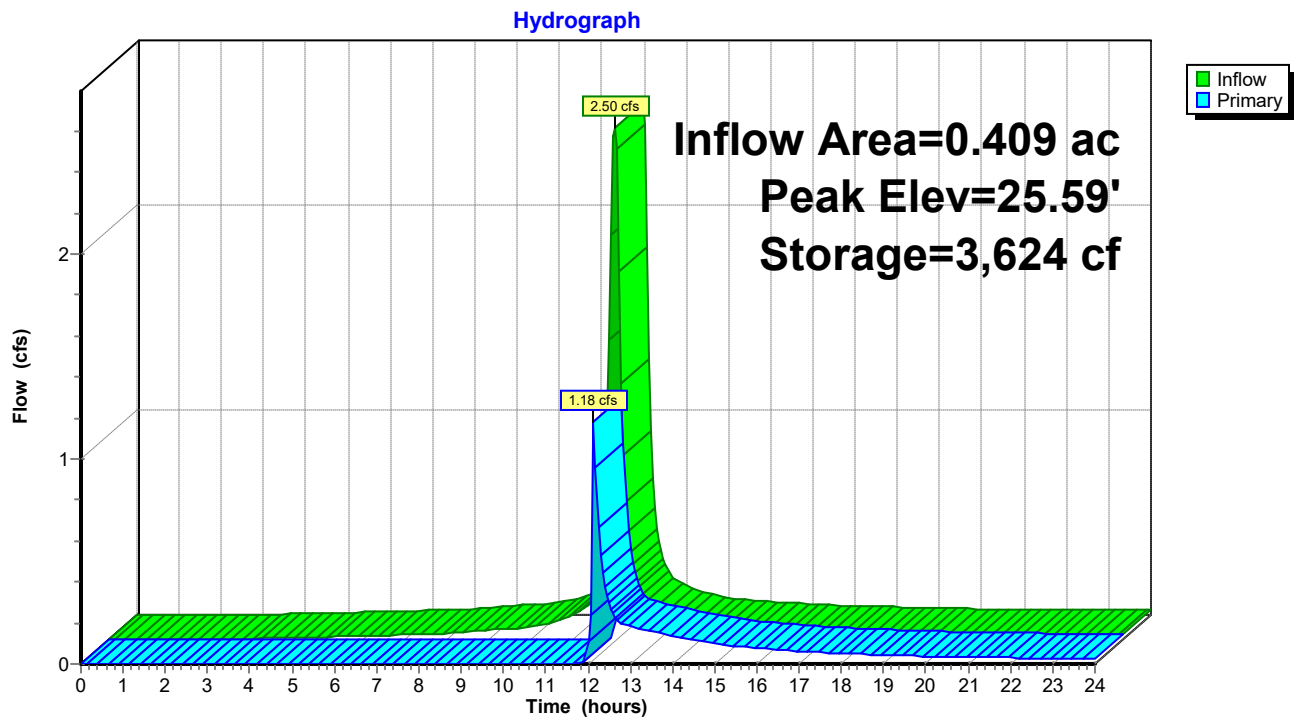
Center-of-Mass det. time= 132.0 min (906.3 - 774.3)

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 136

Stage-Area-Storage for Pond MBR-4: Micro-Bioretenion #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
21.99	1,196	0	24.54	1,500	1,695
22.04	1,196	24	24.59	1,530	1,771
22.09	1,196	48	24.64	1,560	1,848
22.14	1,196	72	24.69	1,590	1,927
22.19	1,196	96	24.74	1,621	2,007
22.24	1,196	120	24.79	1,652	2,089
22.29	1,196	144	24.84	1,684	2,172
22.34	1,196	167	24.89	1,715	2,257
22.39	1,196	191	24.94	1,747	2,344
22.44	1,196	215	24.99	1,780	2,432
22.49	1,196	239	25.04	1,811	2,522
22.54	1,196	263	25.09	1,843	2,613
22.59	1,196	287	25.14	1,876	2,706
22.64	1,196	311	25.19	1,908	2,801
22.69	1,196	335	25.24	1,941	2,897
22.74	1,196	359	25.29	1,974	2,995
22.79	1,196	383	25.34	2,008	3,094
22.84	1,196	407	25.39	2,041	3,196
22.89	1,196	431	25.44	2,075	3,299
22.94	1,196	454	25.49	2,110	3,403
22.99	1,196	478	25.54	2,144	3,510
23.04	1,196	502	25.59	2,179	3,618
23.09	1,196	526	25.64	2,214	3,727
23.14	1,196	550	25.69	2,249	3,839
23.19	1,196	574	25.74	2,285	3,952
23.24	1,196	598	25.79	2,321	4,068
23.29	1,196	622	25.84	2,357	4,185
23.34	1,196	646	25.89	2,394	4,303
23.39	1,196	670	25.94	2,430	4,424
23.44	1,196	694	25.99	2,468	4,546
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 137

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

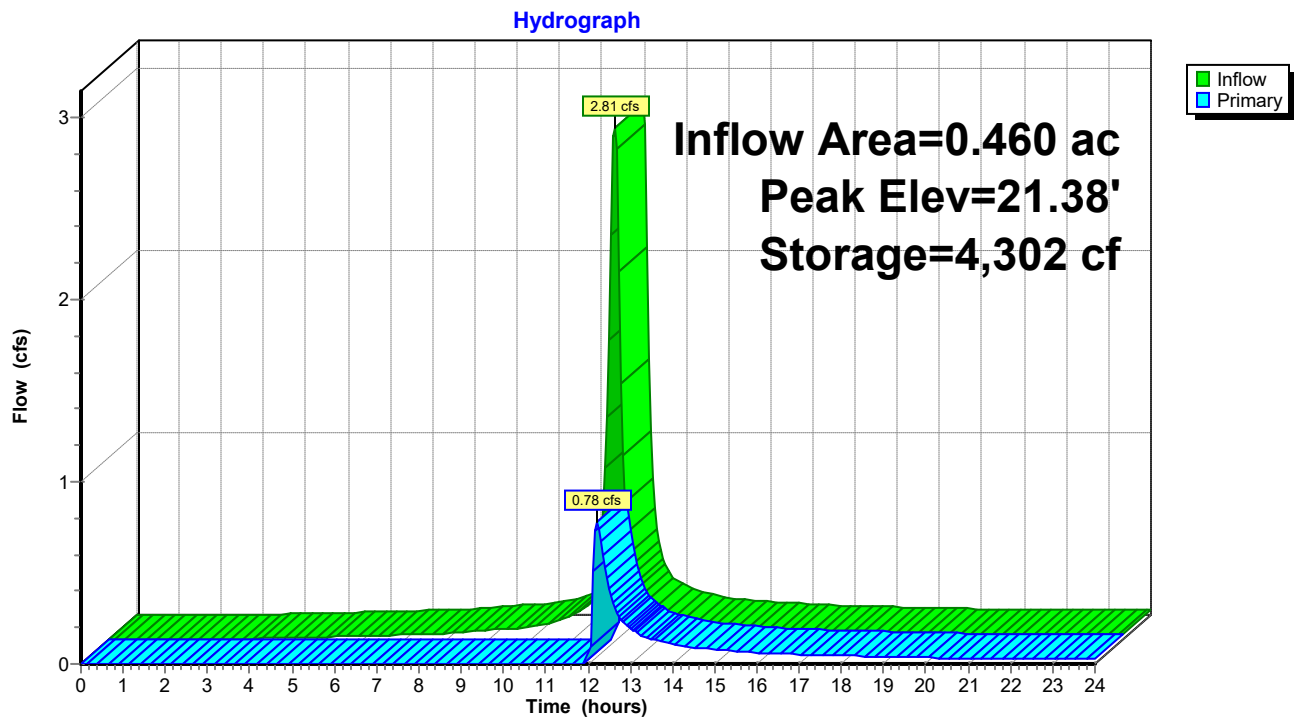
Plug-Flow detention time= 247.5 min calculated for 0.084 af (49% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 139

Stage-Area-Storage for Pond MBR-5: Access Road Micro-Bioretenion #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0	20.74	2,307	2,649
18.24	1,878	38	20.79	2,349	2,766
18.29	1,878	75	20.84	2,392	2,884
18.34	1,878	113	20.89	2,435	3,005
18.39	1,878	150	20.94	2,478	3,128
18.44	1,878	188	20.99	2,521	3,253
18.49	1,878	225	21.04	2,565	3,380
18.54	1,878	263	21.09	2,609	3,509
18.59	1,878	300	21.14	2,654	3,641
18.64	1,878	338	21.19	2,699	3,775
18.69	1,878	376	21.24	2,743	3,911
18.74	1,878	413	21.29	2,786	4,049
18.79	1,878	451	21.34	2,830	4,189
18.84	1,878	488	21.39	2,874	4,332
18.89	1,878	526	21.44	2,919	4,477
18.94	1,878	563	21.49	2,964	4,624
18.99	1,878	601	21.54	3,009	4,773
19.04	1,878	639	21.59	3,055	4,925
19.09	1,878	676	21.64	3,101	5,079
19.14	1,878	714	21.69	3,147	5,235
19.19	1,878	751	21.74	3,194	5,393
19.24	1,878	789	21.79	3,241	5,554
19.29	1,878	826	21.84	3,288	5,717
19.34	1,878	864	21.89	3,336	5,883
19.39	1,878	901	21.94	3,384	6,051
19.44	1,878	939	21.99	3,432	6,221
19.49	1,878	977	22.04	3,481	6,394
19.54	1,878	1,014	22.09	3,530	6,569
19.59	1,878	1,052	22.14	3,579	6,747
19.64	1,878	1,089	22.19	3,629	6,927
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 140

Summary for Pond MBR-6: Micro-Bioretenction #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

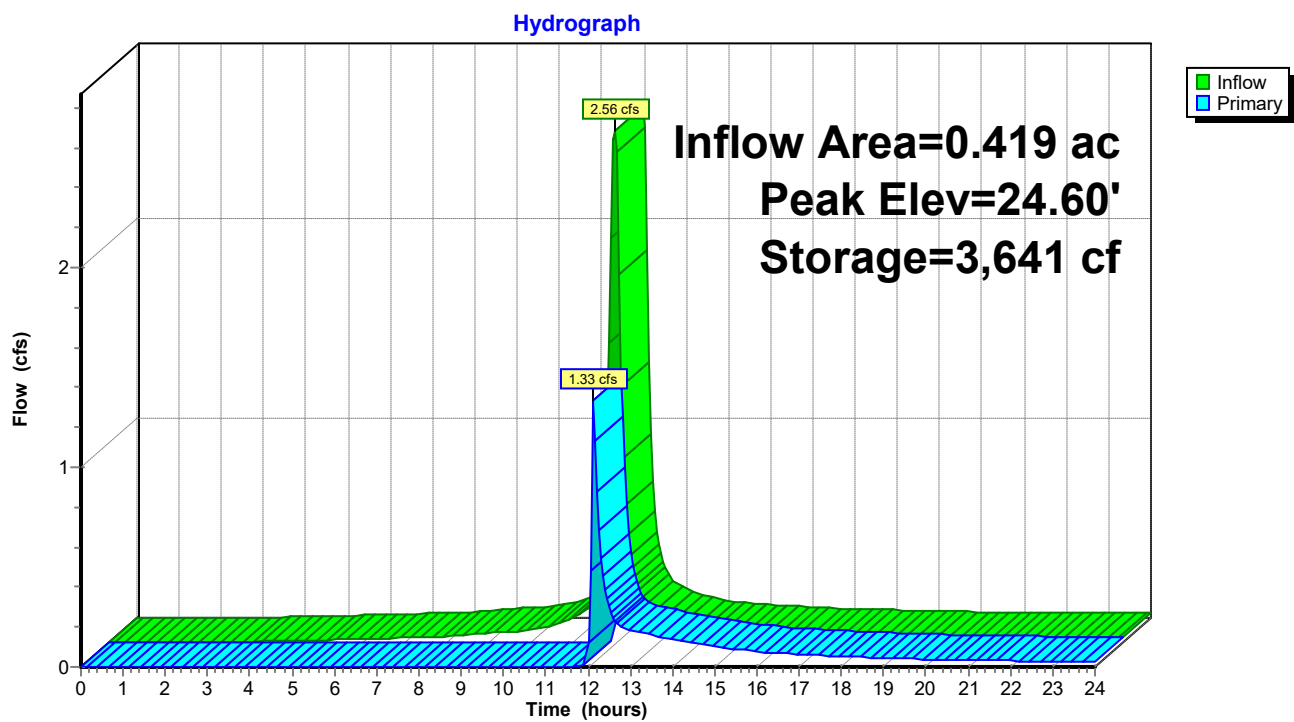
Plug-Flow detention time= 232.2 min calculated for 0.095 af (60% of inflow)

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)

Pond MBR-6: Micro-Bioretention #6

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 142

Stage-Area-Storage for Pond MBR-6: Micro-Bioretenion #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,196	0	23.54	1,500	1,695
21.04	1,196	24	23.59	1,530	1,771
21.09	1,196	48	23.64	1,560	1,848
21.14	1,196	72	23.69	1,590	1,927
21.19	1,196	96	23.74	1,621	2,007
21.24	1,196	120	23.79	1,652	2,089
21.29	1,196	144	23.84	1,684	2,172
21.34	1,196	167	23.89	1,715	2,257
21.39	1,196	191	23.94	1,747	2,344
21.44	1,196	215	23.99	1,780	2,432
21.49	1,196	239	24.04	1,811	2,522
21.54	1,196	263	24.09	1,843	2,613
21.59	1,196	287	24.14	1,876	2,706
21.64	1,196	311	24.19	1,908	2,801
21.69	1,196	335	24.24	1,941	2,897
21.74	1,196	359	24.29	1,974	2,995
21.79	1,196	383	24.34	2,008	3,094
21.84	1,196	407	24.39	2,041	3,196
21.89	1,196	431	24.44	2,075	3,299
21.94	1,196	454	24.49	2,110	3,403
21.99	1,196	478	24.54	2,144	3,510
22.04	1,196	502	24.59	2,179	3,618
22.09	1,196	526	24.64	2,214	3,727
22.14	1,196	550	24.69	2,249	3,839
22.19	1,196	574	24.74	2,285	3,952
22.24	1,196	598	24.79	2,321	4,068
22.29	1,196	622	24.84	2,357	4,185
22.34	1,196	646	24.89	2,394	4,303
22.39	1,196	670	24.94	2,430	4,424
22.44	1,196	694	24.99	2,468	4,546
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 143

Summary for Pond MBR-7: Micro-Bioretenention #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

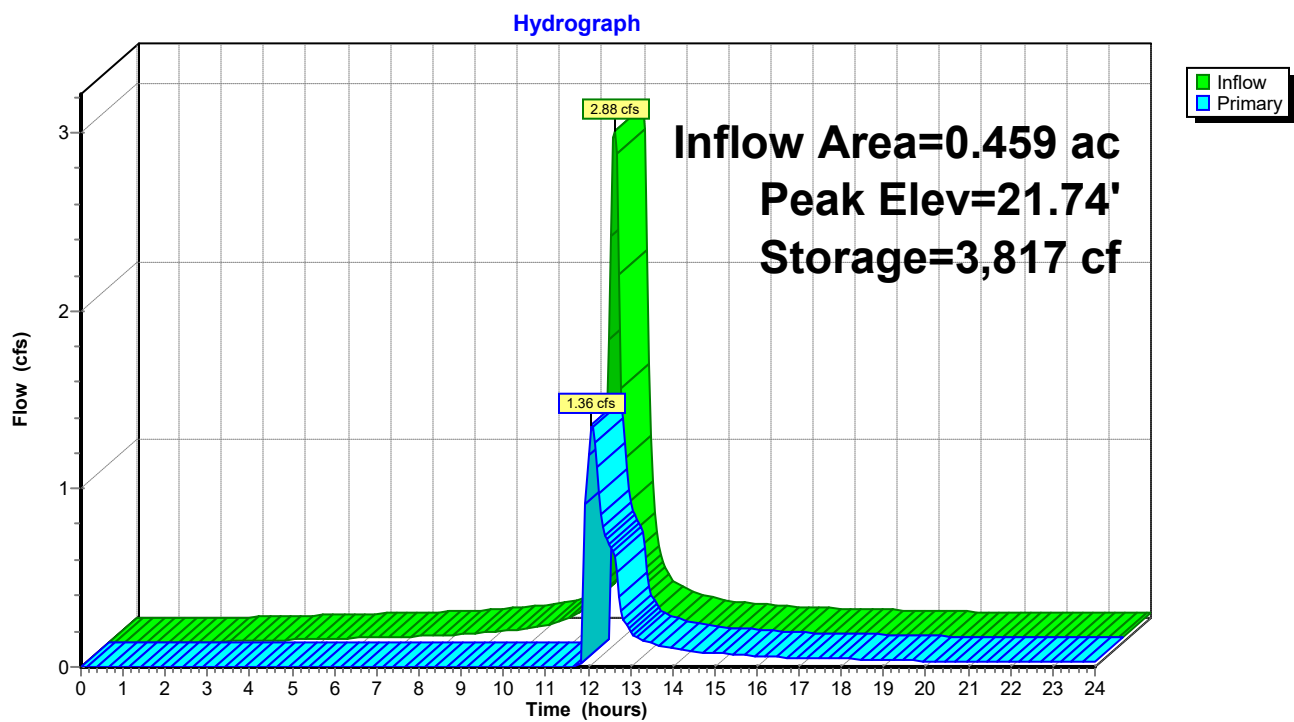
Plug-Flow detention time= 193.2 min calculated for 0.115 af (64% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 145

Stage-Area-Storage for Pond MBR-7: Micro-Bioretenction #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 146

Summary for Pond MBR-8: Micro-Bioretenion #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

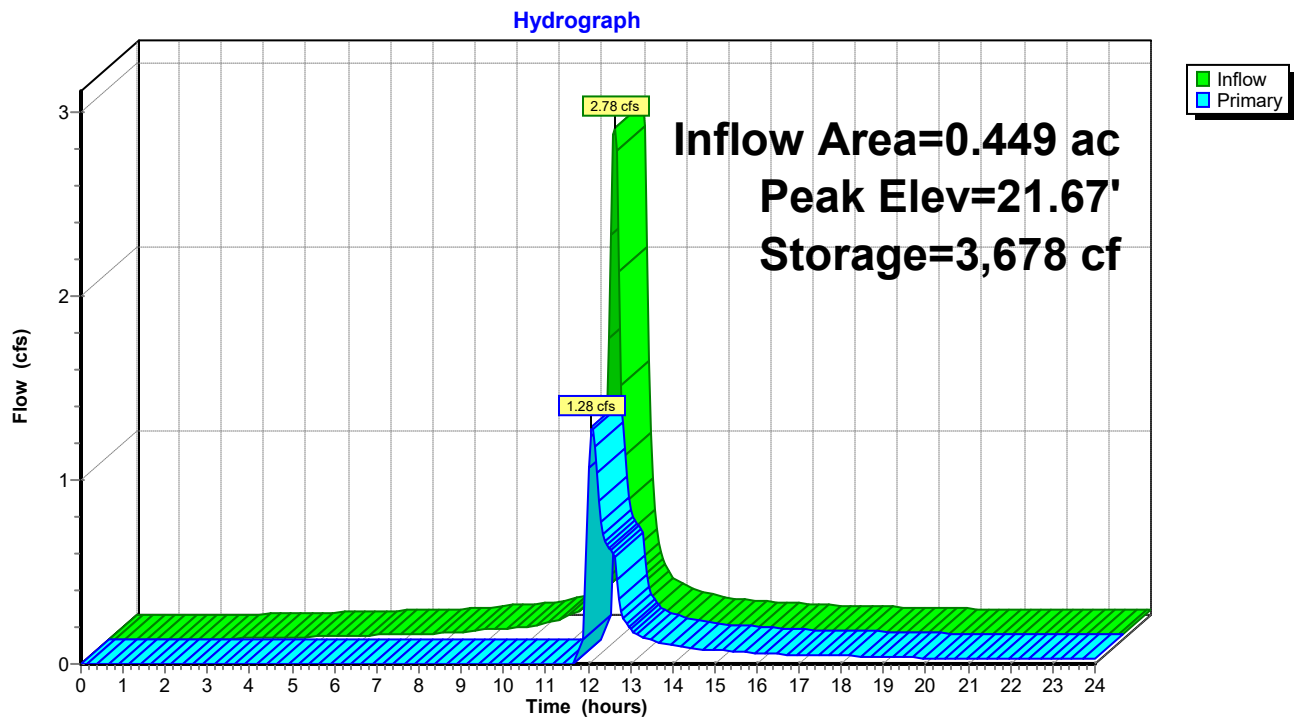
Plug-Flow detention time= 195.2 min calculated for 0.107 af (62% of inflow)

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 ' 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-Bioretenion #8

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 148

Stage-Area-Storage for Pond MBR-8: Micro-Bioretenction #8

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 149

Summary for Pond MBR-9: Micro-Bioretenion #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

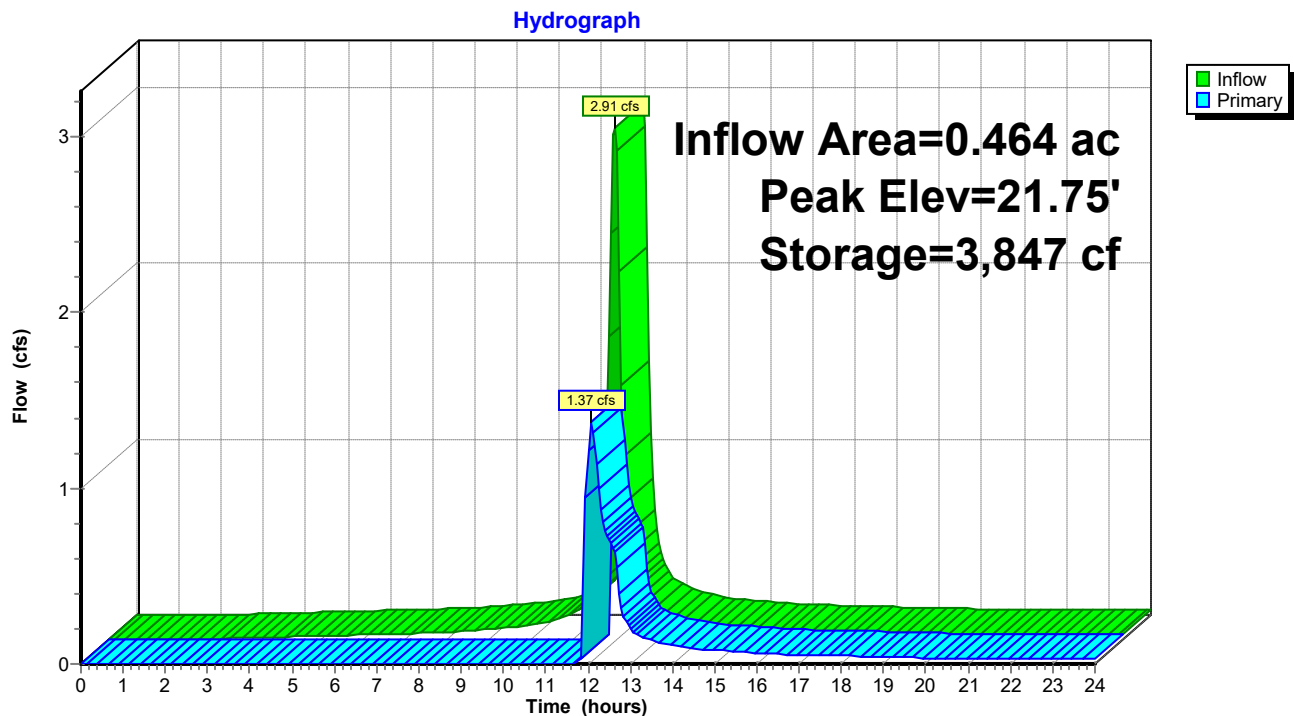
Plug-Flow detention time= 190.9 min calculated for 0.117 af (64% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 151

Stage-Area-Storage for Pond MBR-9: Micro-Bioretenction #9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

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

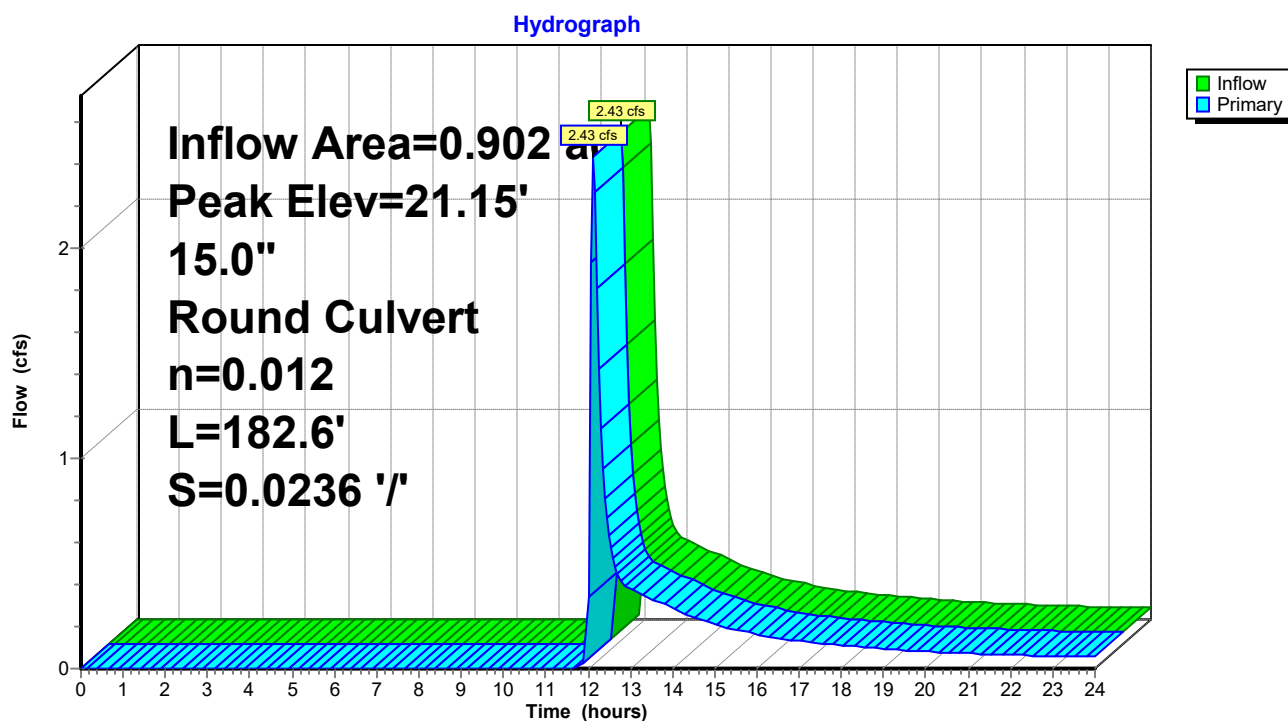
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 153

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

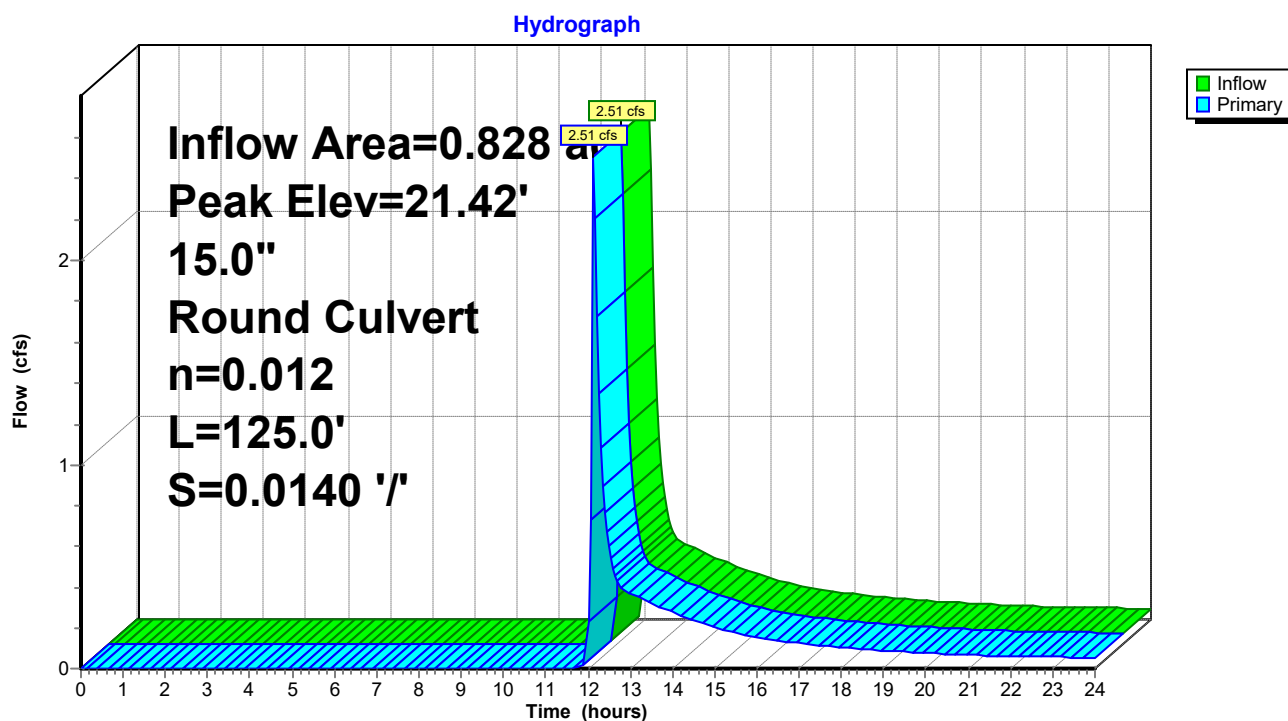
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 155

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 156

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

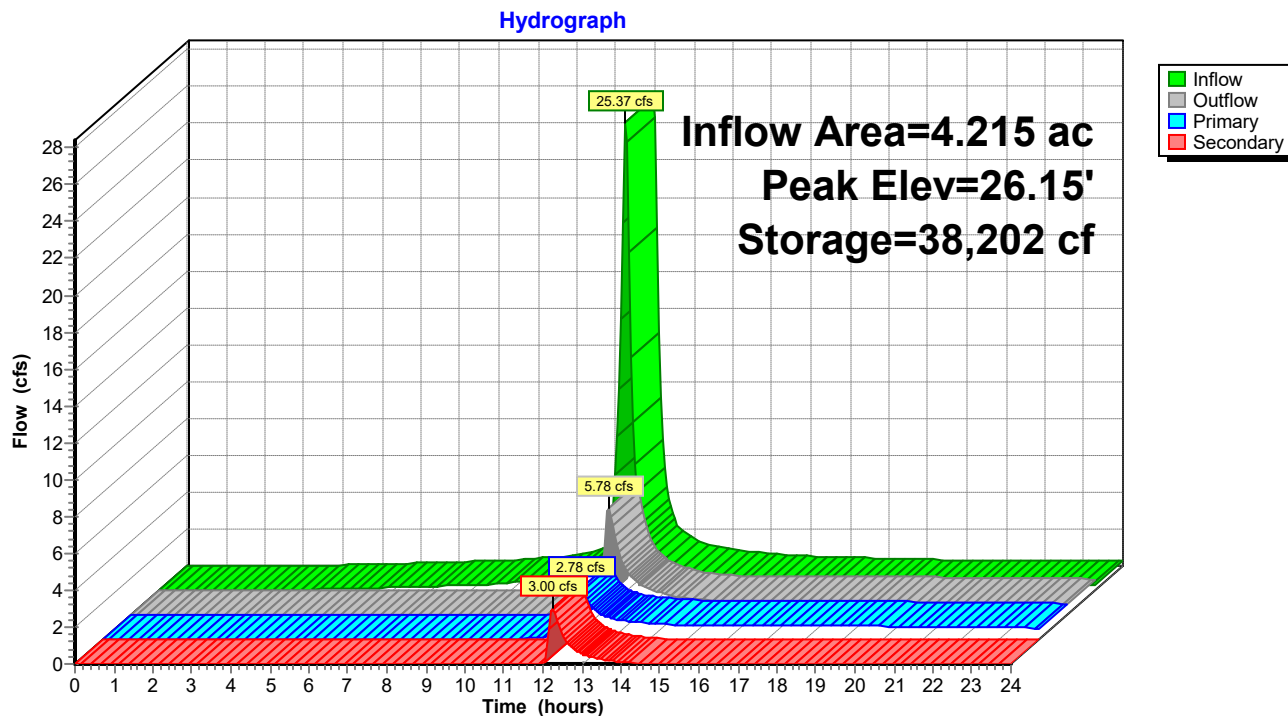
230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 157

Pond SGW-1: (Future) Submerged Gravel Wetland



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

Page 158

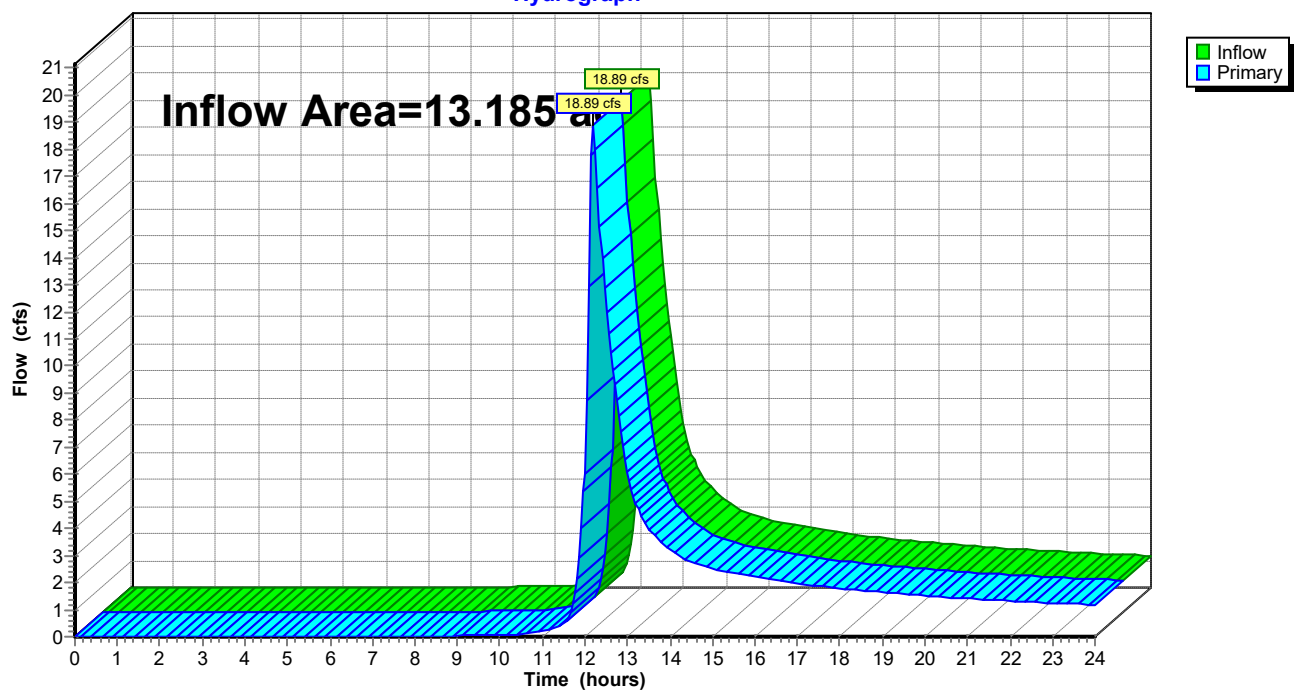
Stage-Area-Storage for Pond SGW-1: (Future) Submerged Gravel Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
23.50	11,511	0	26.05	17,332	36,523
23.55	11,614	578	26.10	17,458	37,393
23.60	11,717	1,161	26.15	17,585	38,269
23.65	11,821	1,750	26.20	17,712	39,151
23.70	11,925	2,343	26.25	17,839	40,040
23.75	12,029	2,942	26.30	17,967	40,935
23.80	12,134	3,546	26.35	18,095	41,837
23.85	12,240	4,156	26.40	18,224	42,745
23.90	12,346	4,770	26.45	18,353	43,659
23.95	12,452	5,390	26.50	18,483	44,580
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			

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

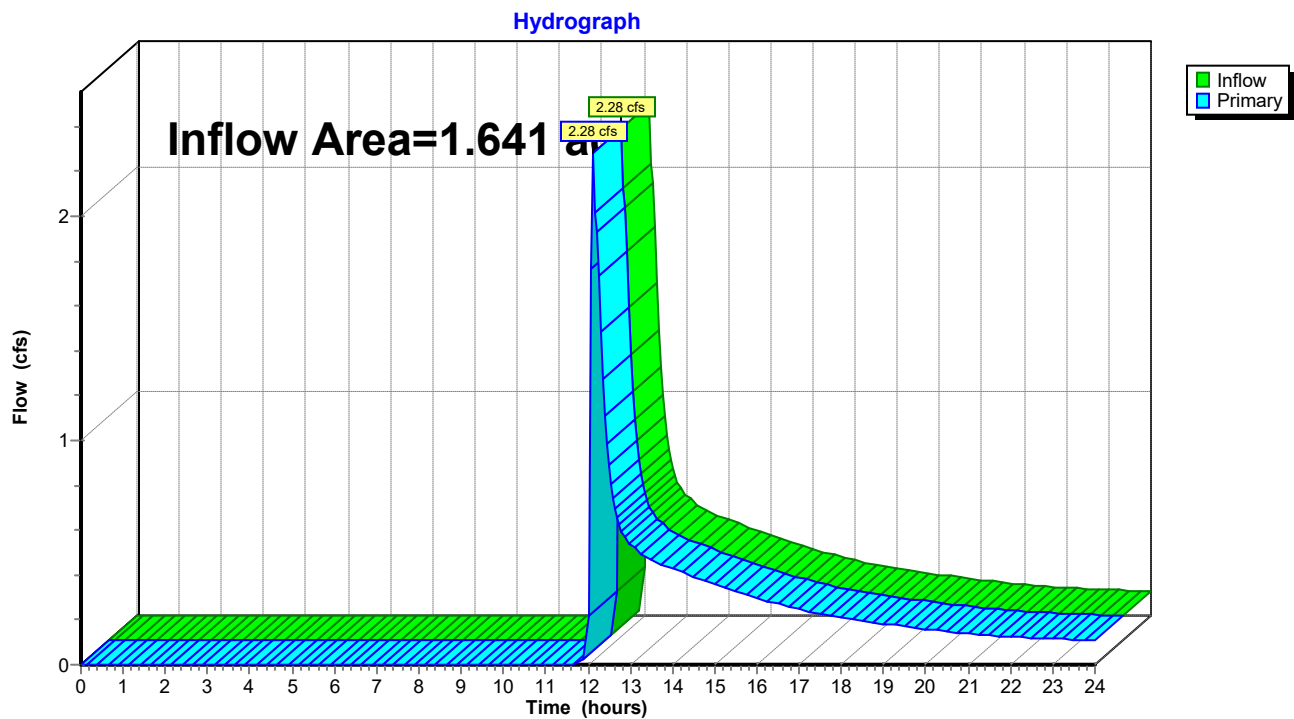
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 1L: POST**Hydrograph**

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

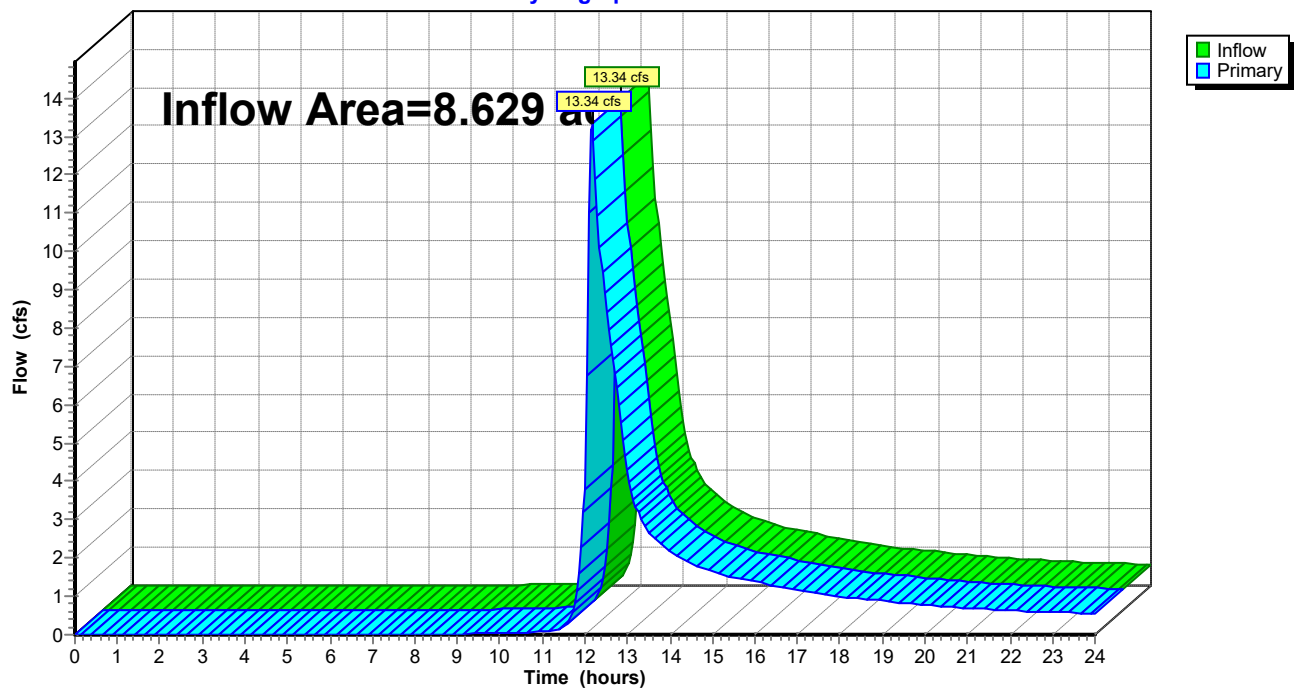
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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**Hydrograph**

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/30/2023

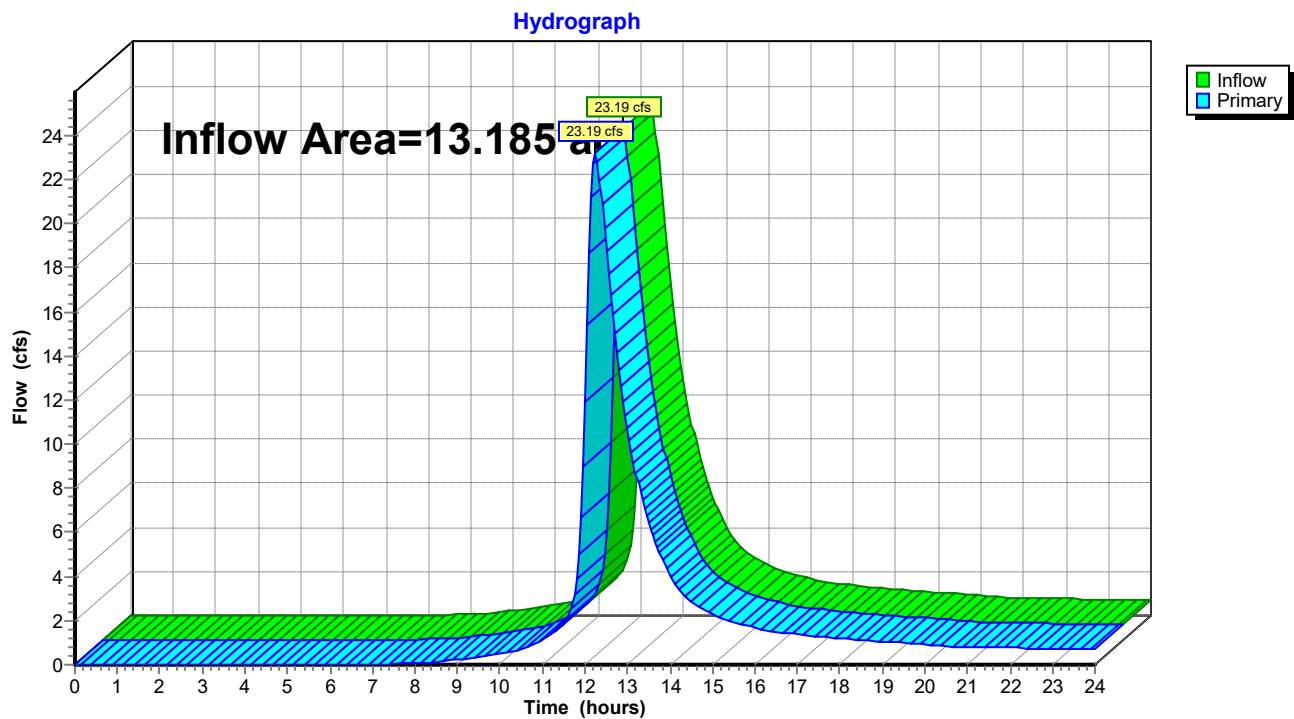
Page 162

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

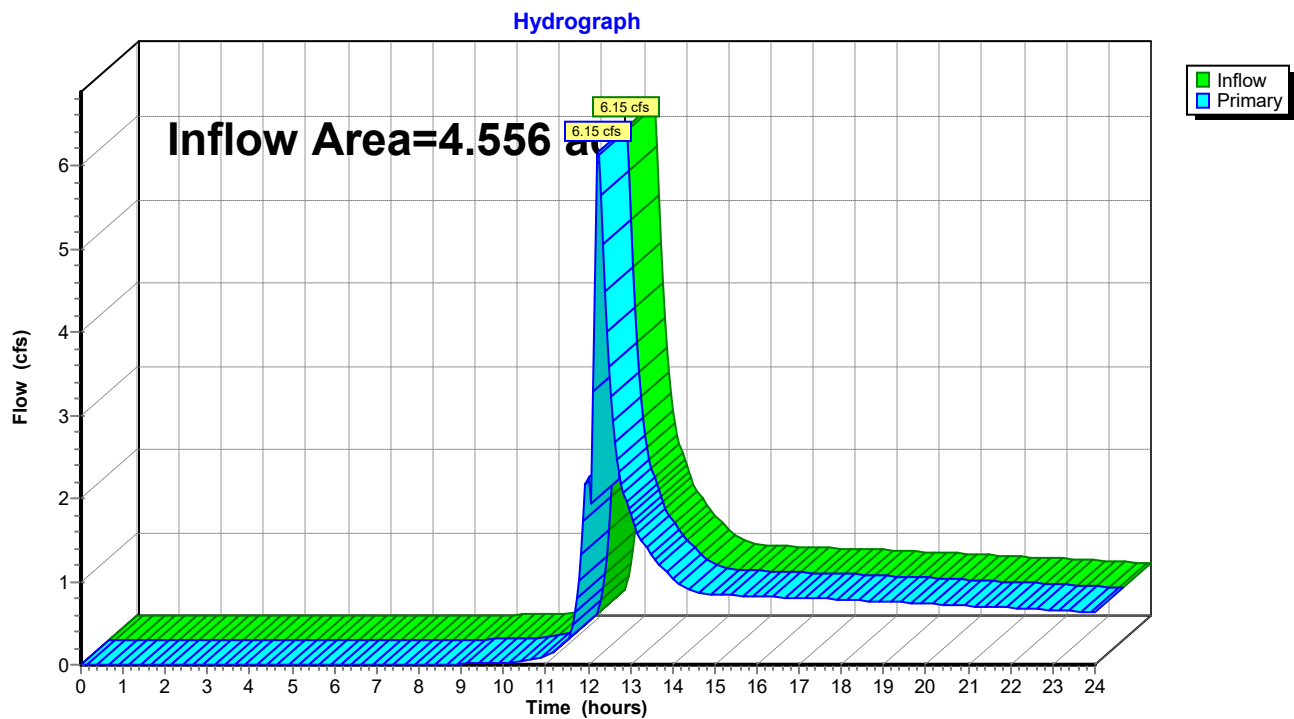
Link 5L: PRE



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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 164

Summary for Subcatchment EX-1: Predevelopment (POI#1)

Runoff = 28.24 cfs @ 12.27 hrs, Volume= 4.284 af, Depth> 5.31"

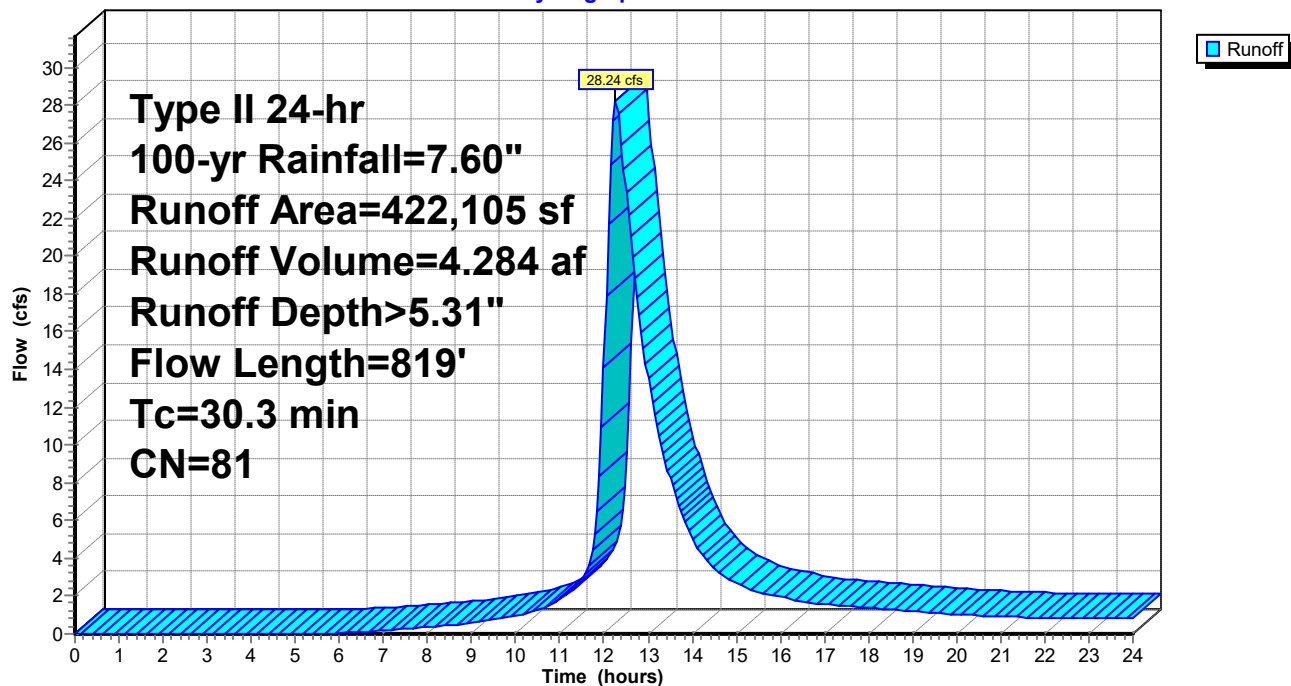
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

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)

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 165

Summary for Subcatchment EX-2: Predevelopment (POI#2)

Runoff = 11.10 cfs @ 12.18 hrs, Volume= 1.384 af, Depth> 4.75"

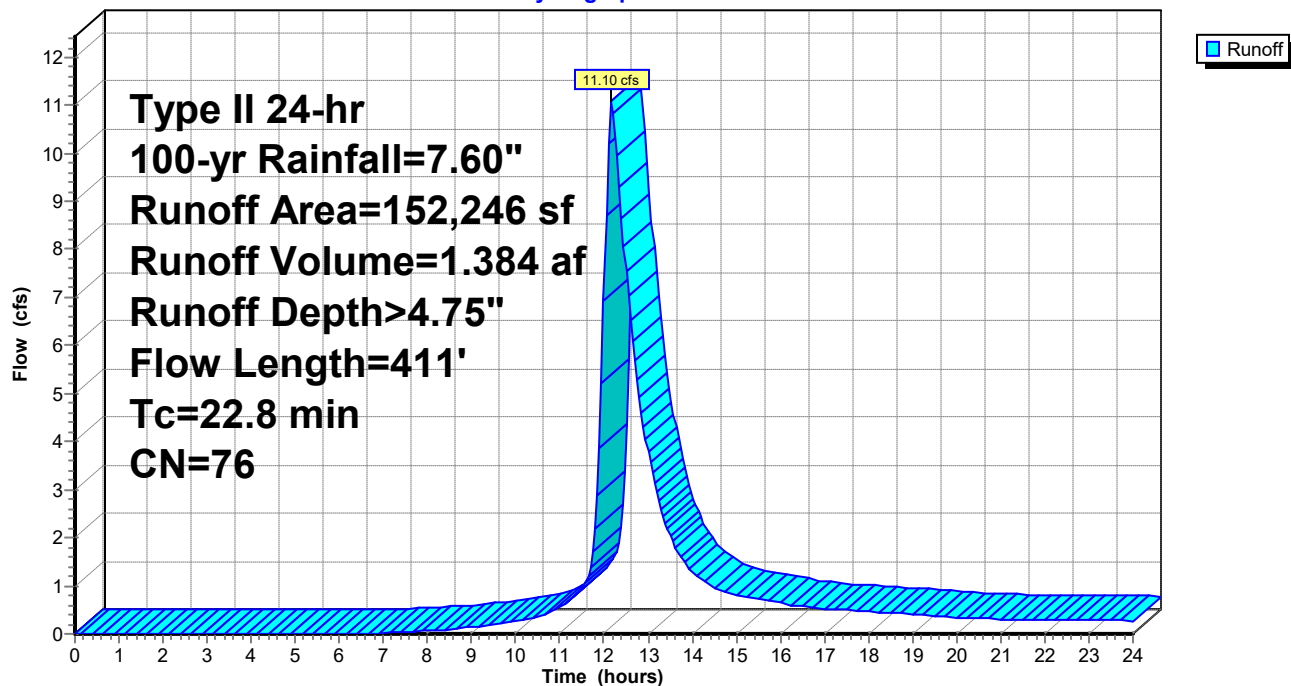
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

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)

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 166

Summary for Subcatchment FT-13: Future Warehouse

Runoff = 37.54 cfs @ 11.97 hrs, Volume= 2.332 af, Depth> 6.64"

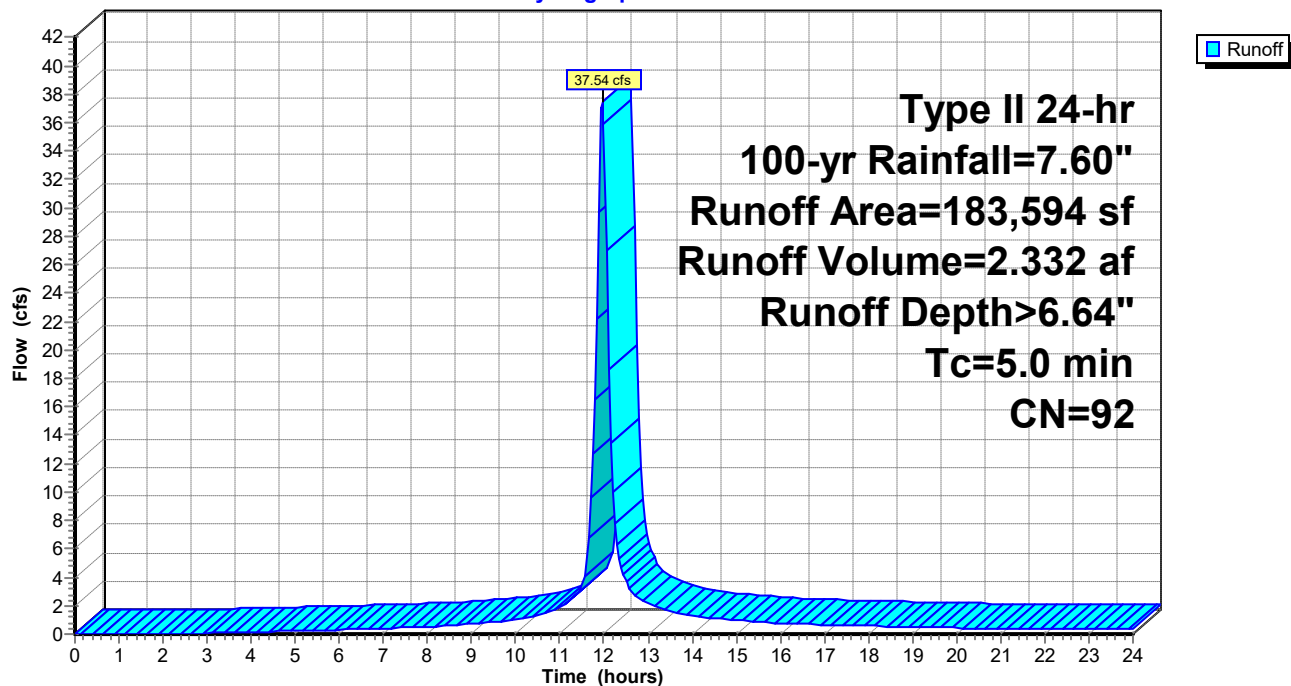
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 167

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"

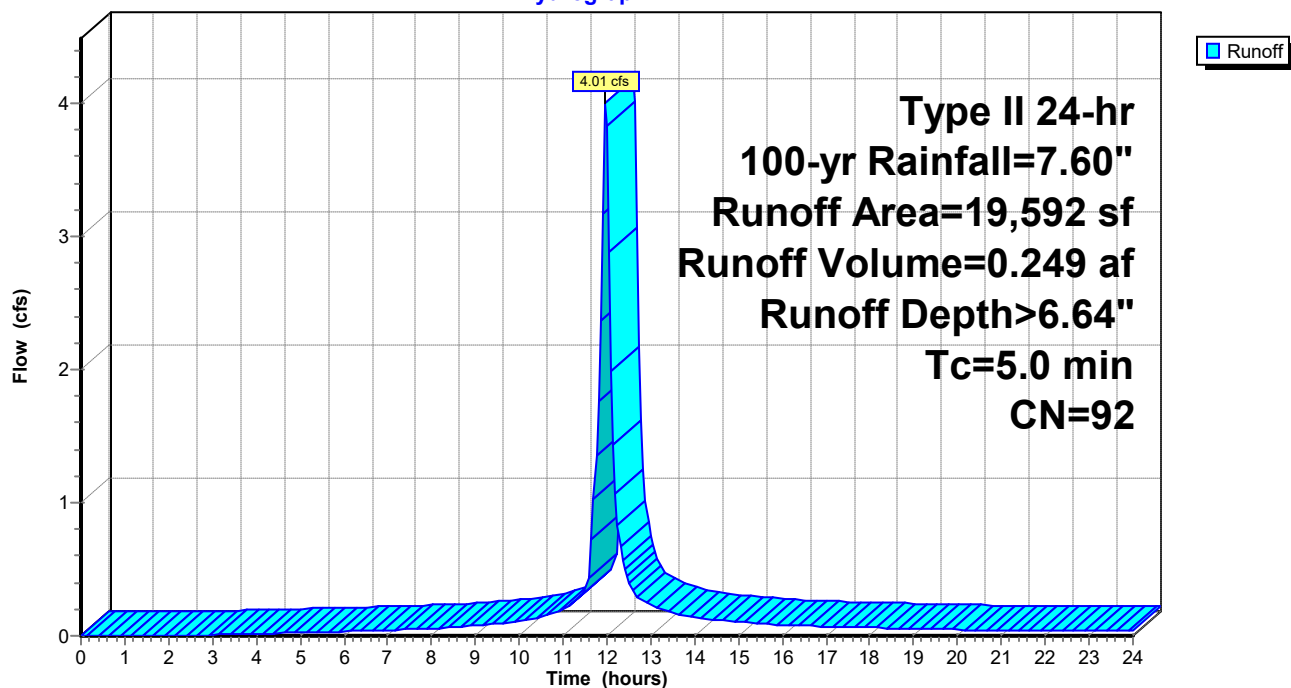
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 168

Summary for Subcatchment FT-15: Access Road & Half Future Parking

Runoff = 3.59 cfs @ 11.97 hrs, Volume= 0.219 af, Depth> 6.40"

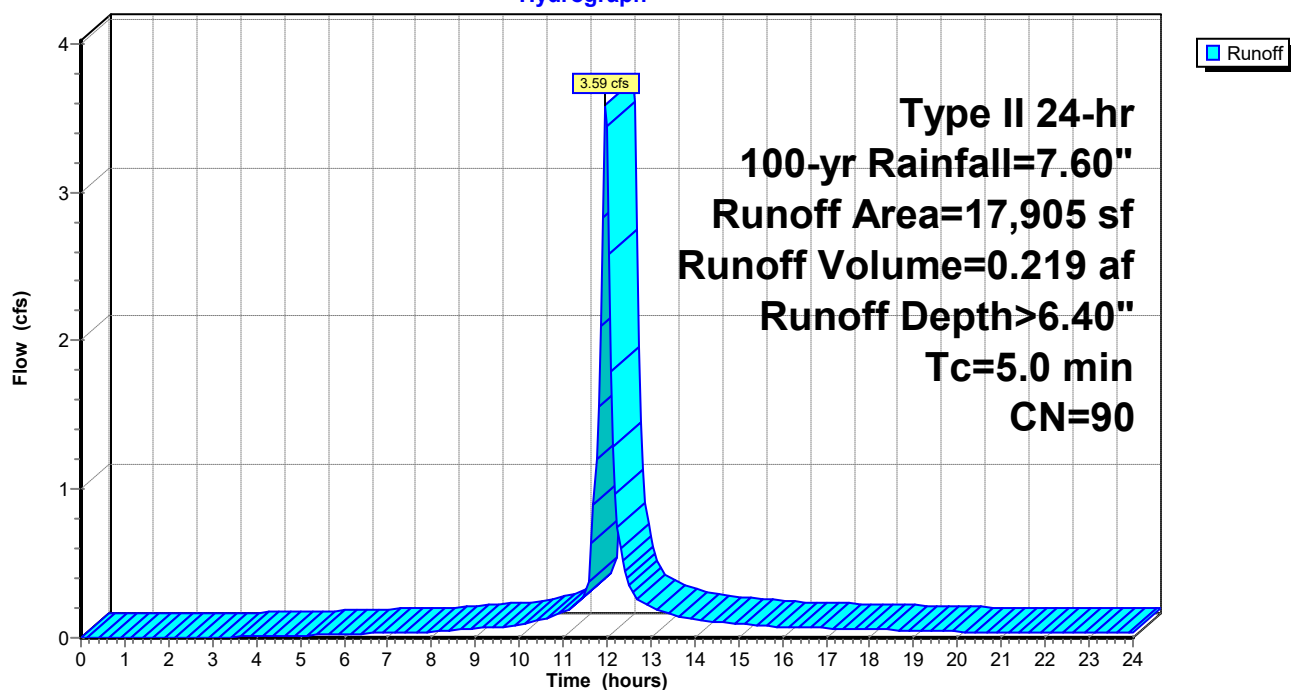
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 169

Summary for Subcatchment PR-1: Front Parking Lot

Runoff = 3.99 cfs @ 11.97 hrs, Volume= 0.242 af, Depth> 6.29"

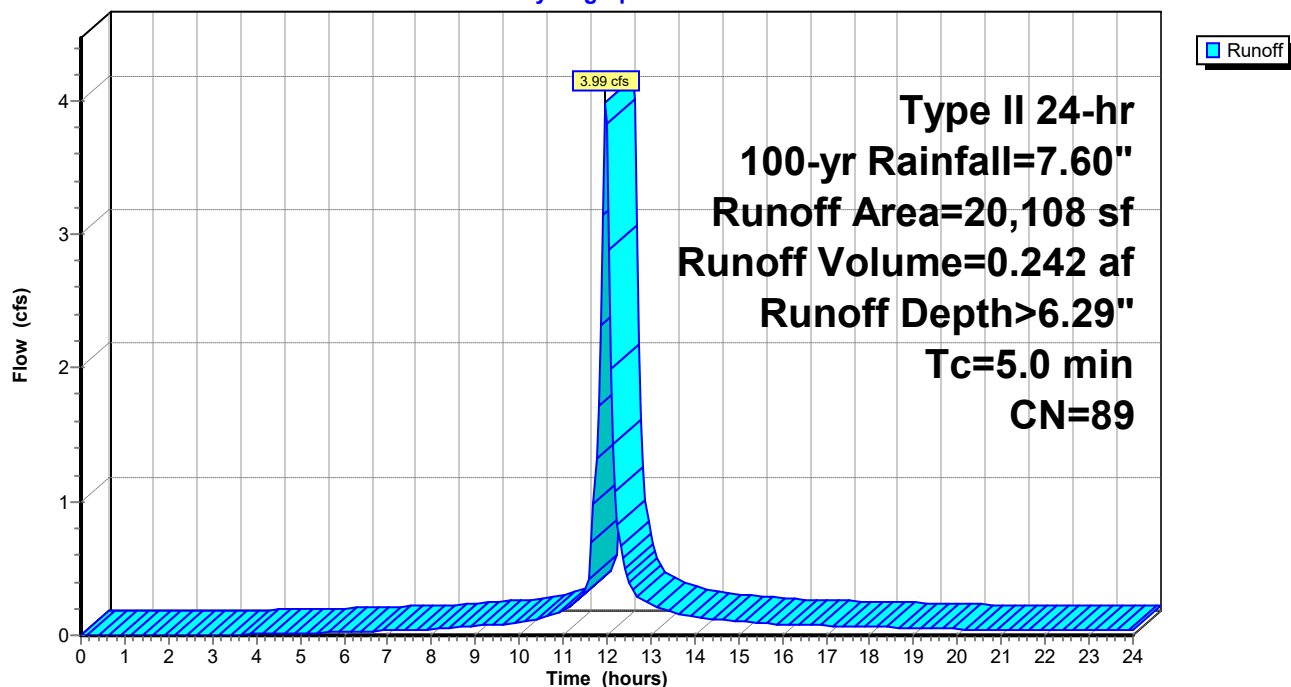
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 170

Summary for Subcatchment PR-10: Loading Area

Runoff = 4.31 cfs @ 11.97 hrs, Volume= 0.276 af, Depth> 6.99"

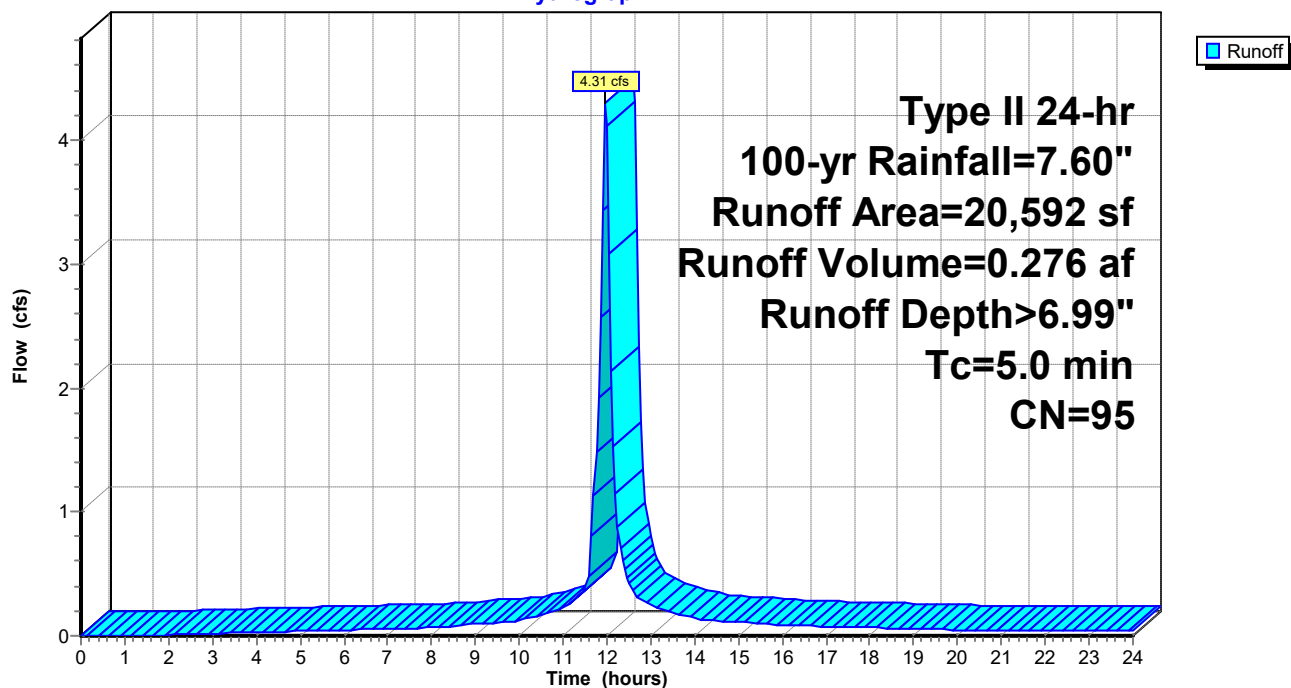
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 171

Summary for Subcatchment PR-11: Loading Area

Runoff = 4.14 cfs @ 11.97 hrs, Volume= 0.265 af, Depth> 6.99"

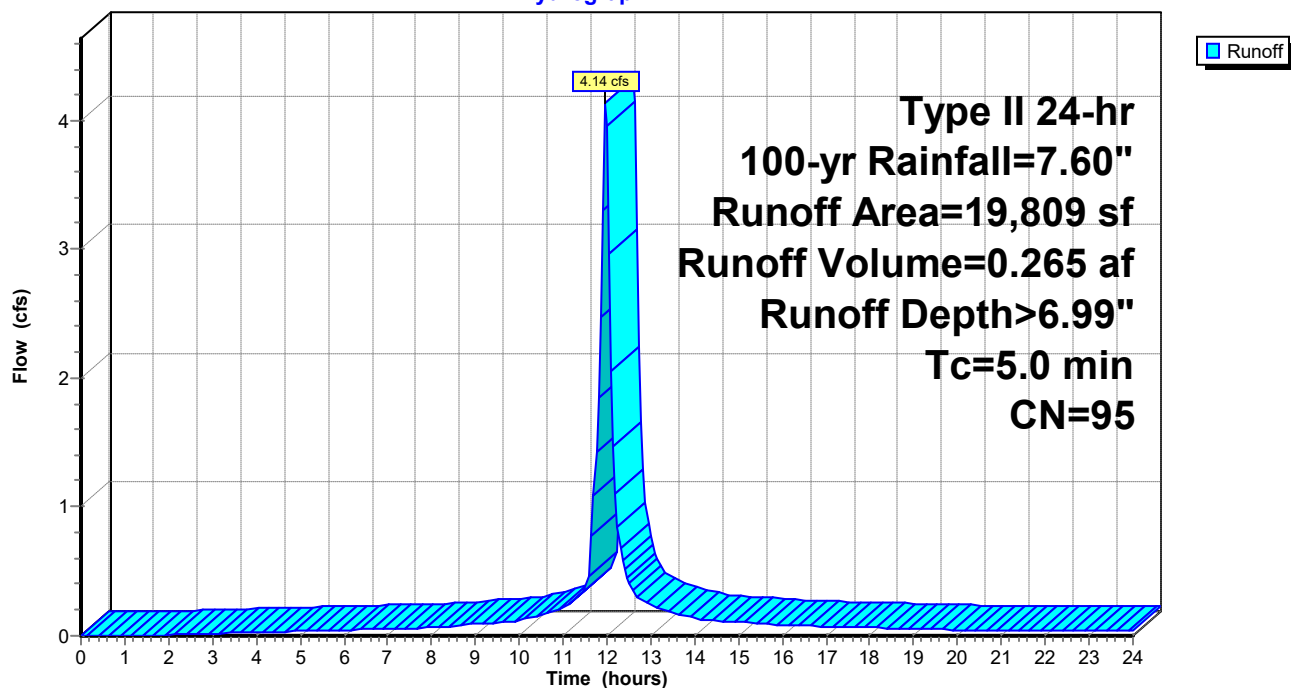
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 172

Summary for Subcatchment PR-12: PR-12

Runoff = 5.90 cfs @ 11.97 hrs, Volume= 0.349 af, Depth> 5.82"

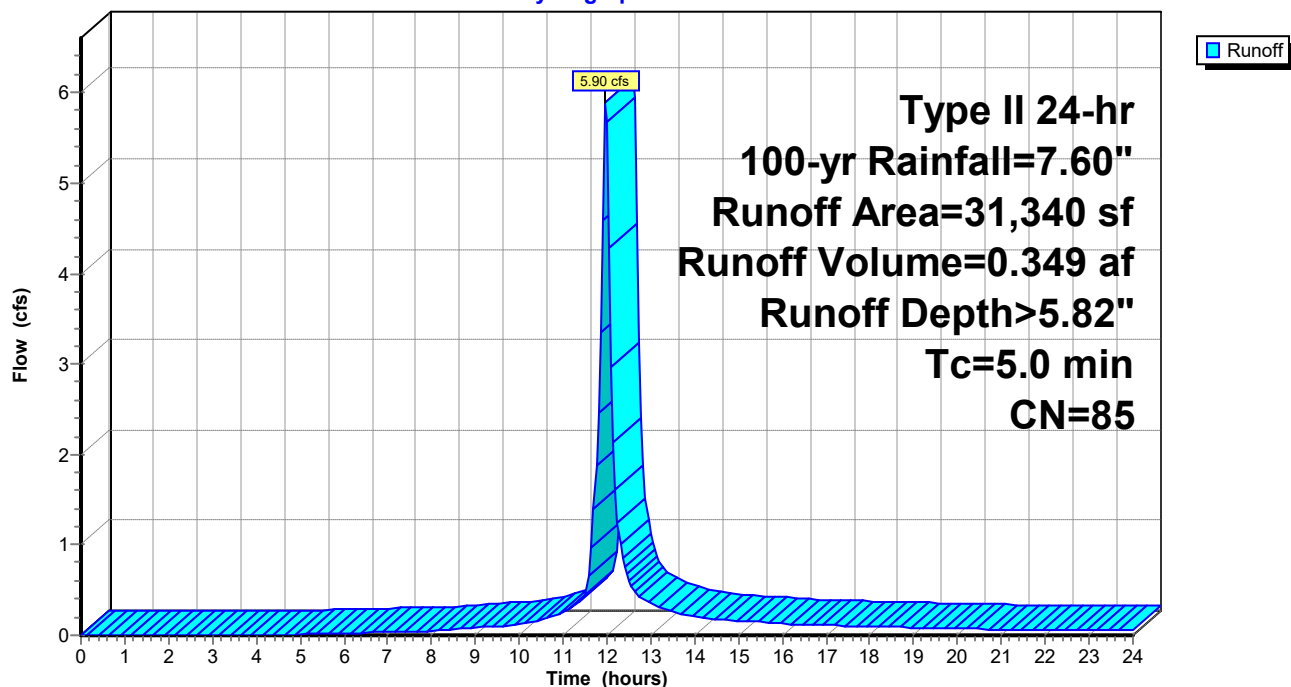
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

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

Hydrograph



Summary for Subcatchment PR-2: Front Parking Lot

Runoff = 4.06 cfs @ 11.97 hrs, Volume= 0.250 af, Depth> 6.52"

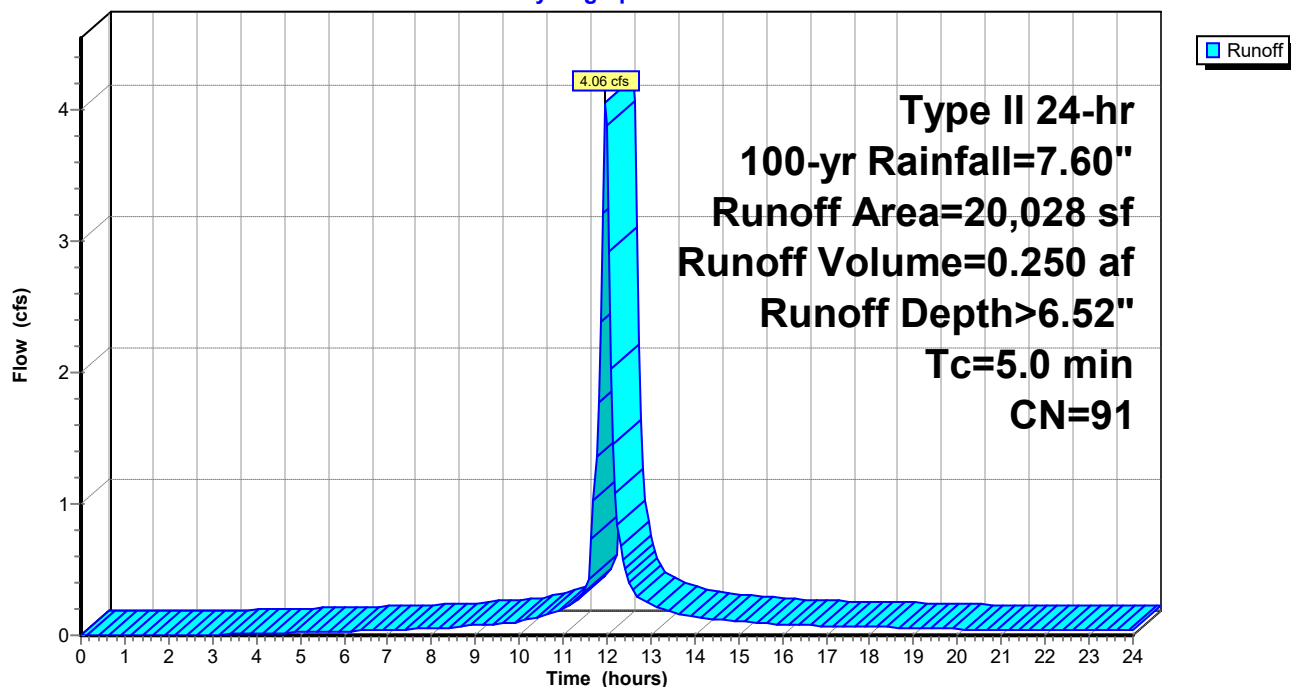
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



Summary for Subcatchment PR-3: Phase 1 Office Roof

Runoff = 3.95 cfs @ 11.97 hrs, Volume= 0.242 af, Depth> 6.40"

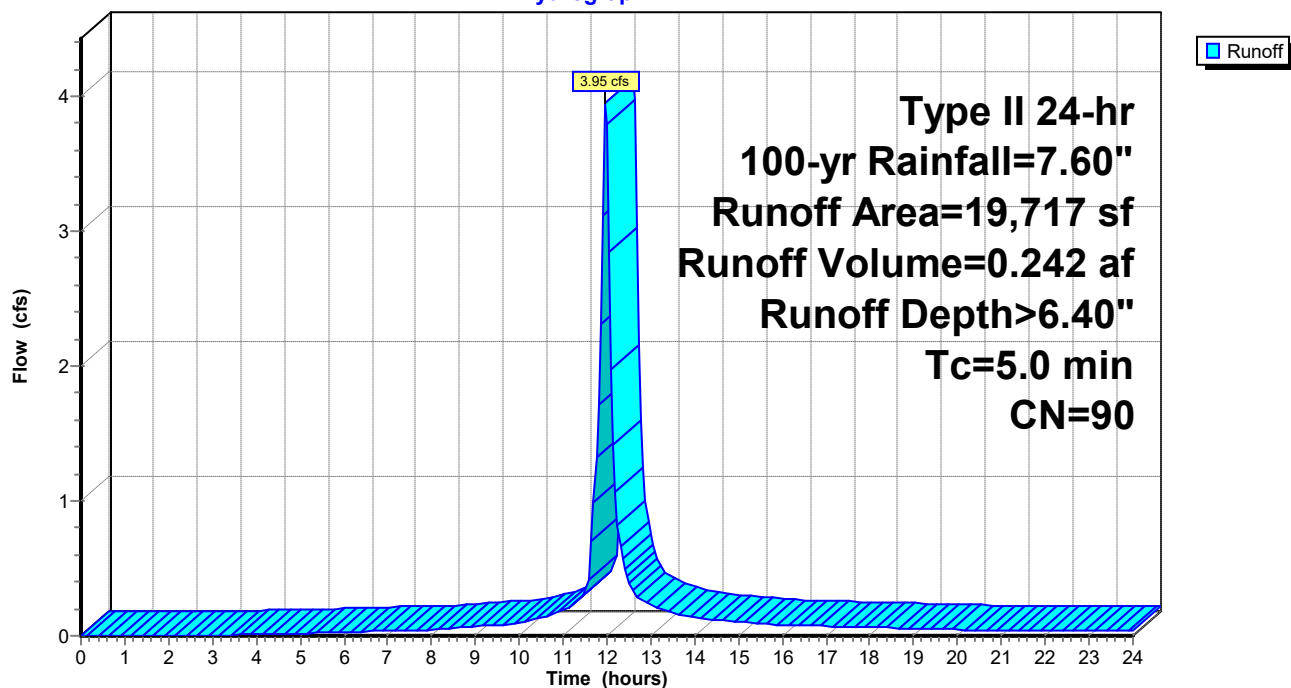
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 175

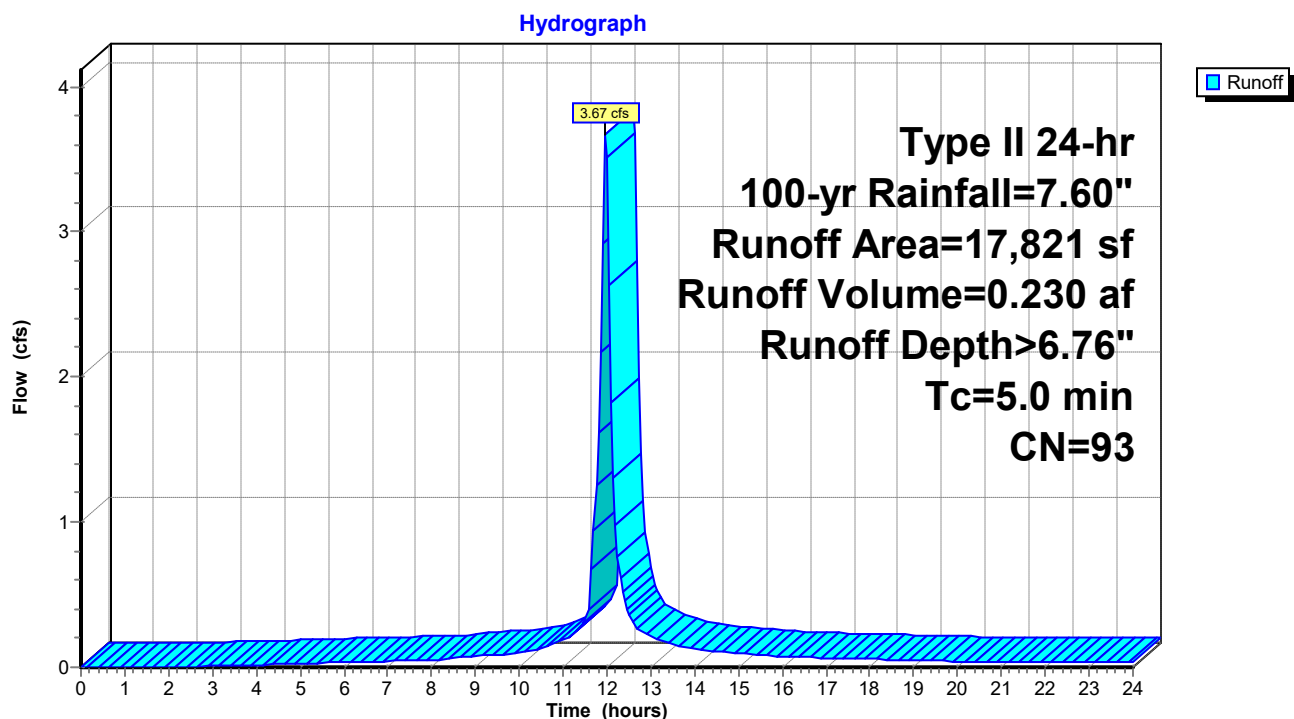
Summary for Subcatchment PR-4: Warehouse Roof

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 176

Summary for Subcatchment PR-5: Dumpster & Portion of Loading Area

Runoff = 4.13 cfs @ 11.97 hrs, Volume= 0.259 af, Depth> 6.76"

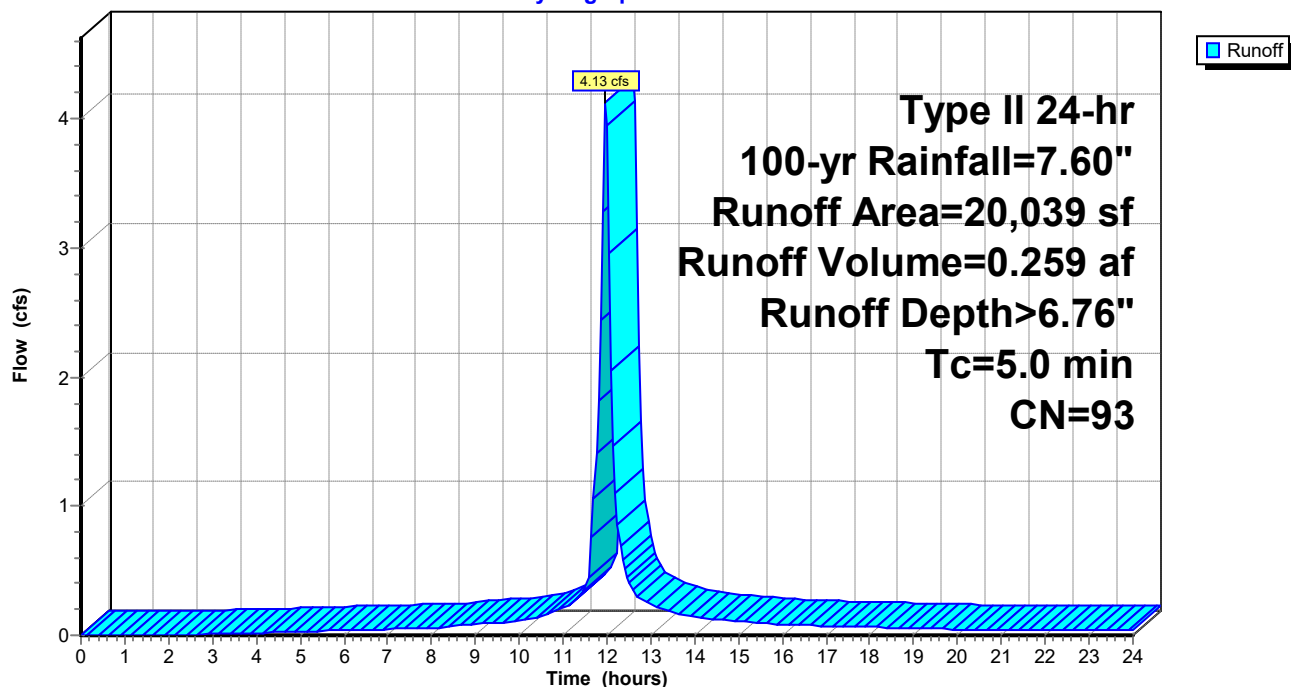
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 177

Summary for Subcatchment PR-6: Warehouse Roof

Runoff = 3.77 cfs @ 11.97 hrs, Volume= 0.236 af, Depth> 6.76"

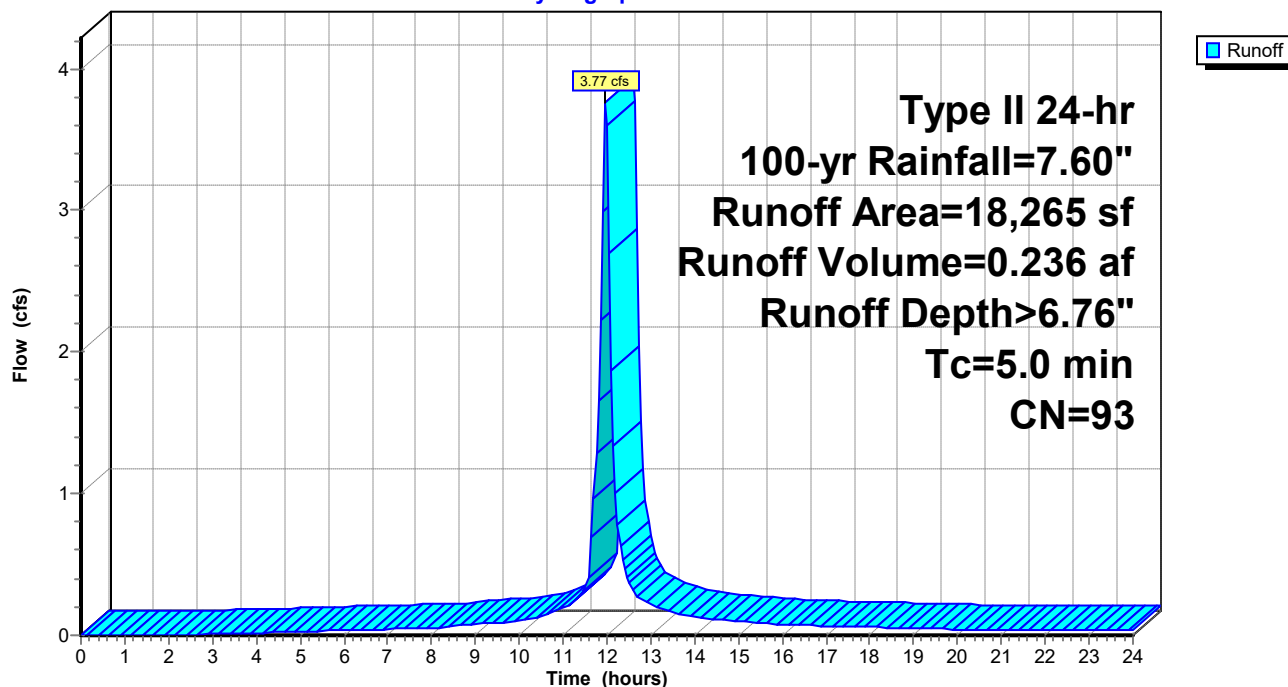
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 178

Summary for Subcatchment PR-7: Loading Area

Runoff = 4.18 cfs @ 11.97 hrs, Volume= 0.268 af, Depth> 6.99"

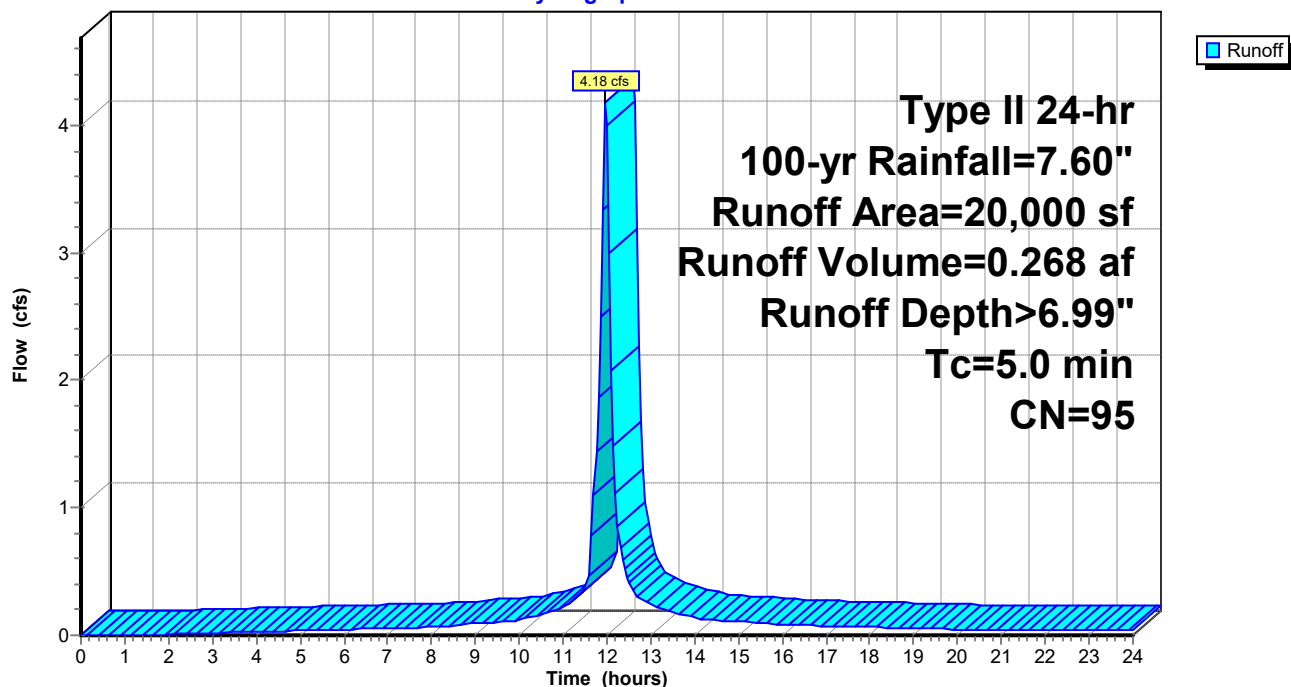
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 179

Summary for Subcatchment PR-8: Warehouse Roof

Runoff = 4.06 cfs @ 11.97 hrs, Volume= 0.257 af, Depth> 6.88"

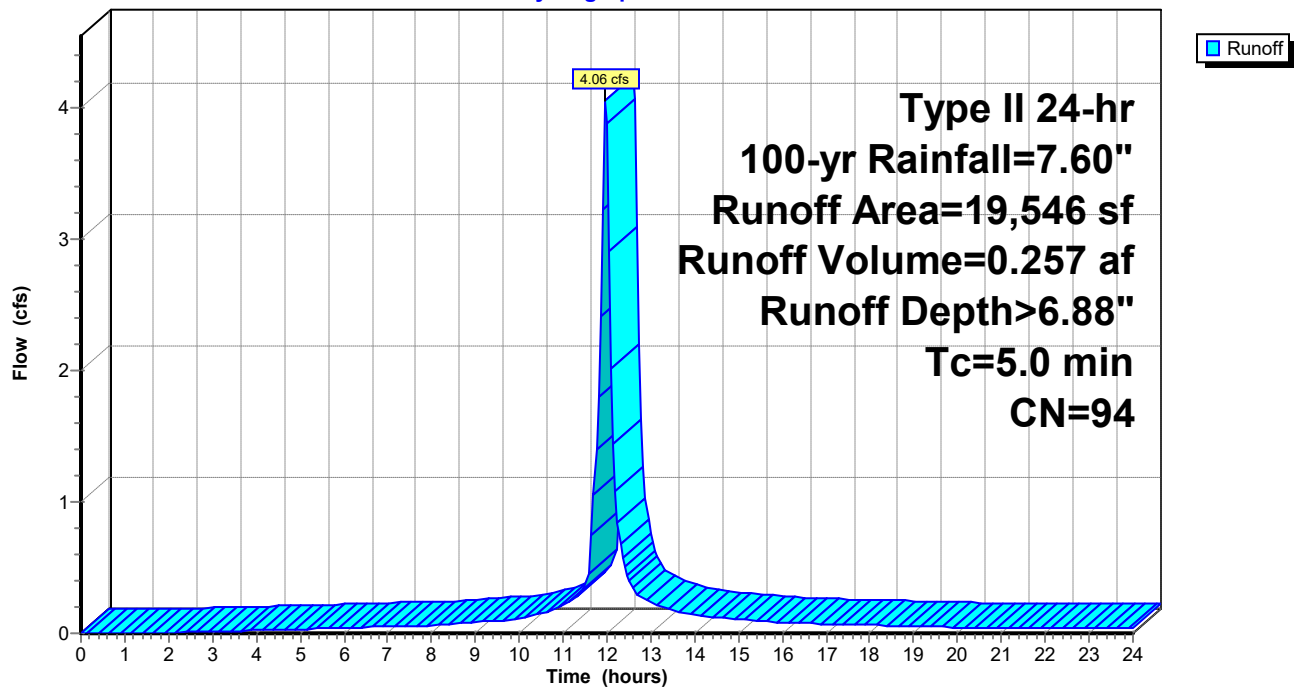
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 180

Summary for Subcatchment PR-9: Loading Area

Runoff = 4.23 cfs @ 11.97 hrs, Volume= 0.271 af, Depth> 6.99"

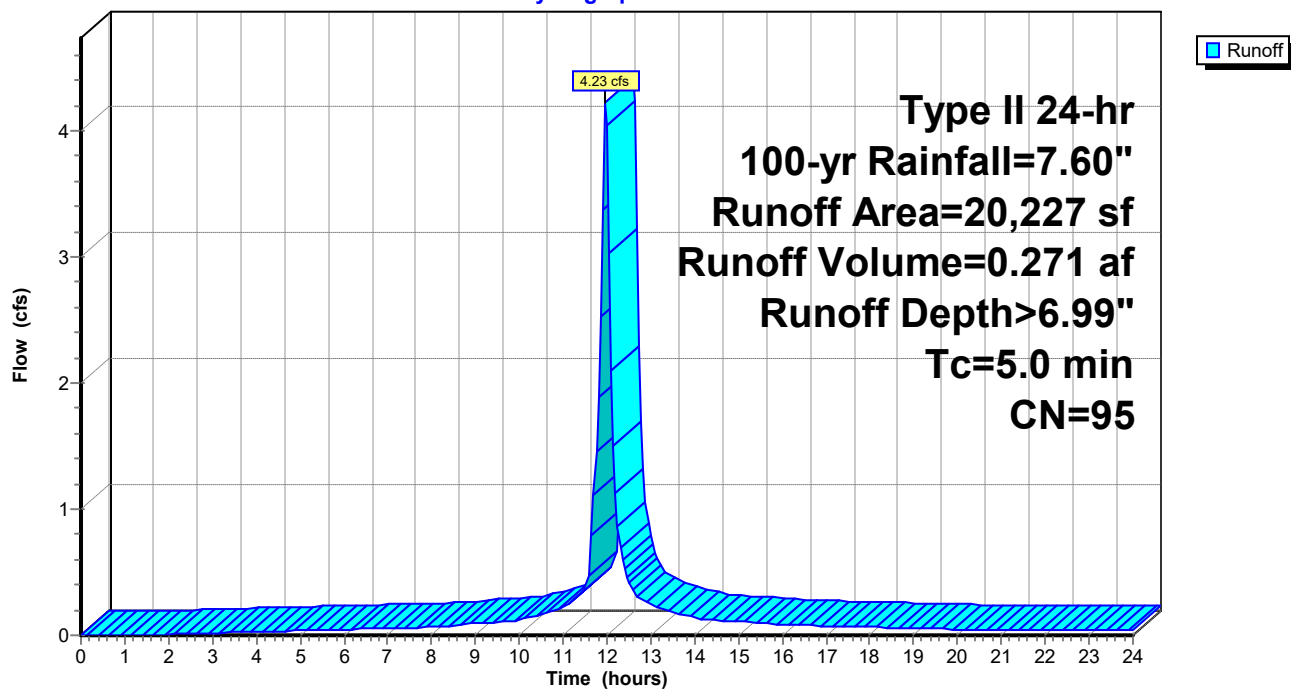
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 181

Summary for Subcatchment RD-1: Residue of Parcel

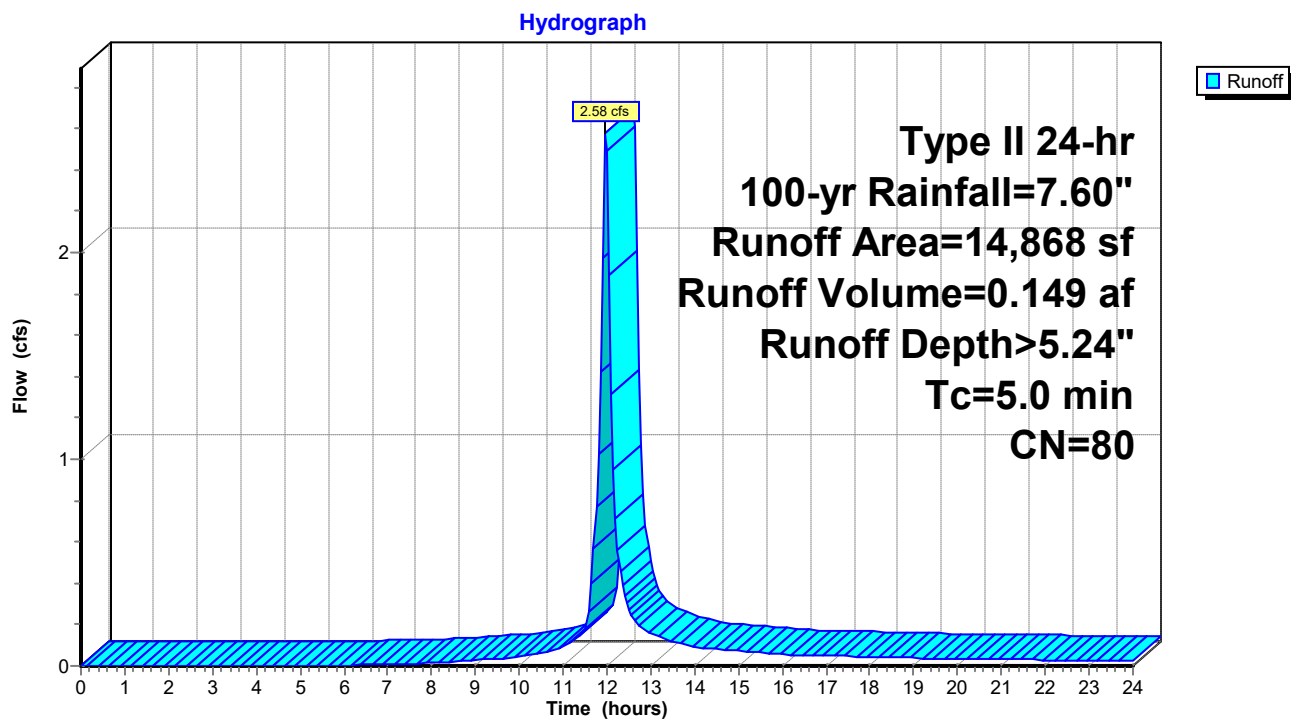
Runoff = 2.58 cfs @ 11.97 hrs, Volume= 0.149 af, Depth> 5.24"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 182

Summary for Subcatchment RD-2: Residue of Parcel

Runoff = 5.65 cfs @ 11.97 hrs, Volume= 0.327 af, Depth> 5.24"

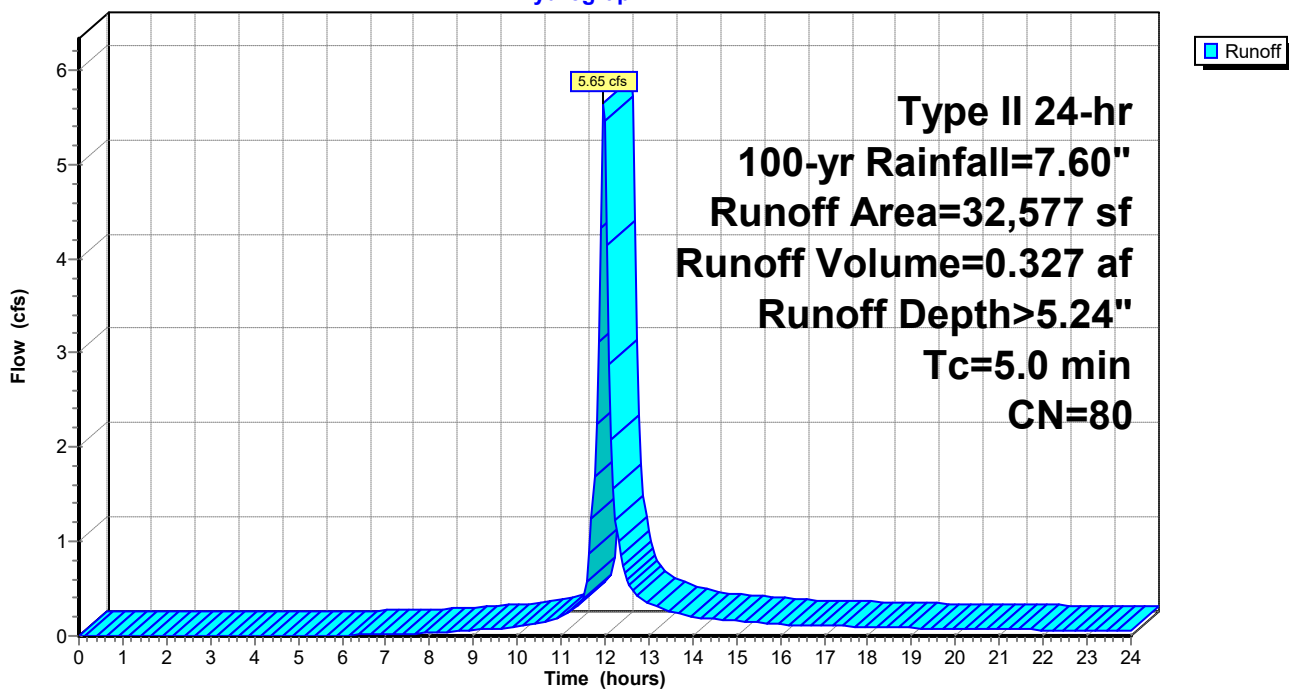
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 183

Summary for Subcatchment RD-3: Residue of Parcel

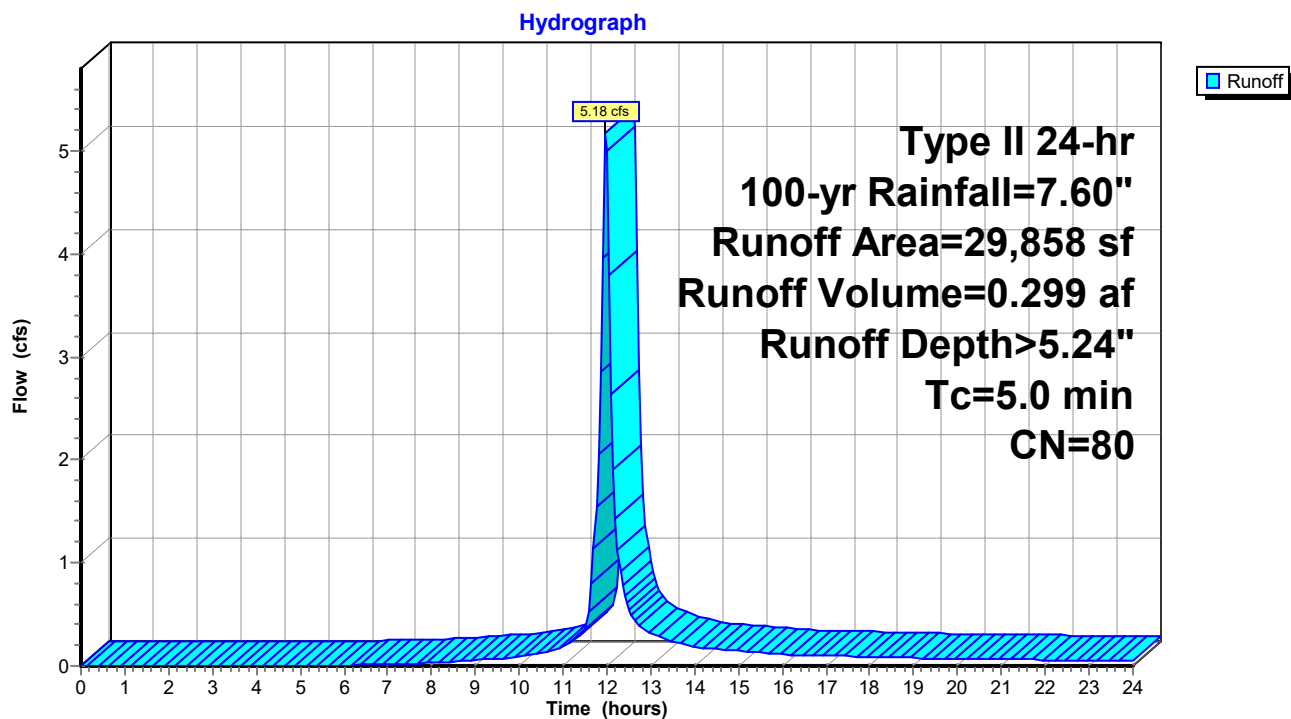
Runoff = 5.18 cfs @ 11.97 hrs, Volume= 0.299 af, Depth> 5.24"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 184

Summary for Subcatchment RD-4: Residue of Parcel

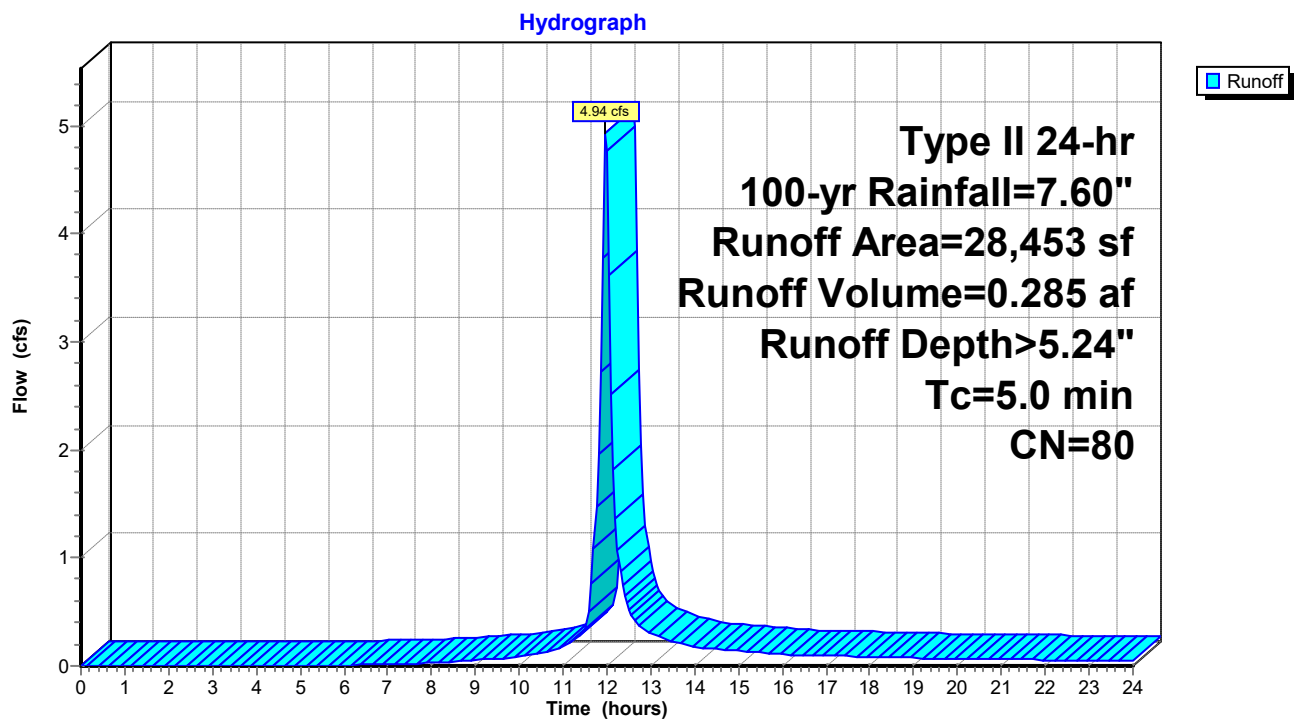
Runoff = 4.94 cfs @ 11.97 hrs, Volume= 0.285 af, Depth> 5.24"

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 185

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)

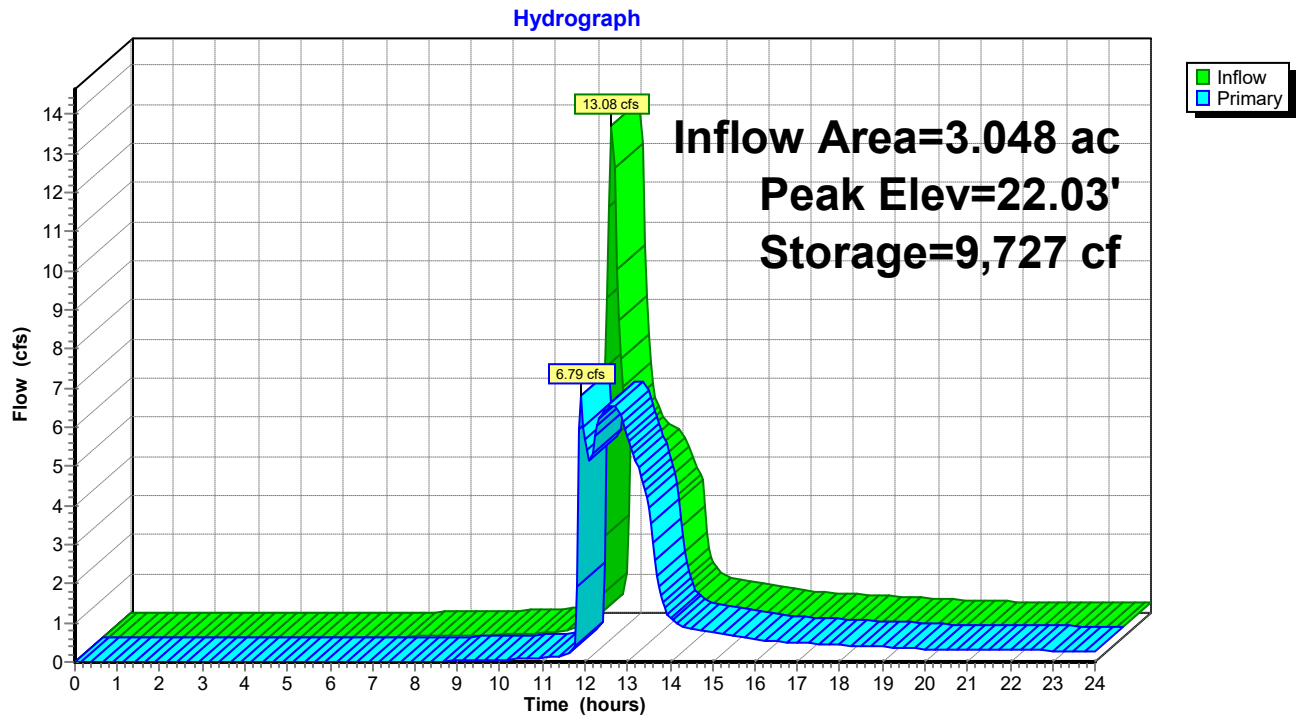
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.70	1,369	691.0	0	0	1,369
22.20	8,591	754.0	11,158	11,158	8,835
22.70	31,484	911.0	9,420	20,578	29,641

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 ' 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)



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 187

Stage-Area-Storage for Pond 1P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.70	1,369	0	22.25	10,234	11,628
19.75	1,453	71	22.30	12,020	12,184
19.80	1,539	145	22.35	13,951	12,832
19.85	1,627	224	22.40	16,024	13,581
19.90	1,719	308	22.45	18,242	14,437
19.95	1,812	396	22.50	20,603	15,408
20.00	1,908	489	22.55	23,108	16,500
20.05	2,007	587	22.60	25,756	17,721
20.10	2,108	690	22.65	28,548	19,078
20.15	2,211	798	22.70	31,484	20,578
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 188

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

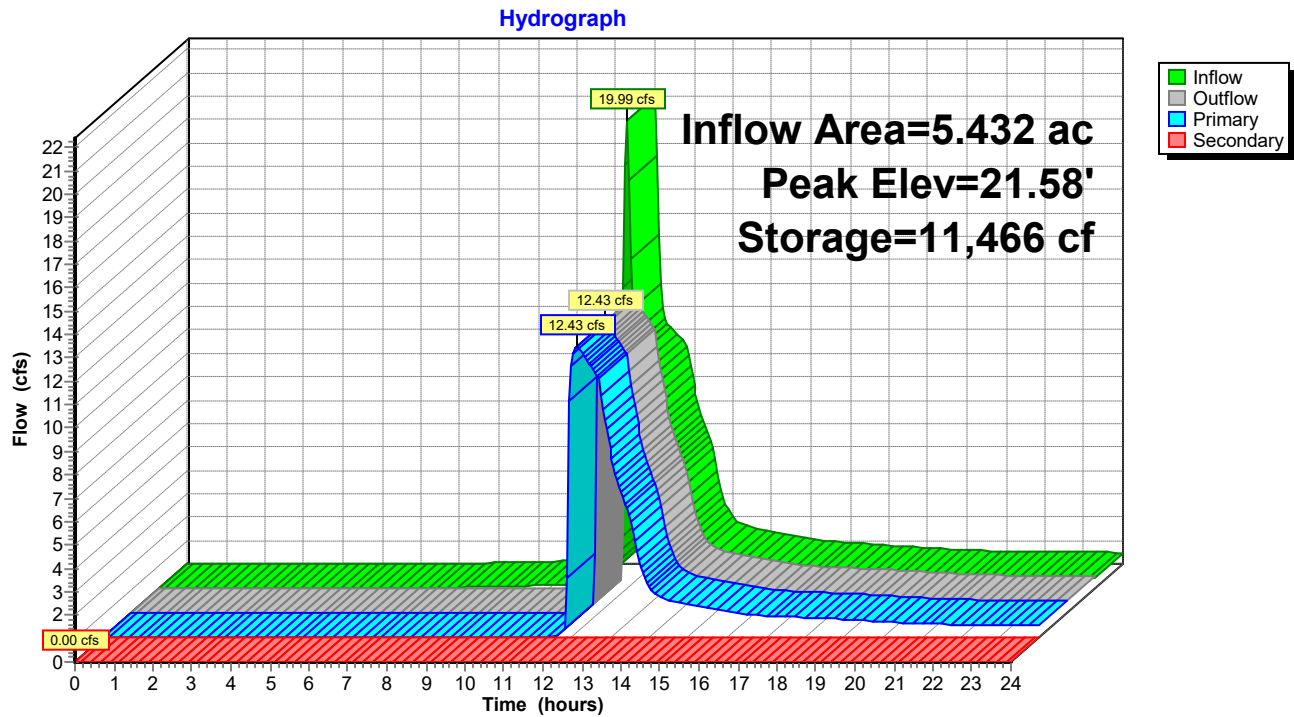
Plug-Flow detention time= 44.4 min calculated for 2.124 af (95% of inflow)

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)

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 190

Stage-Area-Storage for Pond 4P: Wet Swale (Conveyance)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.70	1,059	0	21.25	6,844	9,055
18.75	1,124	55	21.30	6,959	9,400
18.80	1,192	112	21.35	7,074	9,751
18.85	1,261	174	21.40	7,191	10,107
18.90	1,332	239	21.45	7,308	10,470
18.95	1,406	307	21.50	7,427	10,838
19.00	1,481	379	21.55	7,547	11,213
19.05	1,558	455	21.60	7,667	11,593
19.10	1,637	535	21.65	7,788	11,979
19.15	1,718	619	21.70	7,911	12,372
19.20	1,801	707	21.75	8,034	12,770
19.25	1,886	799	21.80	8,158	13,175
19.30	1,973	896	21.85	8,284	13,586
19.35	2,062	996	21.90	8,410	14,004
19.40	2,153	1,102	21.95	8,537	14,427
19.45	2,246	1,212	22.00	8,665	14,857
19.50	2,341	1,326	22.05	8,794	15,294
19.55	2,437	1,446	22.10	8,924	15,737
19.60	2,536	1,570	22.15	9,055	16,186
19.65	2,637	1,700	22.20	9,187	16,642
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 191

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)

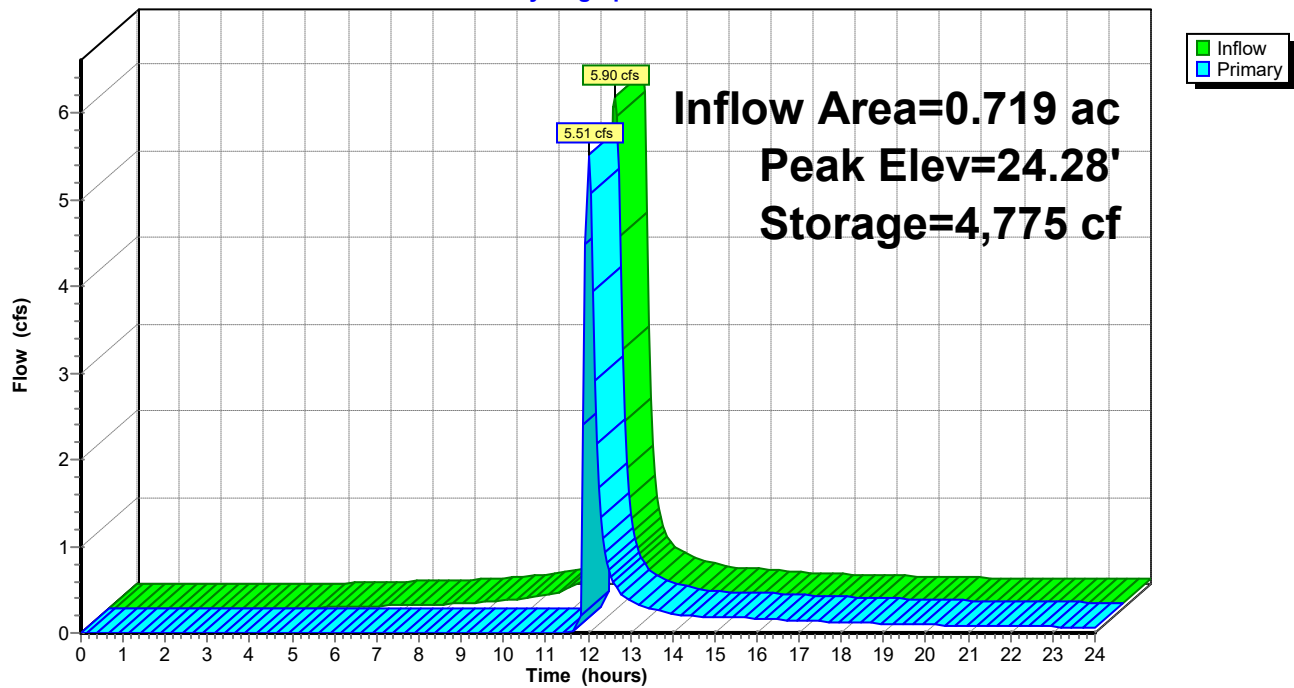
1=12" N-12 Culvert (Passes 5.40 cfs of 6.30 cfs potential flow)

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

Hydrograph



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 193

Stage-Area-Storage for Pond 8P: BioSwale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,517	0	23.54	2,774	2,385
21.04	1,517	30	23.59	2,832	2,525
21.09	1,517	61	23.64	2,890	2,669
21.14	1,517	91	23.69	2,950	2,815
21.19	1,517	121	23.74	3,009	2,964
21.24	1,517	152	23.79	3,070	3,115
21.29	1,517	182	23.84	3,131	3,270
21.34	1,517	212	23.89	3,192	3,429
21.39	1,517	243	23.94	3,254	3,590
21.44	1,517	273	23.99	3,317	3,754
21.49	1,517	303	24.04	3,380	3,921
21.54	1,517	334	24.09	3,444	4,092
21.59	1,517	364	24.14	3,509	4,266
21.64	1,517	394	24.19	3,574	4,443
21.69	1,517	425	24.24	3,640	4,623
21.74	1,517	455	24.29	3,706	4,807
21.79	1,517	485	24.34	3,773	4,994
21.84	1,517	516	24.39	3,840	5,184
21.89	1,517	546	24.44	3,908	5,378
21.94	1,517	576	24.49	3,977	5,575
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 194

Summary for Pond MBR-1: Parking Lot Micro-Bioretenion

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

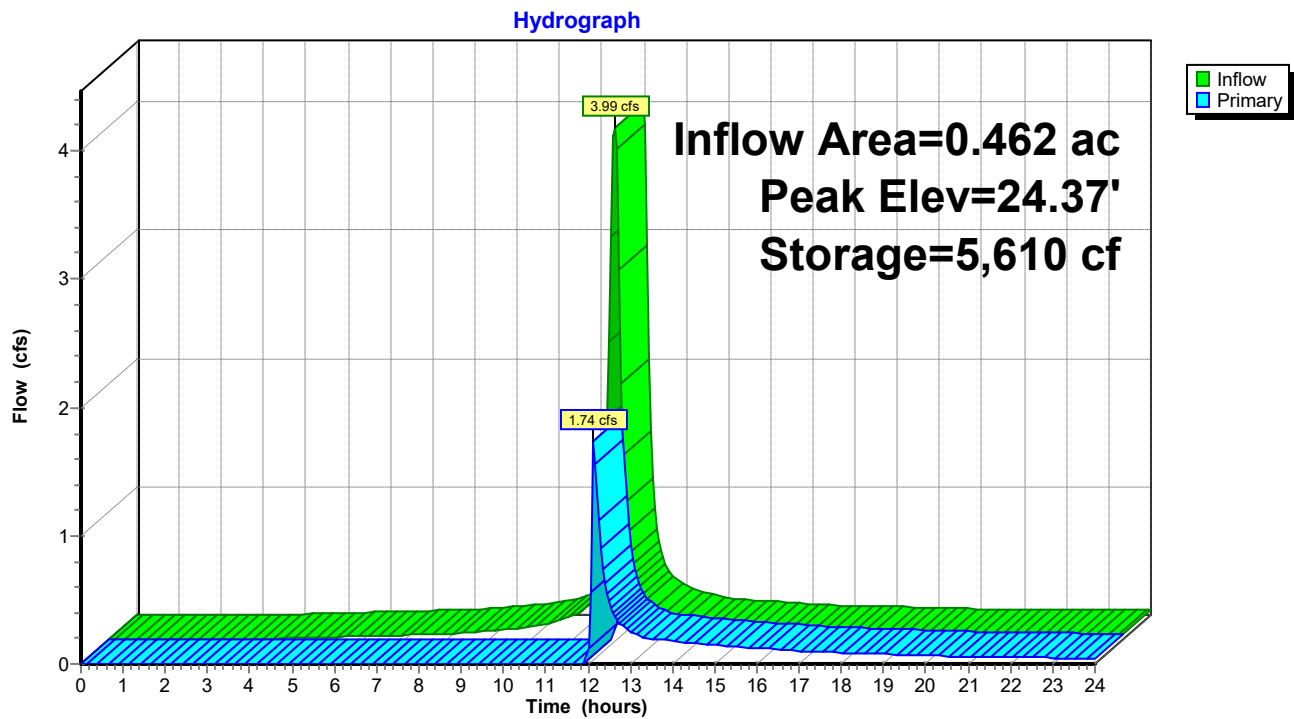
Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	12.0" Round 12" N-12 Culvert L= 69.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0014 ' S= 0.0014 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 196

Stage-Area-Storage for Pond MBR-1: Parking Lot Micro-Bioretenction

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,868	0	23.29	2,287	2,633
20.79	1,868	37	23.34	2,328	2,748
20.84	1,868	75	23.39	2,370	2,866
20.89	1,868	112	23.44	2,411	2,985
20.94	1,868	149	23.49	2,453	3,107
20.99	1,868	187	23.54	2,496	3,231
21.04	1,868	224	23.59	2,539	3,357
21.09	1,868	262	23.64	2,582	3,485
21.14	1,868	299	23.69	2,625	3,615
21.19	1,868	336	23.74	2,669	3,747
21.24	1,868	374	23.79	2,712	3,882
21.29	1,868	411	23.84	2,755	4,018
21.34	1,868	448	23.89	2,798	4,157
21.39	1,868	486	23.94	2,841	4,298
21.44	1,868	523	23.99	2,884	4,441
21.49	1,868	560	24.04	2,928	4,587
21.54	1,868	598	24.09	2,973	4,734
21.59	1,868	635	24.14	3,017	4,884
21.64	1,868	672	24.19	3,062	5,036
21.69	1,868	710	24.24	3,108	5,190
21.74	1,868	747	24.29	3,153	5,347
21.79	1,868	785	24.34	3,199	5,506
21.84	1,868	822	24.39	3,246	5,667
21.89	1,868	859	24.44	3,292	5,830
21.94	1,868	897	24.49	3,339	5,996
21.99	1,868	934	24.54	3,387	6,164
22.04	1,868	971	24.59	3,434	6,335
22.09	1,868	1,009	24.64	3,482	6,507
22.14	1,868	1,046	24.69	3,531	6,683
22.19	1,868	1,083	24.74	3,579	6,861
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 197

Summary for Pond MBR-10: Micro-Bioretenion #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

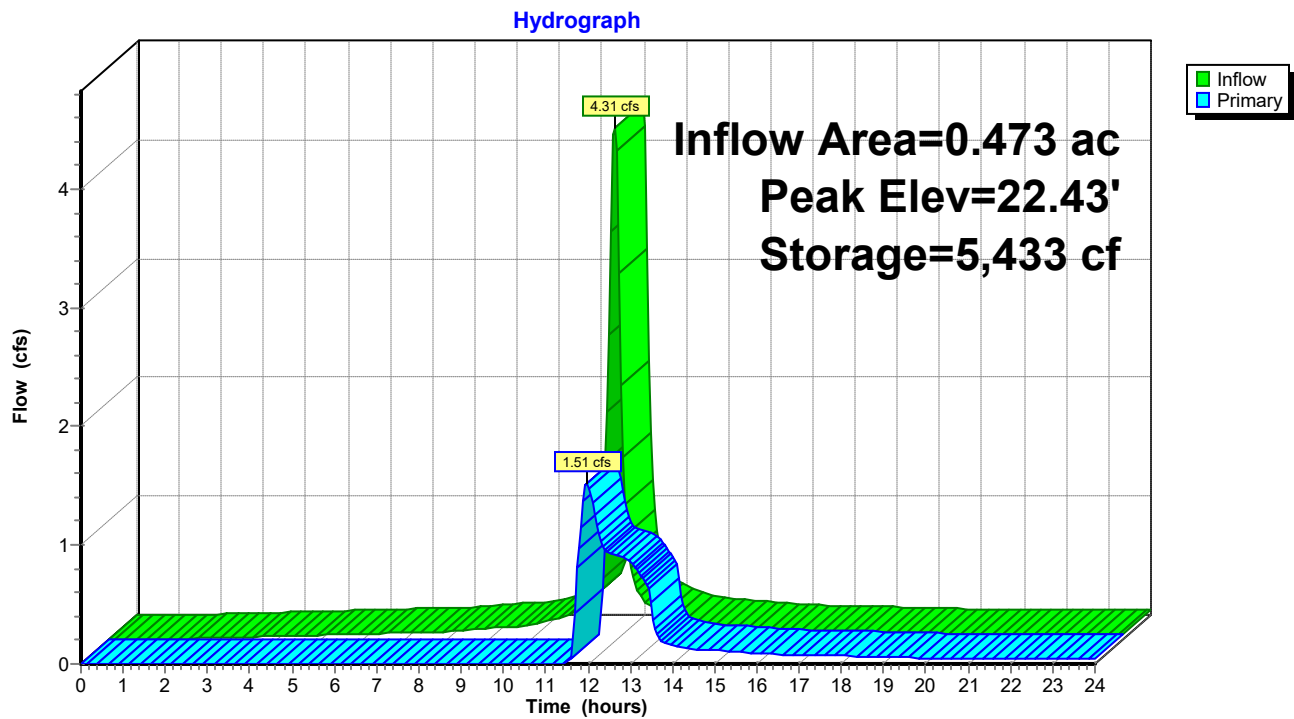
Plug-Flow detention time= 169.3 min calculated for 0.210 af (76% of inflow)

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-Bioretenion #10

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 199

Stage-Area-Storage for Pond MBR-10: Micro-Bioretenction #10

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 200

Summary for Pond MBR-11: Micro-Bioretenion #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)

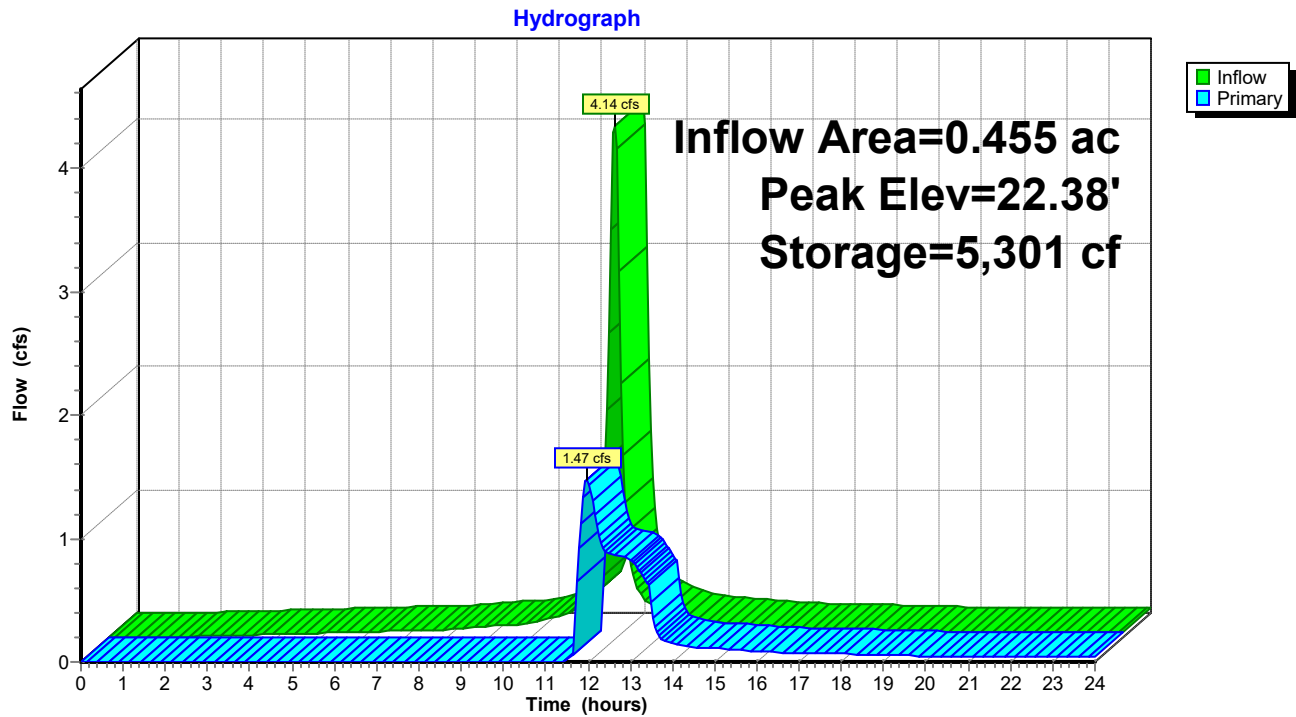
Center-of-Mass det. time= 86.0 min (841.6 - 755.6)

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 ' 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-Bioretenion #11



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 202

Stage-Area-Storage for Pond MBR-11: Micro-Bioretenction #11

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 203

Summary for Pond MBR-14: Future Office Building Micro-Bioretenction

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

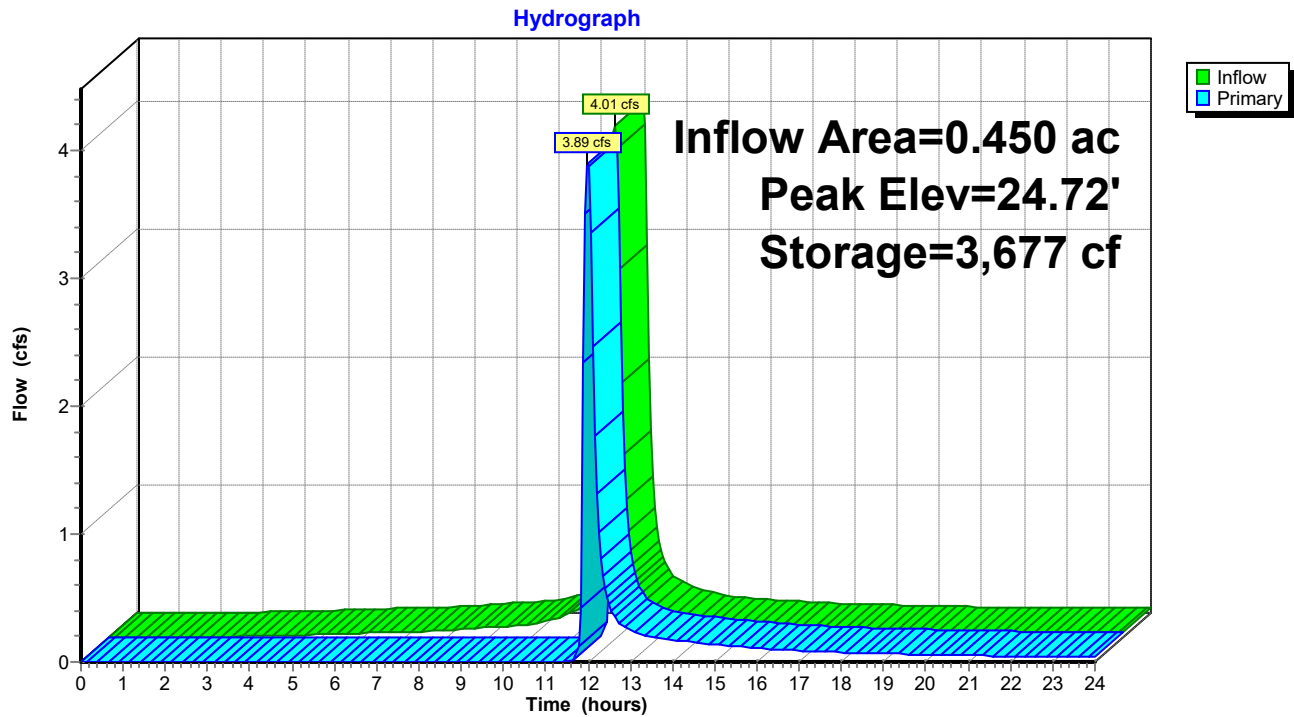
Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	12.0" Round 12" N-12 Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 1	24.50'	10.7' 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-Bioretenention

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 205

Stage-Area-Storage for Pond MBR-14: Future Office Building Micro-Bioretenion

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,099	0	23.54	1,407	1,565
21.04	1,099	22	23.59	1,437	1,636
21.09	1,099	44	23.64	1,468	1,709
21.14	1,099	66	23.69	1,499	1,783
21.19	1,099	88	23.74	1,530	1,859
21.24	1,099	110	23.79	1,562	1,936
21.29	1,099	132	23.84	1,594	2,015
21.34	1,099	154	23.89	1,627	2,095
21.39	1,099	176	23.94	1,659	2,178
21.44	1,099	198	23.99	1,692	2,261
21.49	1,099	220	24.04	1,725	2,347
21.54	1,099	242	24.09	1,757	2,434
21.59	1,099	264	24.14	1,790	2,523
21.64	1,099	286	24.19	1,822	2,613
21.69	1,099	308	24.24	1,856	2,705
21.74	1,099	330	24.29	1,889	2,798
21.79	1,099	352	24.34	1,923	2,894
21.84	1,099	374	24.39	1,957	2,991
21.89	1,099	396	24.44	1,991	3,089
21.94	1,099	418	24.49	2,026	3,190
21.99	1,099	440	24.54	2,061	3,292
22.04	1,099	462	24.59	2,096	3,396
22.09	1,099	484	24.64	2,132	3,502
22.14	1,099	506	24.69	2,168	3,609
22.19	1,099	528	24.74	2,204	3,718
22.24	1,099	549	24.79	2,240	3,830
22.29	1,099	571	24.84	2,277	3,942
22.34	1,099	593	24.89	2,314	4,057
22.39	1,099	615	24.94	2,352	4,174
22.44	1,099	637	24.99	2,389	4,292
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 206

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

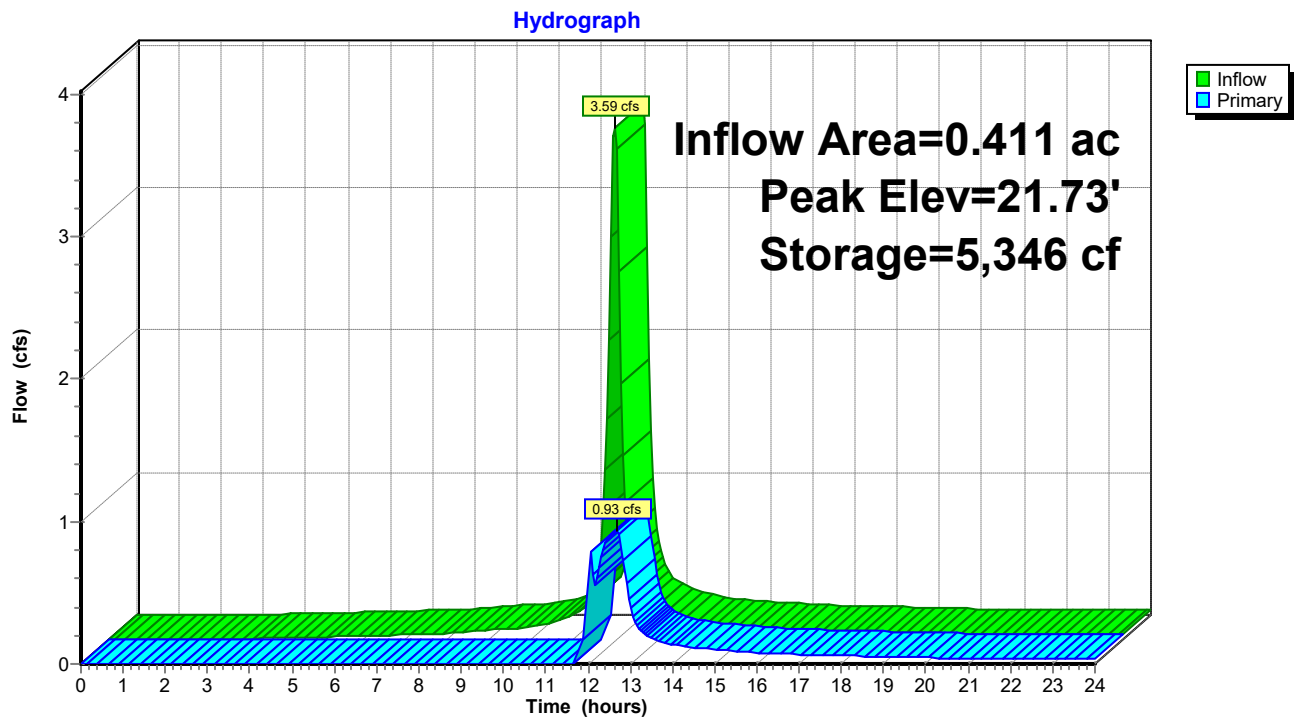
Plug-Flow detention time= 207.1 min calculated for 0.131 af (60% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 208

Stage-Area-Storage for Pond MBR-15: Access Road Microbioretention

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0	20.74	2,307	2,649
18.24	1,878	38	20.79	2,349	2,766
18.29	1,878	75	20.84	2,392	2,884
18.34	1,878	113	20.89	2,435	3,005
18.39	1,878	150	20.94	2,478	3,128
18.44	1,878	188	20.99	2,521	3,253
18.49	1,878	225	21.04	2,565	3,380
18.54	1,878	263	21.09	2,609	3,509
18.59	1,878	300	21.14	2,654	3,641
18.64	1,878	338	21.19	2,699	3,775
18.69	1,878	376	21.24	2,743	3,911
18.74	1,878	413	21.29	2,786	4,049
18.79	1,878	451	21.34	2,830	4,189
18.84	1,878	488	21.39	2,874	4,332
18.89	1,878	526	21.44	2,919	4,477
18.94	1,878	563	21.49	2,964	4,624
18.99	1,878	601	21.54	3,009	4,773
19.04	1,878	639	21.59	3,055	4,925
19.09	1,878	676	21.64	3,101	5,079
19.14	1,878	714	21.69	3,147	5,235
19.19	1,878	751	21.74	3,194	5,393
19.24	1,878	789	21.79	3,241	5,554
19.29	1,878	826	21.84	3,288	5,717
19.34	1,878	864	21.89	3,336	5,883
19.39	1,878	901	21.94	3,384	6,051
19.44	1,878	939	21.99	3,432	6,221
19.49	1,878	977	22.04	3,481	6,394
19.54	1,878	1,014	22.09	3,530	6,569
19.59	1,878	1,052	22.14	3,579	6,747
19.64	1,878	1,089	22.19	3,629	6,927
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 209

Summary for Pond MBR-2: Parking Lot Micro-Bioretenion

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

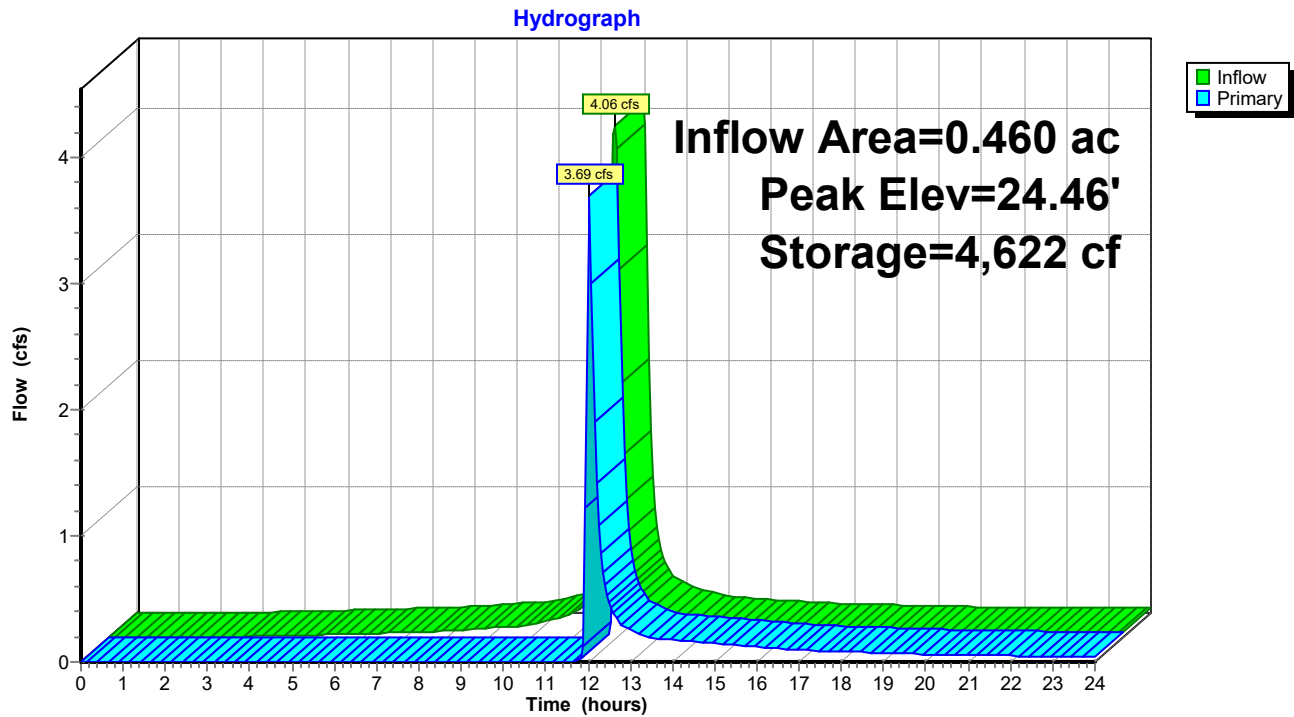
Device	Routing	Invert	Outlet Devices
#1	Primary	20.75'	12.0" Round 12" N-12 Culvert L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 20.75' / 20.65' S= 0.0008 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	23.75'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 1	24.25'	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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 211

Stage-Area-Storage for Pond MBR-2: Parking Lot Micro-Bioretenction

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.74	1,385	0	23.29	1,777	1,973
20.79	1,385	28	23.34	1,816	2,063
20.84	1,385	55	23.39	1,855	2,155
20.89	1,385	83	23.44	1,895	2,249
20.94	1,385	111	23.49	1,935	2,345
20.99	1,385	139	23.54	1,975	2,442
21.04	1,385	166	23.59	2,016	2,542
21.09	1,385	194	23.64	2,058	2,644
21.14	1,385	222	23.69	2,099	2,748
21.19	1,385	249	23.74	2,142	2,854
21.24	1,385	277	23.79	2,182	2,962
21.29	1,385	305	23.84	2,222	3,072
21.34	1,385	332	23.89	2,262	3,184
21.39	1,385	360	23.94	2,303	3,298
21.44	1,385	388	23.99	2,344	3,415
21.49	1,385	416	24.04	2,386	3,533
21.54	1,385	443	24.09	2,428	3,653
21.59	1,385	471	24.14	2,470	3,776
21.64	1,385	499	24.19	2,513	3,900
21.69	1,385	526	24.24	2,556	4,027
21.74	1,385	554	24.29	2,599	4,156
21.79	1,385	582	24.34	2,643	4,287
21.84	1,385	609	24.39	2,687	4,420
21.89	1,385	637	24.44	2,731	4,555
21.94	1,385	665	24.49	2,776	4,693
21.99	1,385	693	24.54	2,821	4,833
22.04	1,385	720	24.59	2,867	4,975
22.09	1,385	748	24.64	2,913	5,120
22.14	1,385	776	24.69	2,959	5,267
22.19	1,385	803	24.74	3,006	5,416
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 212

Summary for Pond MBR-3: Office Building Micro-Bioretenion

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

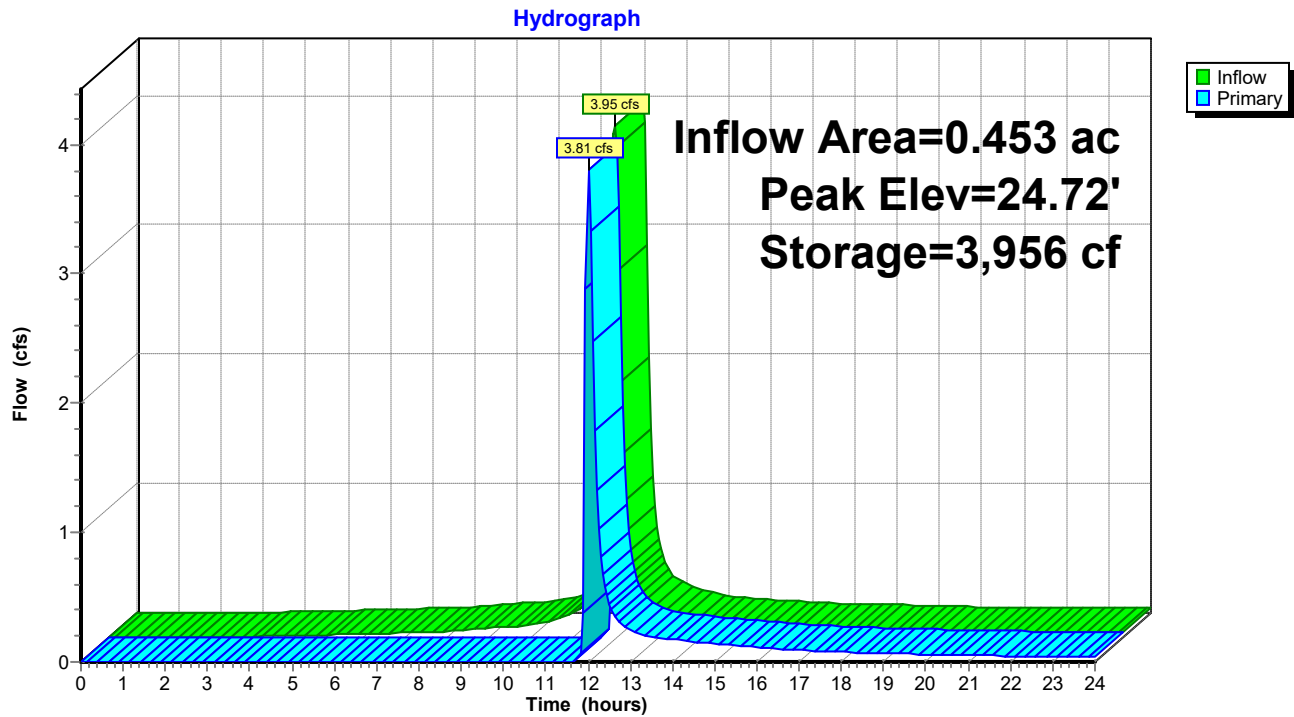
Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	12.0" Round 12" N-12 Culvert L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.31' S= 0.0197 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 1	24.50'	10.7' 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-Bioretenction

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 214

Stage-Area-Storage for Pond MBR-3: Office Building Micro-Bioretenion

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,193	0	23.54	1,518	1,697
21.04	1,193	24	23.59	1,550	1,773
21.09	1,193	48	23.64	1,583	1,852
21.14	1,193	72	23.69	1,615	1,932
21.19	1,193	95	23.74	1,649	2,013
21.24	1,193	119	23.79	1,682	2,096
21.29	1,193	143	23.84	1,716	2,181
21.34	1,193	167	23.89	1,750	2,268
21.39	1,193	191	23.94	1,784	2,356
21.44	1,193	215	23.99	1,819	2,446
21.49	1,193	239	24.04	1,853	2,538
21.54	1,193	262	24.09	1,887	2,632
21.59	1,193	286	24.14	1,921	2,727
21.64	1,193	310	24.19	1,956	2,824
21.69	1,193	334	24.24	1,991	2,923
21.74	1,193	358	24.29	2,026	3,023
21.79	1,193	382	24.34	2,061	3,125
21.84	1,193	406	24.39	2,097	3,229
21.89	1,193	429	24.44	2,133	3,335
21.94	1,193	453	24.49	2,170	3,442
21.99	1,193	477	24.54	2,206	3,552
22.04	1,193	501	24.59	2,244	3,663
22.09	1,193	525	24.64	2,281	3,776
22.14	1,193	549	24.69	2,319	3,891
22.19	1,193	573	24.74	2,357	4,008
22.24	1,193	597	24.79	2,395	4,127
22.29	1,193	620	24.84	2,433	4,248
22.34	1,193	644	24.89	2,472	4,370
22.39	1,193	668	24.94	2,512	4,495
22.44	1,193	692	24.99	2,551	4,621
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 215

Summary for Pond MBR-4: Micro-Bioretenion #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)

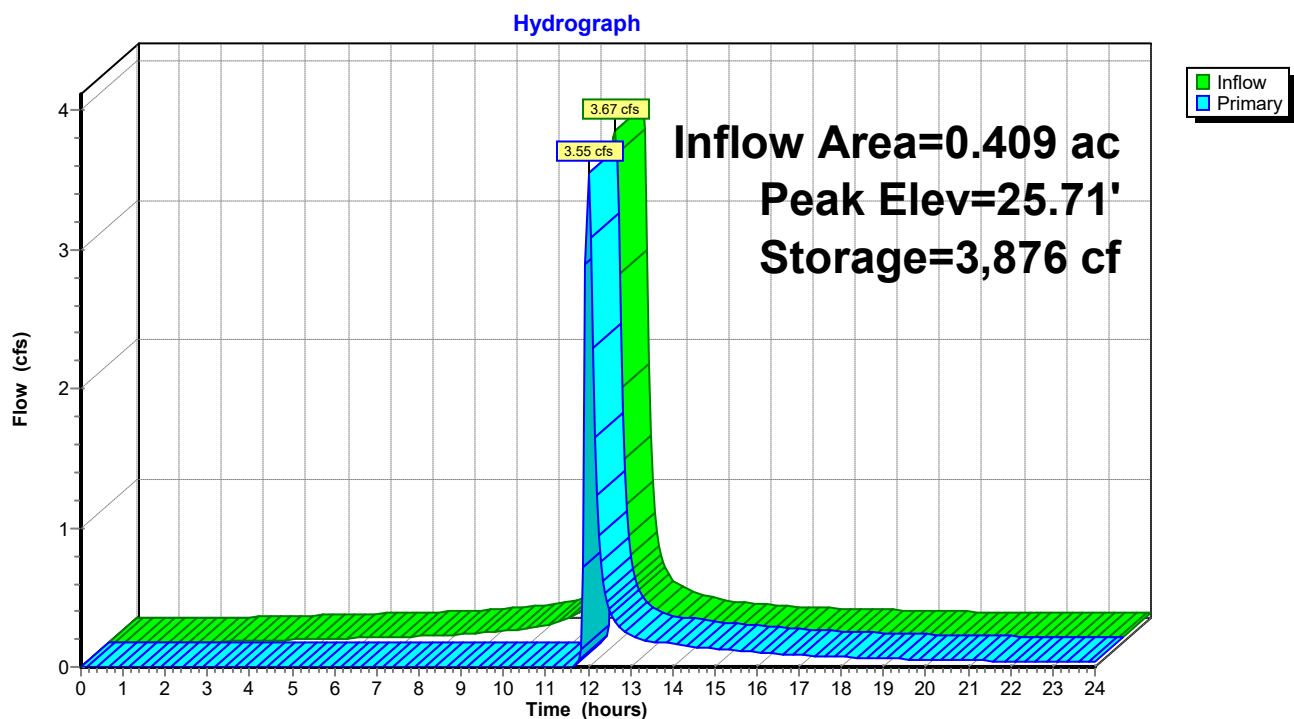
Center-of-Mass det. time= 94.4 min (858.6 - 764.2)

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 217

Stage-Area-Storage for Pond MBR-4: Micro-Bioretenion #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
21.99	1,196	0	24.54	1,500	1,695
22.04	1,196	24	24.59	1,530	1,771
22.09	1,196	48	24.64	1,560	1,848
22.14	1,196	72	24.69	1,590	1,927
22.19	1,196	96	24.74	1,621	2,007
22.24	1,196	120	24.79	1,652	2,089
22.29	1,196	144	24.84	1,684	2,172
22.34	1,196	167	24.89	1,715	2,257
22.39	1,196	191	24.94	1,747	2,344
22.44	1,196	215	24.99	1,780	2,432
22.49	1,196	239	25.04	1,811	2,522
22.54	1,196	263	25.09	1,843	2,613
22.59	1,196	287	25.14	1,876	2,706
22.64	1,196	311	25.19	1,908	2,801
22.69	1,196	335	25.24	1,941	2,897
22.74	1,196	359	25.29	1,974	2,995
22.79	1,196	383	25.34	2,008	3,094
22.84	1,196	407	25.39	2,041	3,196
22.89	1,196	431	25.44	2,075	3,299
22.94	1,196	454	25.49	2,110	3,403
22.99	1,196	478	25.54	2,144	3,510
23.04	1,196	502	25.59	2,179	3,618
23.09	1,196	526	25.64	2,214	3,727
23.14	1,196	550	25.69	2,249	3,839
23.19	1,196	574	25.74	2,285	3,952
23.24	1,196	598	25.79	2,321	4,068
23.29	1,196	622	25.84	2,357	4,185
23.34	1,196	646	25.89	2,394	4,303
23.39	1,196	670	25.94	2,430	4,424
23.44	1,196	694	25.99	2,468	4,546
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 218

Summary for Pond MBR-5: Access Road Micro-Bioretenion #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

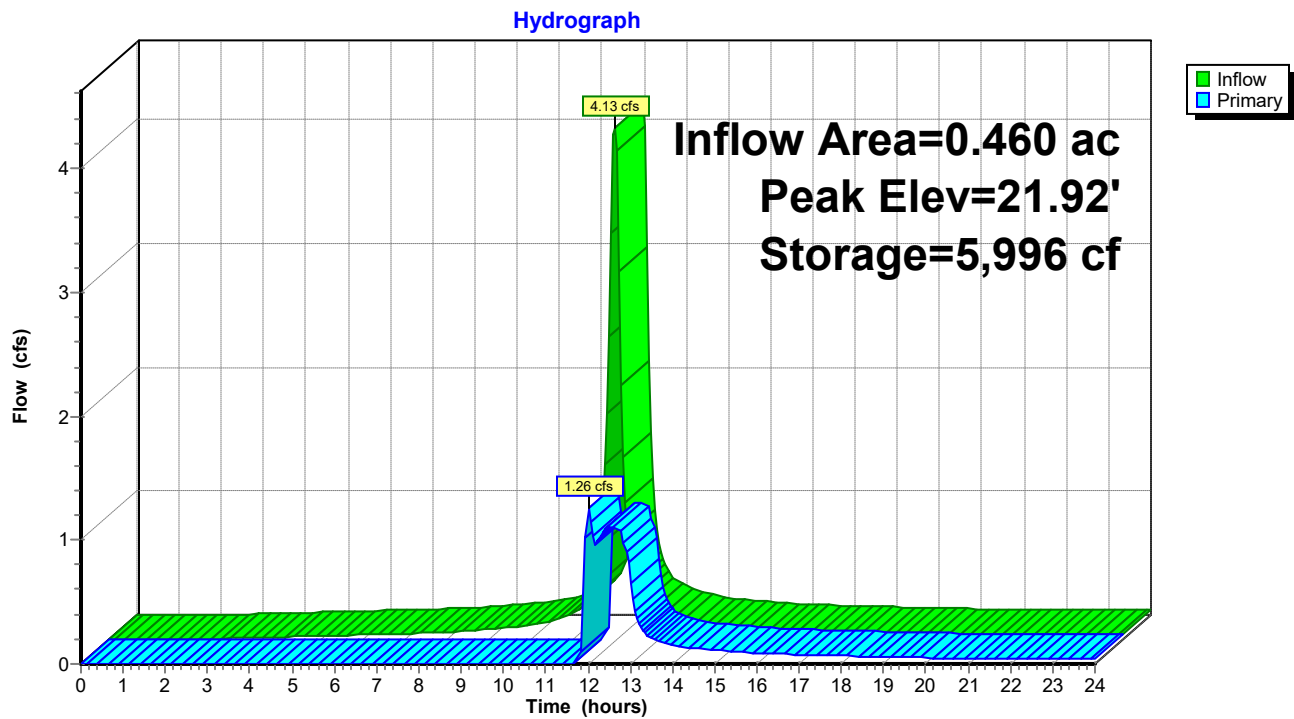
Plug-Flow detention time= 194.6 min calculated for 0.170 af (66% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 220

Stage-Area-Storage for Pond MBR-5: Access Road Micro-Bioretenion #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
18.19	1,878	0	20.74	2,307	2,649
18.24	1,878	38	20.79	2,349	2,766
18.29	1,878	75	20.84	2,392	2,884
18.34	1,878	113	20.89	2,435	3,005
18.39	1,878	150	20.94	2,478	3,128
18.44	1,878	188	20.99	2,521	3,253
18.49	1,878	225	21.04	2,565	3,380
18.54	1,878	263	21.09	2,609	3,509
18.59	1,878	300	21.14	2,654	3,641
18.64	1,878	338	21.19	2,699	3,775
18.69	1,878	376	21.24	2,743	3,911
18.74	1,878	413	21.29	2,786	4,049
18.79	1,878	451	21.34	2,830	4,189
18.84	1,878	488	21.39	2,874	4,332
18.89	1,878	526	21.44	2,919	4,477
18.94	1,878	563	21.49	2,964	4,624
18.99	1,878	601	21.54	3,009	4,773
19.04	1,878	639	21.59	3,055	4,925
19.09	1,878	676	21.64	3,101	5,079
19.14	1,878	714	21.69	3,147	5,235
19.19	1,878	751	21.74	3,194	5,393
19.24	1,878	789	21.79	3,241	5,554
19.29	1,878	826	21.84	3,288	5,717
19.34	1,878	864	21.89	3,336	5,883
19.39	1,878	901	21.94	3,384	6,051
19.44	1,878	939	21.99	3,432	6,221
19.49	1,878	977	22.04	3,481	6,394
19.54	1,878	1,014	22.09	3,530	6,569
19.59	1,878	1,052	22.14	3,579	6,747
19.64	1,878	1,089	22.19	3,629	6,927
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 221

Summary for Pond MBR-6: Micro-Bioretenion #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

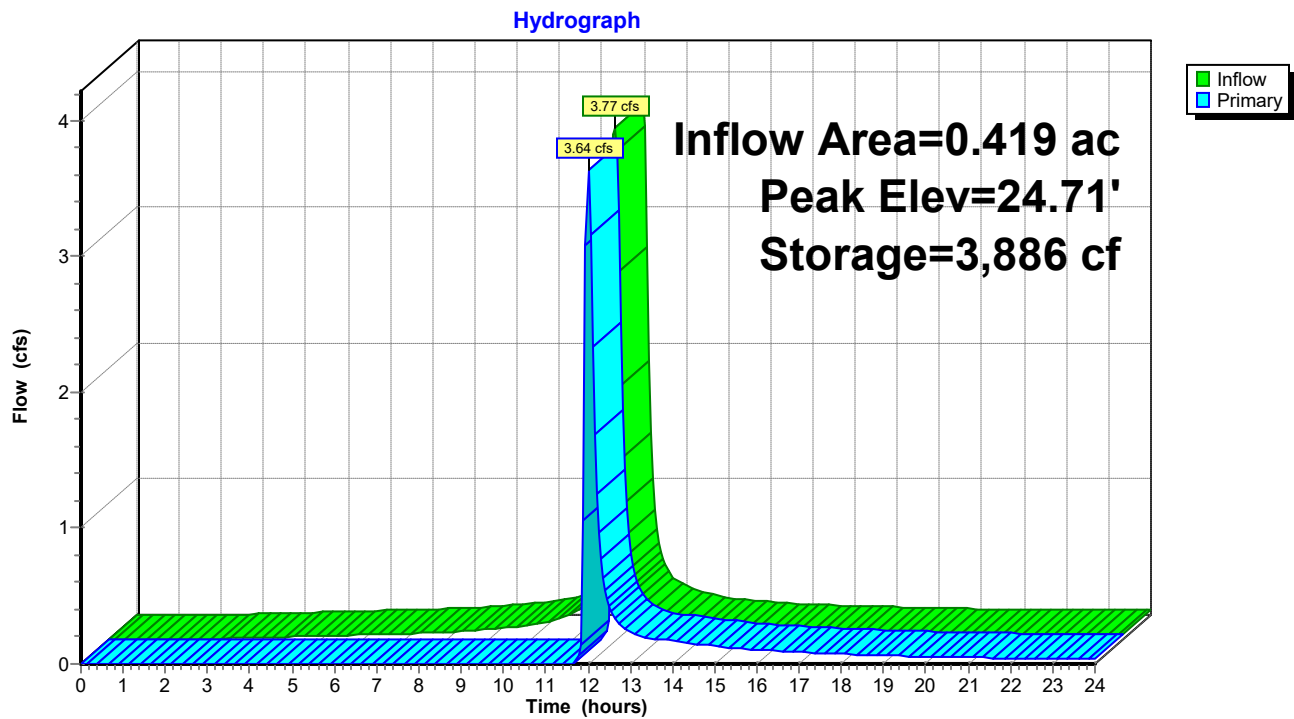
Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	12.0" Round 12" N-12 Culvert L= 26.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.00' / 20.45' S= 0.0205 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.00'	2.0" W x 6.0" H Vert. 2" Notch C= 0.600
#3	Device 1	24.50'	10.7' 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-Bioretenention #6

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 223

Stage-Area-Storage for Pond MBR-6: Micro-Bioretenion #6

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
20.99	1,196	0	23.54	1,500	1,695
21.04	1,196	24	23.59	1,530	1,771
21.09	1,196	48	23.64	1,560	1,848
21.14	1,196	72	23.69	1,590	1,927
21.19	1,196	96	23.74	1,621	2,007
21.24	1,196	120	23.79	1,652	2,089
21.29	1,196	144	23.84	1,684	2,172
21.34	1,196	167	23.89	1,715	2,257
21.39	1,196	191	23.94	1,747	2,344
21.44	1,196	215	23.99	1,780	2,432
21.49	1,196	239	24.04	1,811	2,522
21.54	1,196	263	24.09	1,843	2,613
21.59	1,196	287	24.14	1,876	2,706
21.64	1,196	311	24.19	1,908	2,801
21.69	1,196	335	24.24	1,941	2,897
21.74	1,196	359	24.29	1,974	2,995
21.79	1,196	383	24.34	2,008	3,094
21.84	1,196	407	24.39	2,041	3,196
21.89	1,196	431	24.44	2,075	3,299
21.94	1,196	454	24.49	2,110	3,403
21.99	1,196	478	24.54	2,144	3,510
22.04	1,196	502	24.59	2,179	3,618
22.09	1,196	526	24.64	2,214	3,727
22.14	1,196	550	24.69	2,249	3,839
22.19	1,196	574	24.74	2,285	3,952
22.24	1,196	598	24.79	2,321	4,068
22.29	1,196	622	24.84	2,357	4,185
22.34	1,196	646	24.89	2,394	4,303
22.39	1,196	670	24.94	2,430	4,424
22.44	1,196	694	24.99	2,468	4,546
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 224

Summary for Pond MBR-7: Micro-Bioretenention #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)

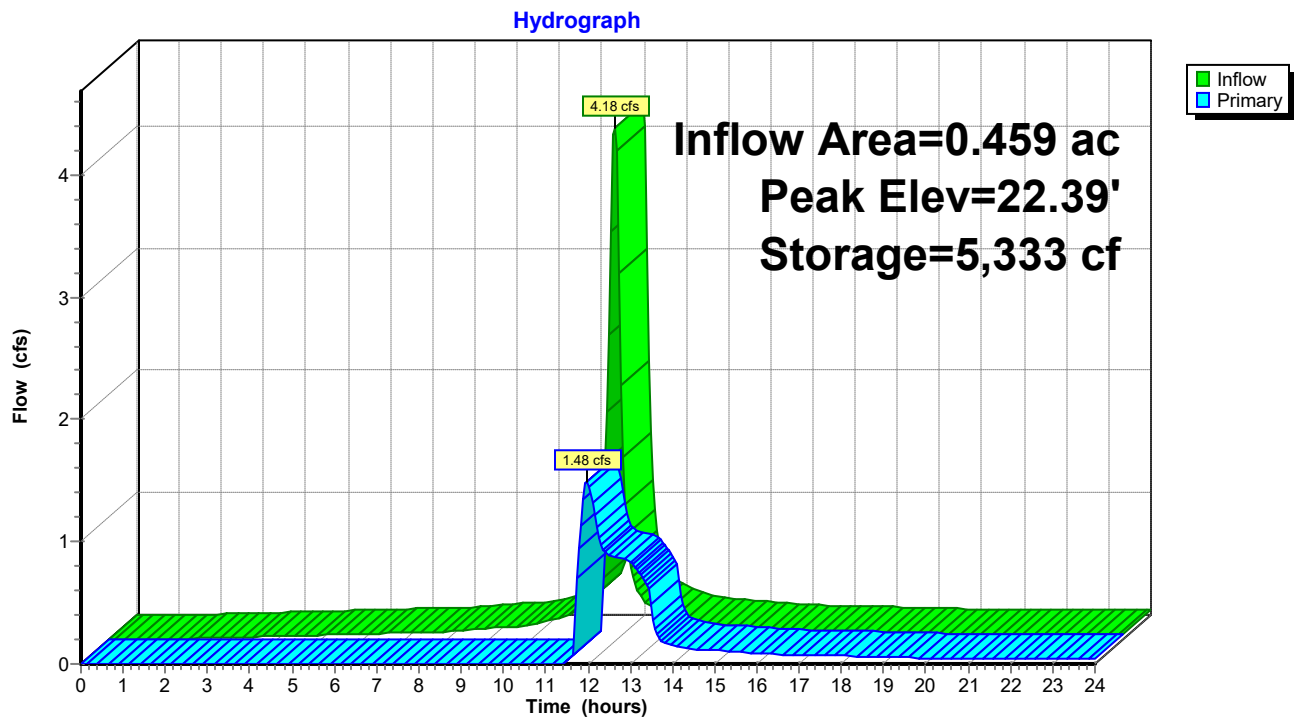
Center-of-Mass det. time= 85.6 min (841.2 - 755.6)

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 ' 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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 226

Stage-Area-Storage for Pond MBR-7: Micro-Bioretenction #7

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 227

Summary for Pond MBR-8: Micro-Bioretenion #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

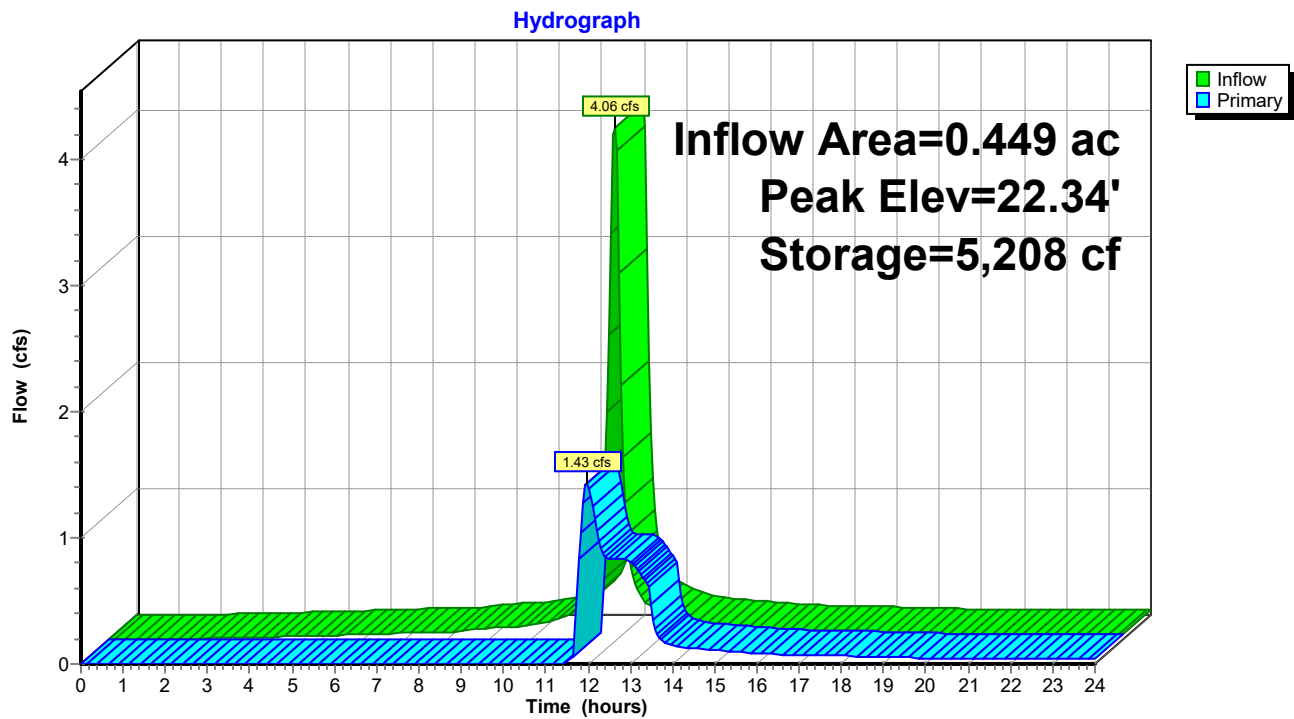
Plug-Flow detention time= 172.8 min calculated for 0.192 af (75% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 229

Stage-Area-Storage for Pond MBR-8: Micro-Bioretenction #8

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 230

Summary for Pond MBR-9: Micro-Bioretenion #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

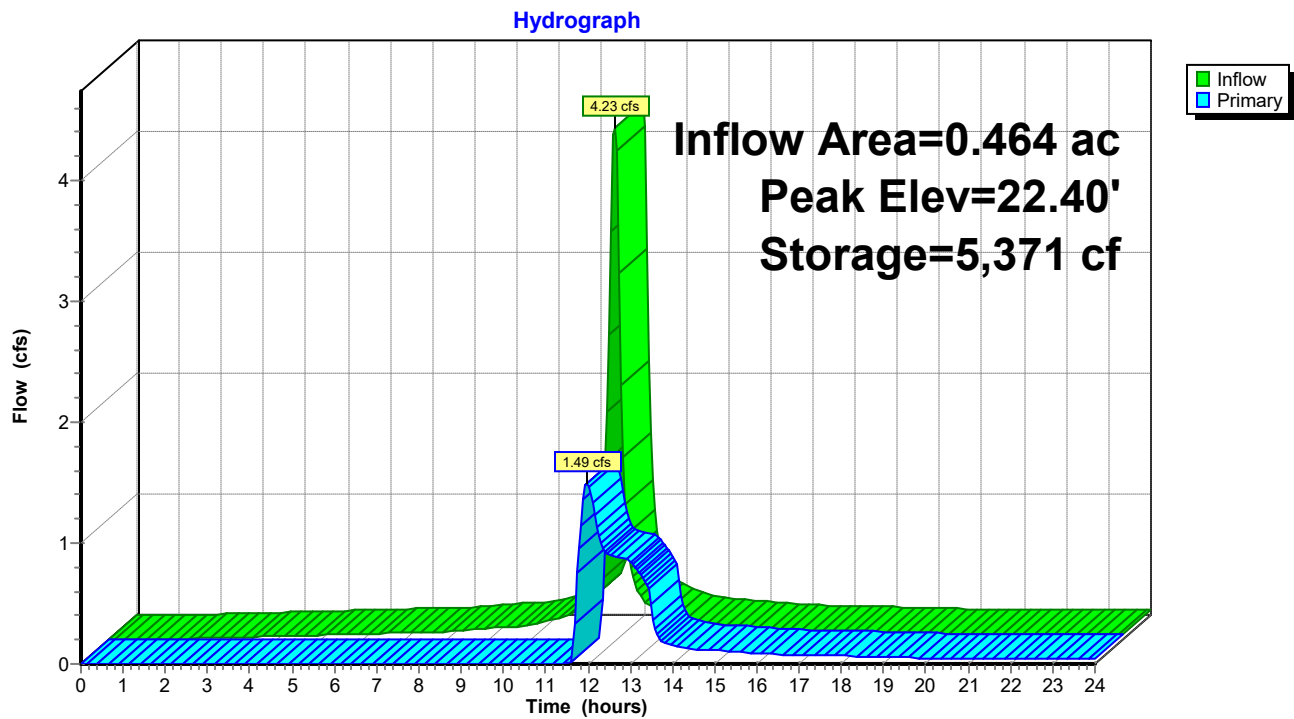
Plug-Flow detention time= 171.7 min calculated for 0.205 af (76% of inflow)

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 ' 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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 232

Stage-Area-Storage for Pond MBR-9: Micro-Bioretenction #9

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.19	1,136	0	22.29	2,491	5,086
17.29	1,136	45	22.39	2,567	5,338
17.39	1,136	91	22.49	2,643	5,599
17.49	1,136	136	22.59	2,721	5,867
17.59	1,136	182	22.69	2,800	6,143
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			

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 233

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

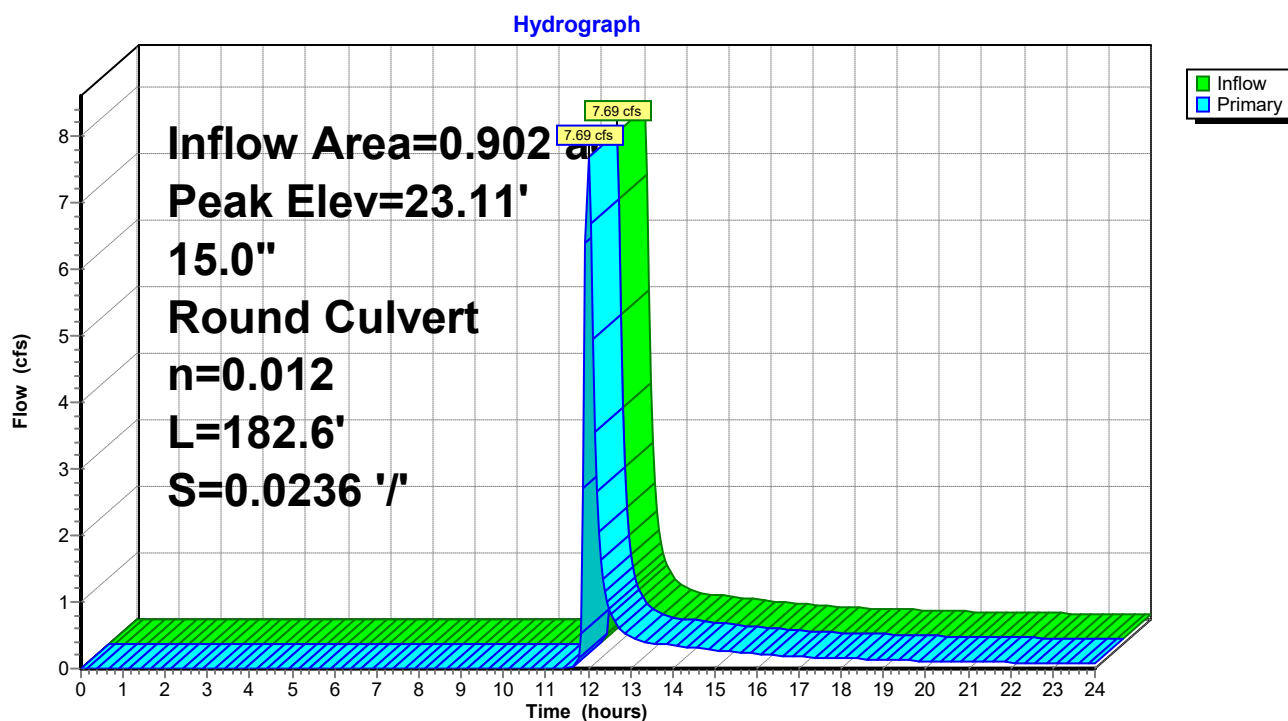
Peak Elev= 23.11' @ 12.00 hrs

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 234

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

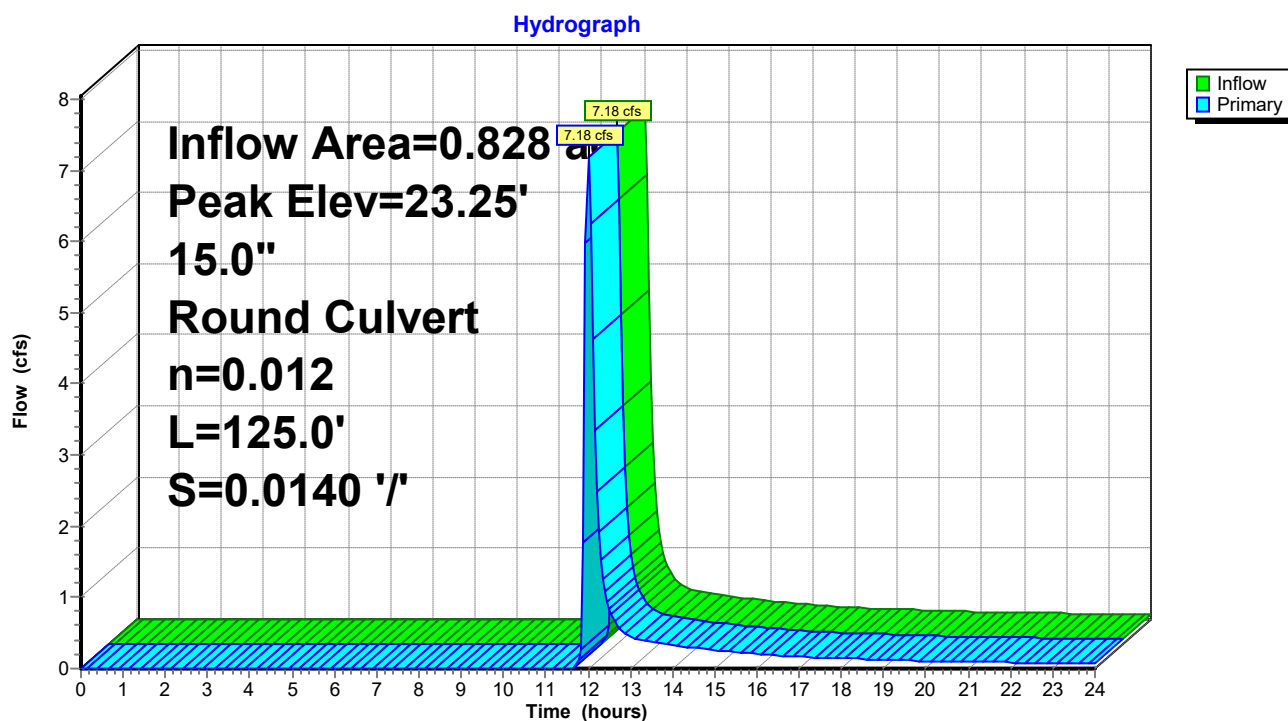
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 236

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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 237

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)

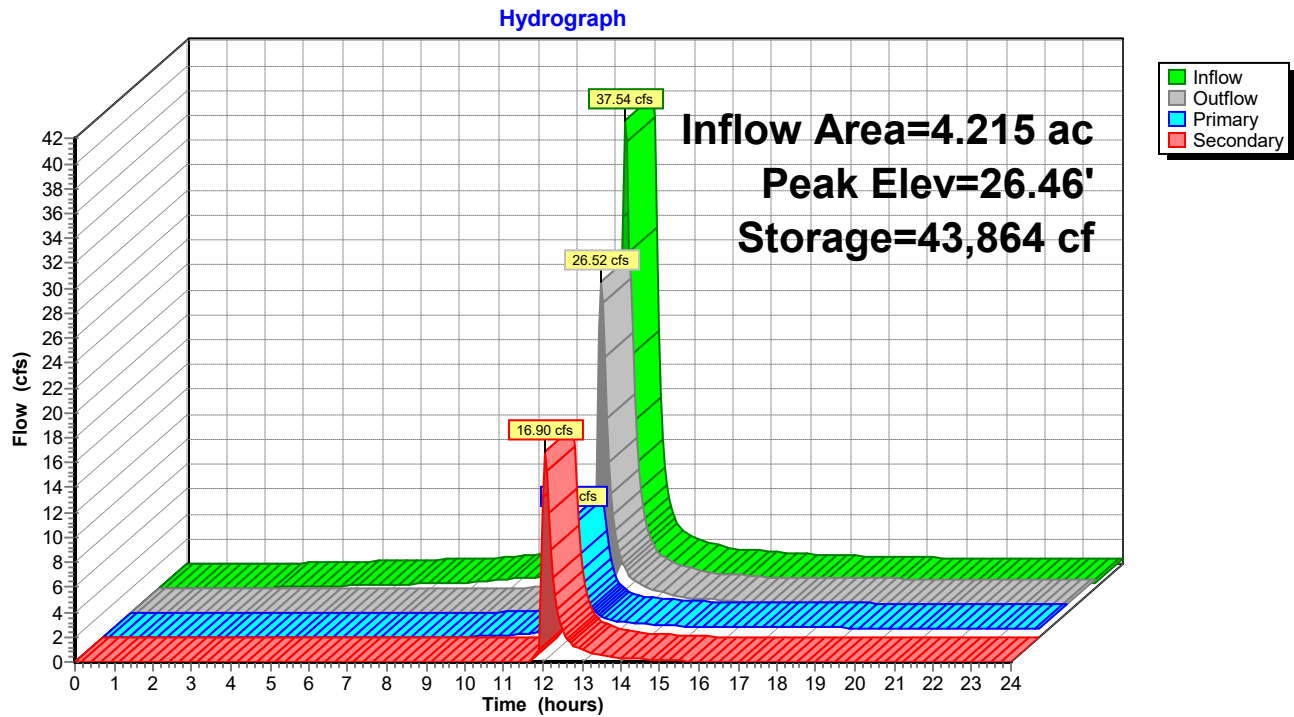
↑ **1=18" N-12 Culvert** (Barrel Controls 9.60 cfs @ 5.43 fps)

↑ **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

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

Page 239

Stage-Area-Storage for Pond SGW-1: (Future) Submerged Gravel Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
23.50	11,511	0	26.05	17,332	36,523
23.55	11,614	578	26.10	17,458	37,393
23.60	11,717	1,161	26.15	17,585	38,269
23.65	11,821	1,750	26.20	17,712	39,151
23.70	11,925	2,343	26.25	17,839	40,040
23.75	12,029	2,942	26.30	17,967	40,935
23.80	12,134	3,546	26.35	18,095	41,837
23.85	12,240	4,156	26.40	18,224	42,745
23.90	12,346	4,770	26.45	18,353	43,659
23.95	12,452	5,390	26.50	18,483	44,580
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			

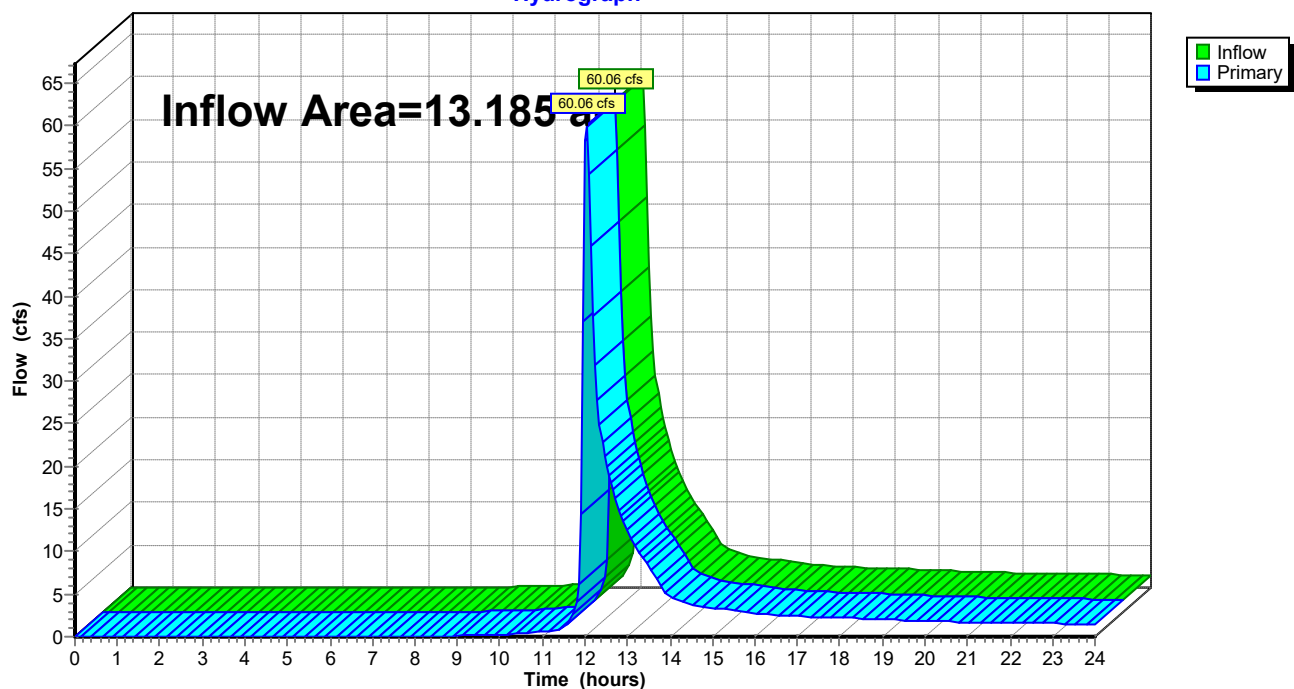
Summary for Link 1L: POST

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

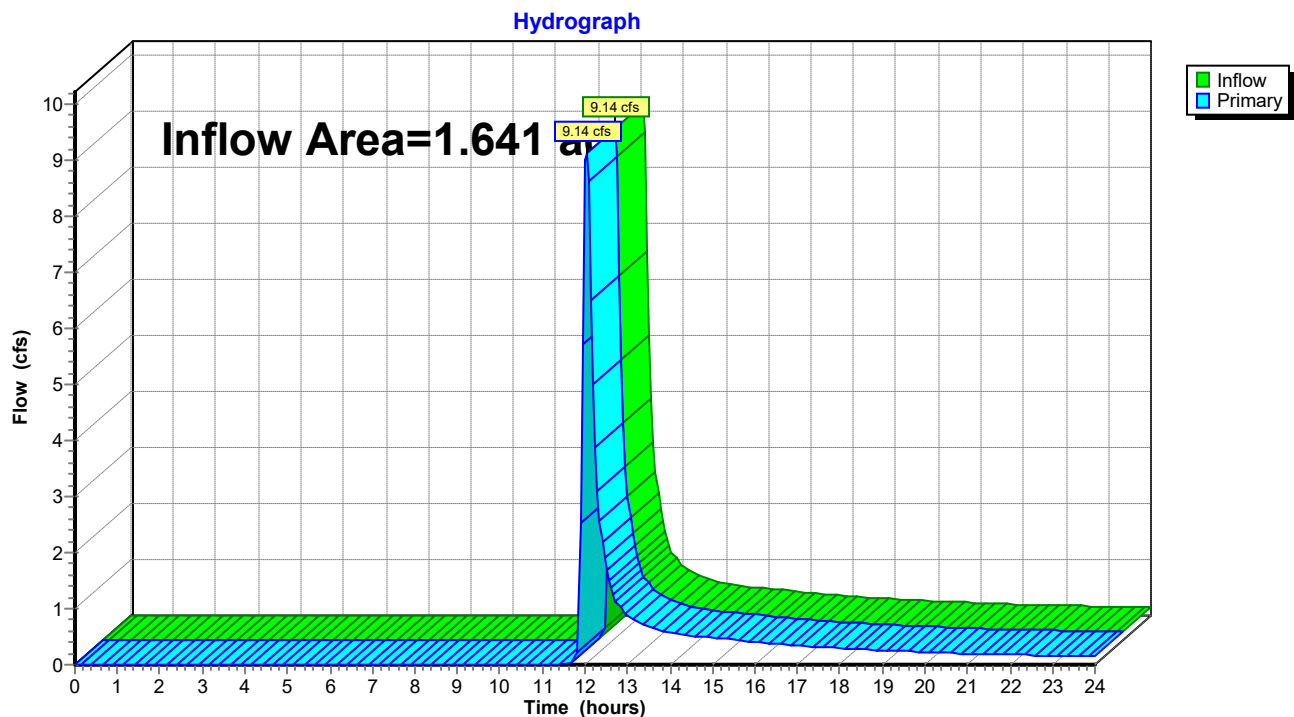
Hydrograph



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

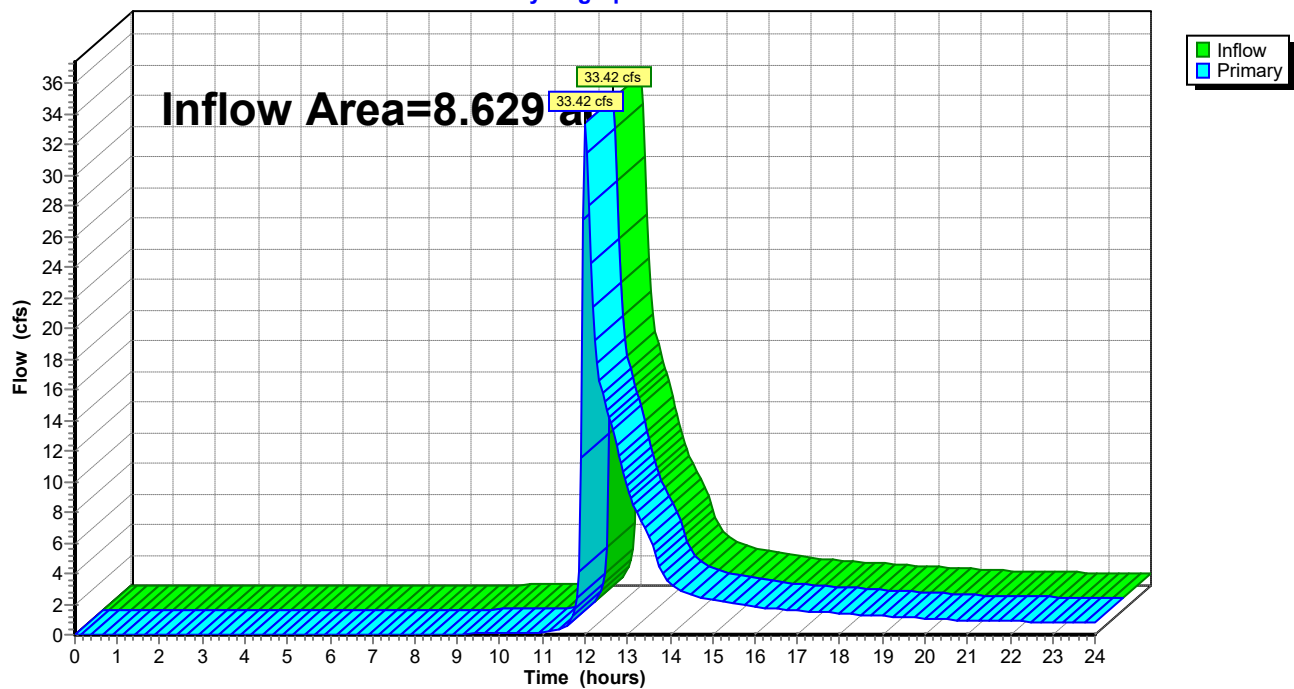
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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**Hydrograph**

230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

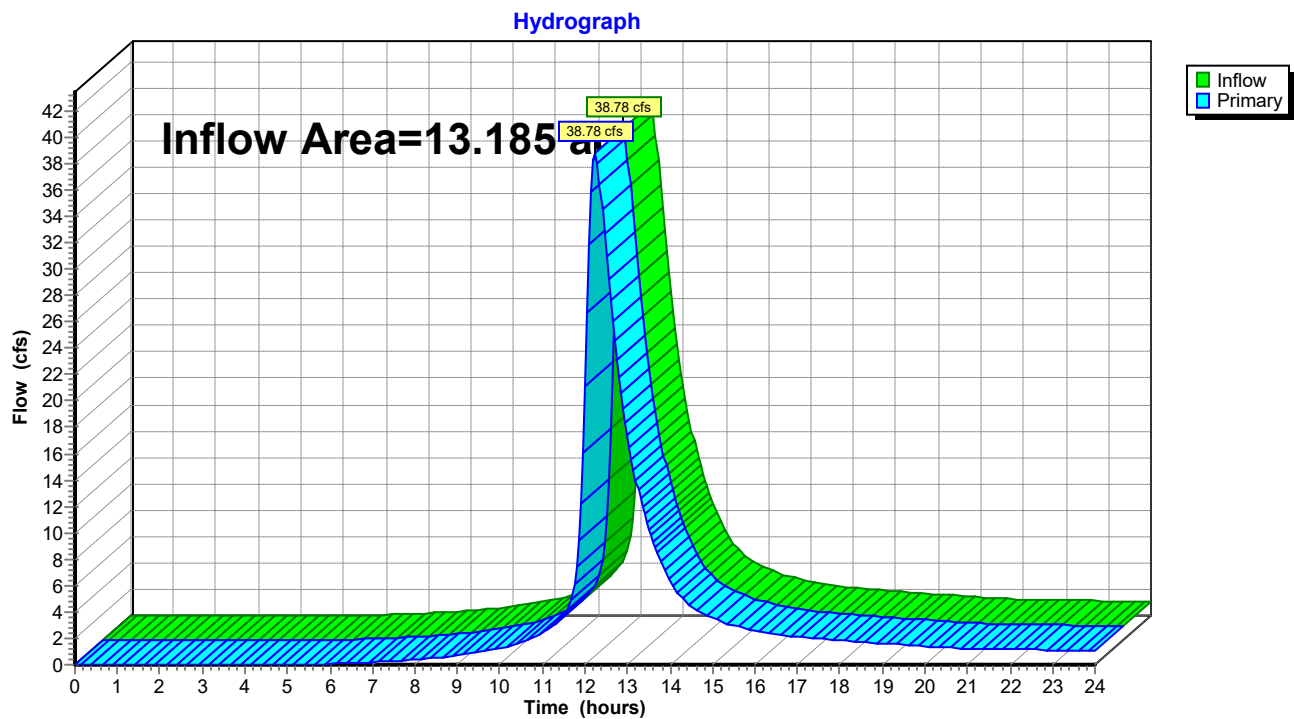
Page 243

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



230407-Vetagro

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230407 - Vetagro

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/30/2023

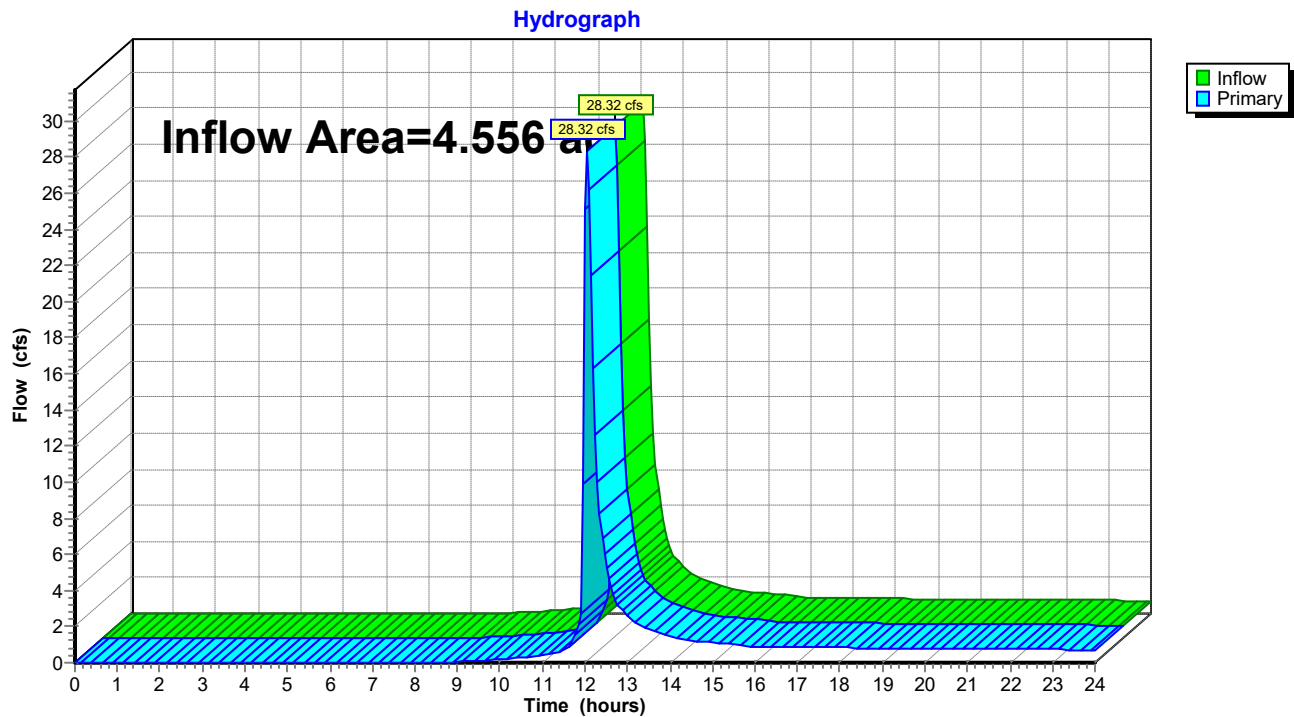
Page 244

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

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

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

REC FEE 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.

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.

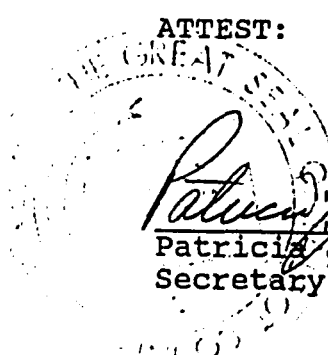
LIBERO 743 FOLIO 703

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

AS WITNESS the hand and seal of the Grantor.

ATTEST:

TALBOT COUNTY, MARYLAND, a
Maryland political subdivision

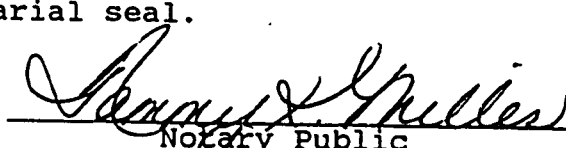

Patricia J. Rasinski,
Secretary

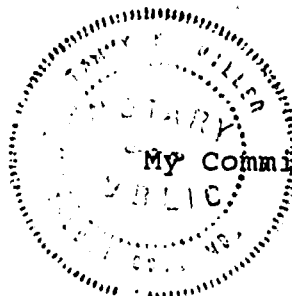
By:  (SEAL)
Clinton S. Bradley, III,
President, Talbot County Council

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. Nolan, Attorney At Law

TJKMLS\AJM\AIRC02.DEE

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

LIBERO 743 FOLIO 705

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 (4)

DATE

1/26/1930

THIS IS TO CERTIFY THAT THE PROPERTY DESCRIBED
HEREIN HAS BEEN TRANSFERRED ON THE APPROPRIATE
RECORDS OF TALBOT COUNTY.

HENRY V. TRIPPE, JR.
SUPERVISOR OF ASSESSMENTS

PER BLENDA W. ARMISTEAD, FIN. OFFICER (4)

1/26/1930

LIBERO 743 FOLIO 706



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

RECEIVED
NOV 01 2023
TOWN OF EASTON

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 Reference: 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 Required Y ☒ N ☐

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 11/13/2023

Revised 02-2019



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

RECEIVED
NOV 01 2023
TOWN OF EASTON

Site Plan, PUD, Planned Healthcare Application

Application Type

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

Subdivision Information

Name
Original Property Size
Telephone No. Email

Site Plan Information

Property Size Total of Parcels: 7538756
Structure's Floor Area Structure's Square Feet
Area of Disturbance Number of Dwelling Units

Property Information

Address
Tax Map
Deed Reference: Liber Folio
Plat Reference: Liber Folio
Base Zoning District Historic Y ☒ N ☐ Planned Redevelopment Y ☒ N ☐
Source of Electricity

Owner

Name
Mailing Address
Telephone No. Email

Applicant or Agent

Name
Mailing Address
Telephone No. Email

Surveyor / Engineer

Name License No. Expiration Date
Mailing Address
Telephone No. Email

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		
Sketch Approval Date	Project No.	ESDR 23-24
Prelim/Dev. Approval Date	Application No.	2023-996
Final Approval Date	Sketch Fee Paid	
Recordation Date	Develop. Fee Paid	
Historic District Commission Approval Date: 10/09/2023		<i>Revised 02-2019</i>



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

RECEIVED
NOV 01 2023
TOWN OF EASTON

Subdivision & Property Line Adjustment Application

Application Type

Subdivision ☐ Minor Subdivision ☐ Lot Line Revision ☒

Subdivision Information

Name
Property Size
Number of Lots Proposed

Property Information

Address
Tax Map Grid Parcel Lot
Deed Reference: Liber Folio
Plat Reference: Liber Folio
Zoning District Planned Redevelopment Y ☒ N ☐ Historic District Y ☒ N ☐
Source of Electricity

Owner

Name
Mailing Address
Telephone No. Email

Surveyor / Engineer

Name License No. Expiration Date
Mailing Address
Telephone No. Email

Applicant or Agent

Name
Mailing Address
Telephone No. Email

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		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	
HDC Approval Date: 10/09/2023		Revised 02-2019	



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

RECEIVED
NOV 01 2023
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)		
Project Description	& 108 North St., Easton, MD 21601 (parcel 753)		
	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):

One Side		Both Sides		Yes	No
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:

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		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
Tax Map:	103	Grid		Parcel	756
Maryland Grid:	NAD27	North American Datum Year	1927	Grid Block	D5
District / Account Number	01-011960	Sub-watershed No.	2130403	Lot	1
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. Wayne 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 or 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

Sketch Approval Date

Prelim/Dev. Approval Date

Final Approval Date

Recordation Date

HDC Approval Date: 10/09/2023

Project No.

Application No.

Sketch Fee Paid

Develop. Fee Paid

ESDR 23-24

2023-996

Revised 02-2019



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, LLC¹, 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 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.



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.



1 FIRST FLOOR
1/8" = 1'-0"

UNIT MATRIX					
	AREA	1ST	2ND	3RD	TOTAL
3 BED TYPE B	1,231 S.F.	2	2	0	4 (13%)
2 BED TYPE A	1,084 S.F.	1	0	0	1 (3%)
2 BED TYPE B	1,084 S.F.	3	4	6	14 (44%)
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



FOR REVIEW
ONLY NOT FOR
CONSTRUCTION

PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM
A PROFESSIONAL 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 THE STATE
OF MARYLAND. THESE DOCUMENTS
ARE, AND SHALL REMAIN, THE PROPERTY
OF FISHER ARCHITECTURE, LLC.

CONSULTANTS:

CANNERY SQUARE BUILDING

EASTON, MD 21601

SHEET INFO:

FIRST FLOOR PLAN

- GENERAL PLAN NOTES
- ALL TENANT UNIT SEPARATION WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
 - ALL CORRIDOR WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
 - REFER TO ENLARGED UNIT PLANS (A-400'S) FOR DIMENSIONS, DETAILS AND WALL TYPES.
 - REFER TO ENLARGED VESTIBULE PLANS (A-504) FOR DIMENSIONS, DETAILS AND WALL TYPES.
 - ALL BALCONIES TO HAVE 1/8" SLOPE AWAY FROM BUILDING.

2	2023.07.27	SDw To Owner
1	2023.07.13	SDw To Owner
REV	REV DATE	DESCRIPTION
DATE:	2021.08.04	
PROJECT NO.	2020054	
SCALE:	As indicated	
FROM MOB:	HAM	
DRAWN BY:	Author	
SHEET NUMBER:		

A-101



1 SECOND FLOOR
1/8" = 1'-0"

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	1 (3%)
2 BED TYPE B	1,084 S.F.	3	4	6	14 (44%)
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



FOR REVIEW
ONLY NOT FOR
CONSTRUCTION

PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM
A PROFESSIONAL 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 INTENDING 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 EXERCISE
OF THE PROJECT, THESE DOCUMENTS
ARE, AND SHALL REMAIN, THE PROPERTY
OF FISHER ARCHITECTURE, LLC.

CONSULTANTS:

CANNERY SQUARE BUILDING
EASTON, MD 21601

SHEET INFO:

SECOND FLOOR
PLAN

- GENERAL PLAN NOTES
- ALL TENANT UNIT SEPARATION WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
 - ALL CORRIDOR WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
 - REFER TO ENLARGED UNIT PLANS (A-400'S) FOR DIMENSIONS, DETAILS AND WALL TYPES.
 - REFER TO ENLARGED VESTIBULE PLANS (A-504) FOR DIMENSIONS, DETAILS AND WALL TYPES.
 - ALL BALCONIES TO HAVE 1/8" SLOPE AWAY FROM BUILDING.

2	2023.07.27	60% To Owner
1	2023.07.13	50% To Owner
REV	REV DATE	DESCRIPTION
DATE:	2021.08.04	
PROJECT NO.	2020054	
SCALE:	As indicated	
FROM MO:	HAM	
DRAWN BY:	Author	
SHEET NUMBER:		

A-102



1 THIRD FLOOR
1/8" = 1'-0"

UNIT MATRIX					
	AREA	1ST	2ND	3RD	TOTAL
3 BED TYPE B	1,231 S.F.	2	2	0	4 (3%)
2 BED TYPE A	1,084 S.F.	1	0	0	1 (1%)
2 BED TYPE B	1,084 S.F.	3	4	6	14 (44%)
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



FOR REVIEW
ONLY NOT FOR
CONSTRUCTION

PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM
A PROFESSIONAL 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 INTENDING 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 EXERCISE
OF THE PROJECT, THESE DOCUMENTS
ARE, AND SHALL REMAIN, THE PROPERTY
OF FISHER ARCHITECTURE, LLC.

CONSULTANTS:

CANNERY SQUARE BUILDING

EASTON, MD 21601

SHEET INFO:

THIRD FLOOR PLAN

- GENERAL PLAN NOTES
- ALL TENANT UNIT SEPARATION WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
 - ALL CORRIDOR WALLS SHALL BE 1 HOUR RATED; WALLS SHALL BE CONSTRUCTED AS WALL TYPE 2, U.O.N.
 - REFER TO ENLARGED UNIT PLANS (A-400'S) FOR DIMENSIONS, DETAILS AND WALL TYPES.
 - REFER TO ENLARGED VESTIBULE PLANS (A-504) FOR DIMENSIONS, DETAILS AND WALL TYPES.
 - ALL BALCONIES TO HAVE 1/8" SLOPE AWAY FROM BUILDING.

2	2023.07.27	SDs To Owner
1	2023.07.13	SDs To Owner
REV	REV DATE	DESCRIPTION
DATE:	2021.08.04	
PROJECT NO.	2020054	
SCALE:	As indicated	
FROM MOB:	HAM	
DRAWN BY:	Author	
SHEET NUMBER:		

A-103



1 ELEVATION NORTH
1/8" = 1'-0"



2 ELEVATION SOUTH
1/8" = 1'-0"

SEAL:



PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM
A FULLY 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 INTENDING 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 WITNESS
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

2	2023.07.27	60% To Owner
1	2023.07.13	50% To Owner
REV	REV DATE	DESCRIPTION
DATE:	2021.08.04	
PROJECT NO.	20200054	
SCALE:	1/8" = 1'-0"	
PROJ MGR:	HAM	
DRAWN BY:	Author	
SHEET NUMBER:		

A-201



AL:

FOR REVIEW
ONLY NOT FOR
CONSTRUCTION

CENSE NO.: 001395
PIRATION NO.: 09.23.202

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. 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

[illegible]

2023.07.27	SDs To Owner
2023.07.13	SDs To Owner
REV DATE:	DESCRIPTION
ECT NO.	2021.08.04
E:	2020054
MGR:	1/8" = 1'-0"
VN BY:	HAM
ET NUMBER:	Author

A-202



① ELEVATION EAST
 $1/8'' = 1' - \theta''$



② ELEVATION WEST
 $1/8'' = 1' - \theta''$

Date: 11/01/2023 - 7:14am User: wbornhart Project Manager: BCE
Drawing Path: J:\2023\0200\230228\Civil3D\RSK-VIS-230228.dwg ILLUSTRATIVE
XREF File(s): VLD-BASE-170146\VF-BASE-2436-230228\VF-BASE-230228\RD-EVC-BASE-230228\LRP-BASE-230228\RR-BASE-230228\RRN-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±)

BUILDING SETBACKS: FRONT- 40'
SIDE- 10'
REAR- 30'
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%

SETBACKS ESTABLISHED THROUGH PR: FRONT- 15'
SIDE- 10'
REAR- 15'

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 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.

THE CONTOURS SHOWN HEREON WERE FIELD LOCATED BY LANE ENGINEERING, LLC JUNE 2017 & JULY 2023.

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.

PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON, EASTON UTILITIES.

FLOOD DATA

THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO 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 EQUALLED 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:

- OVERALL TREES - 3 TREES/ RESIDENTIAL UNIT: 96 UNITS X 3 = 288 TREES REQUIRED
- STREET TREES- 1 DECIDUOUS TREE/ 25' OF STREET CENTERLINE: 487 LF / 25 = 19 TREES REQUIRED
- PARKING LOTS/ PARKING COURTS- 1 TREE/ 5 SPACES: 108 SPACES/5 = 22 TREES REQUIRED
- SHRUB/GROUNDCOVER PLANTINGS: PROVIDED ACROSS SITE AS SHOWN HEREON.

LANDSCAPE BUFFERYARD REQUIREMENTS (SECTION 1014.7.E)

10' WIDE LANDSCAPE BUFFERYARD "C" (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.

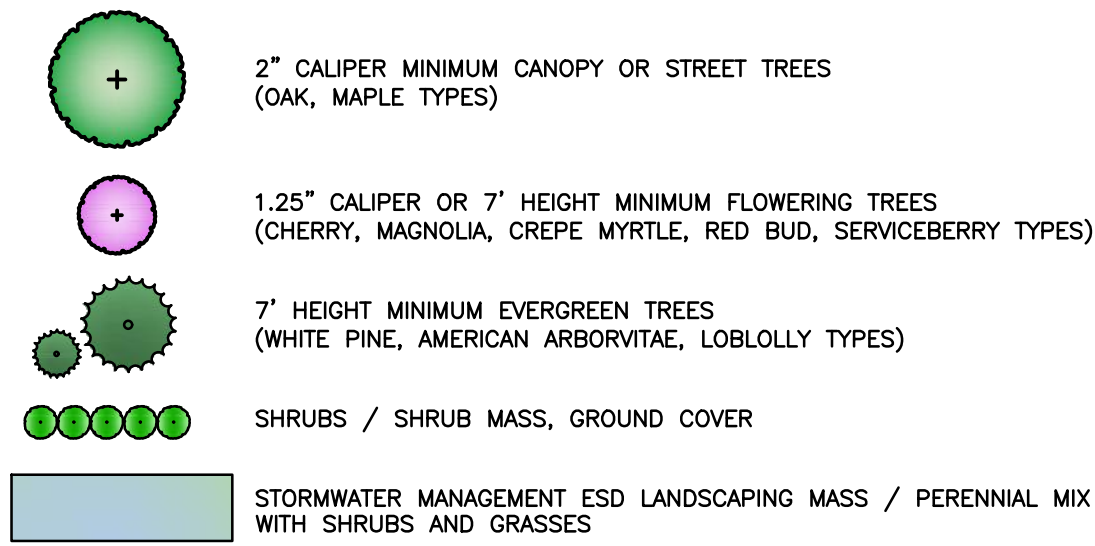
PRINCIPLE #6- SIGNS SHOULD INFORM BUT NOT DOMINATE-SIGNAGE TASTEFUL, SIMPLE AND PER CODE.

PRINCIPLE #7- NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES- THIS DEVELOPMENT PROPOSES A MULTI-FAMILY 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.

LANDSCAPE KEY



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





FOR REVIEW
ONLY NOT FOR
CONSTRUCTION

CENSE NO.: 001395

PIRATION NO.: 09.23.202

† ENOCHIAN PRINCIPLES: DIVINE DATA FROM THE FUTURE

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. THE 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 APARTMENTS
CLUBHOUSE

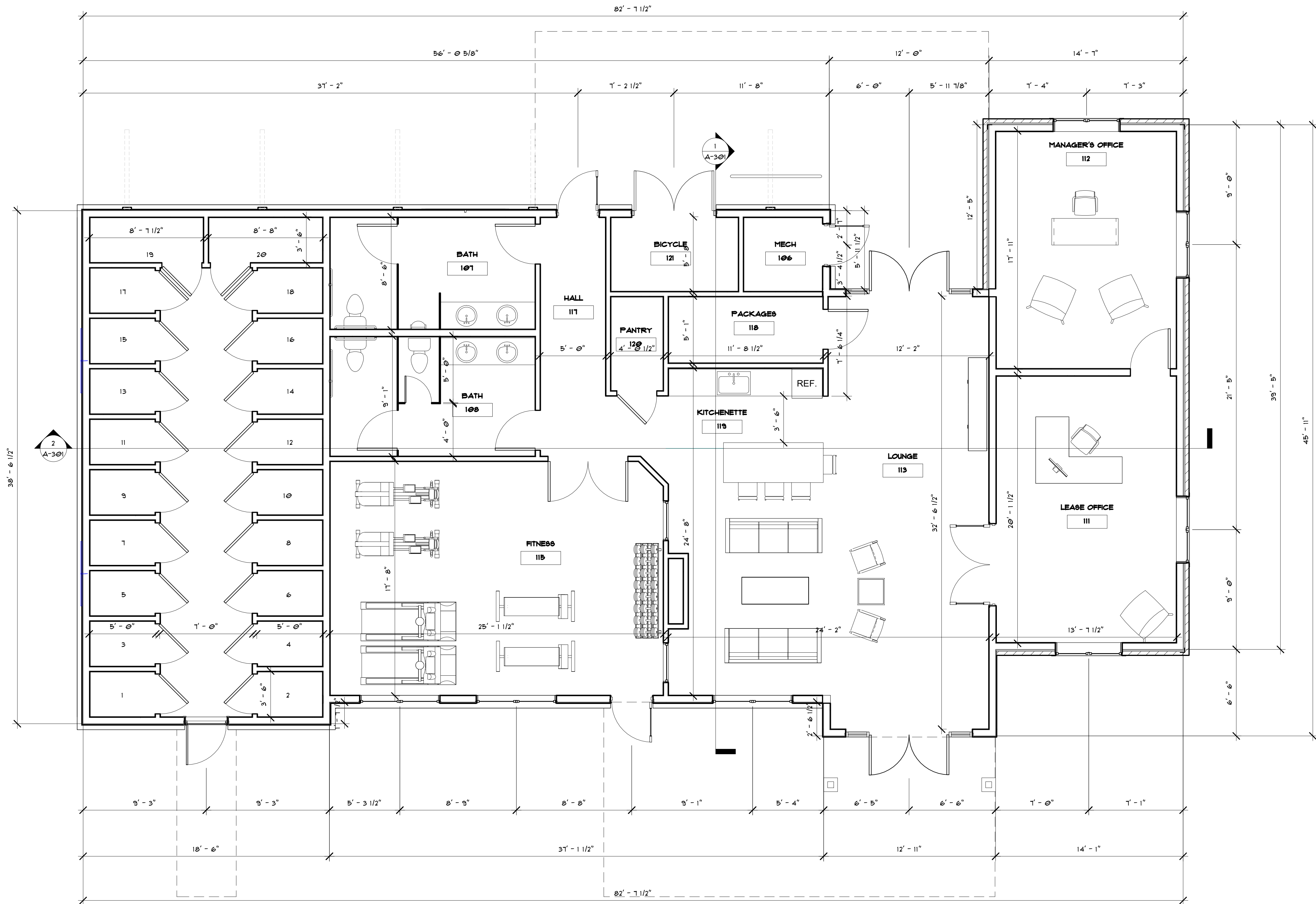
ADDRESS
CITY STATE

SHEET INFO:

FIRST FLOOR PLAN

[illegible]

09.13.2023	HDC Resubmission
08.24.2023	HDC Resubmission
08.02.2023	HDC Submission
07.25.2023	Schematic Design
REV DATE	DESCRIPTION
1:	2023.07.14
E: CT NO.	2023065
E:	1/4" = 1'-0"
MGR:	Designer
OWN BY:	Author
SHEET NUMBER:	

$$A^{-1} \in \mathbb{R}^{n \times n}$$


① FIRST FLOOR
1/4" = 1'-0"

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 PROFESSIONAL ARCHITECT UNDER THE LAWS
OF THE STATE OF MARYLAND.
LICENSE NO.: 0013955
EXPIRATION NO.: 09.23.2024

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 WITNESS
OF THE PROJECT, THESE DOCUMENTS
ARE, AND SHALL REMAIN, THE PROPERTY
OF FISHER ARCHITECTURE, LLC.

CONSULTANTS:

CANNERY SQUARE APARTMENTS
CLUBHOUSE

ADDRESS
CITY, STATE

SHEET INFO:

ELEVATIONS

4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design
REV.	REV. DATE	DESCRIPTION
DATE:	2023.07.14	
PROJECT NO.	2023065	
SCALE:	1/4" = 1'-0"	
FROM MGR:	Designer	
DRAWN BY:	Author	
SHEET NUMBER:		

A-201



1 ELEVATION EAST (FRONT)
1/4" = 1'-0"



2 ELEVATION WEST (REAR)
1/4" = 1'-0"



PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM
A PROFESSIONAL ARCHITECT UNDER THE LAWS
OF THE STATE OF MARYLAND.

LICENSE NO.: 0019555
EXPIRATION NO.: 09.23.2024

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 APARTMENTS
CLUBHOUSE

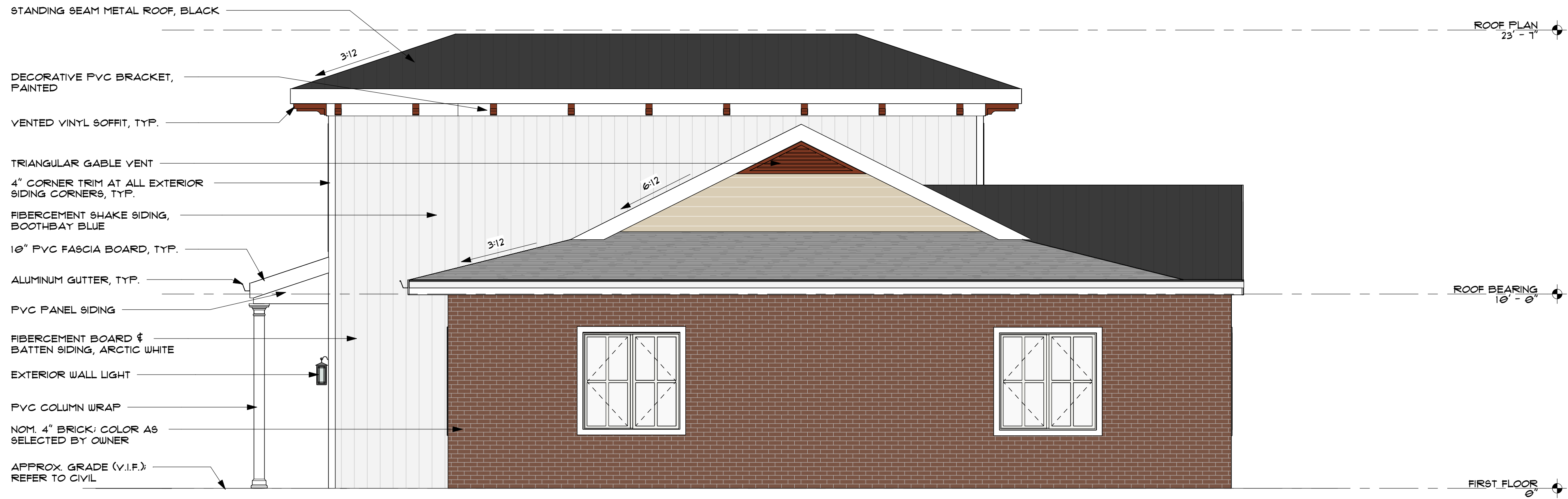
ADDRESS
CITY, STATE

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"	
FROM MGR:	Designer	
DRAWN BY:	Author	
SHEET NUMBER:		

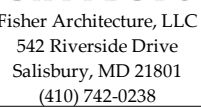
A-202



① ELEVATION NORTH (RIGHT)
1/4" = 1'-0"



② ELEVATION SOUTH (LEFT)
1/4" = 1'-0"



SEAL:



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.: 001
EXPIRATION NO.: 09.23.

THE DOCUMENTS PREPARED BY FISHER ARCHITECTURE, L.L.C. ARE SOLELY FOR THE PURPOSES OF THE SPECIFIED PROJECT. THEY ARE NOT INTENDED TO BE AUTHORIZED FOR USE ON ANY OTHER PROJECT. FISHER ARCHITECTURE MAKES NO REPRESENTATION AS TO THEIR SUITABILITY FOR ANY OTHER PROJECT. ALL DOCUMENTS PREPARED BY FISHER ARCHITECTURE, L.L.C. ARE INSTRUMENTS OF PROFESSIONAL SERVICE IN RESPECT OF THE PROJECT. THESE DOCUMENTS ARE, AND SHALL REMAIN, THE PROPERTY OF FISHER ARCHITECTURE, L.L.C.

CONSULTANTS:



CANNERY SQUARE APARTMENTS
CLUBHOUSE

ADDRESS
CITY STATE

SHEET INFO:

RENDERING -
ELIZABETH STREET

[illegible]

4	09.13.2023	HDC Resubmission
3	08.24.2023	HDC Resubmission
2	08.02.2023	HDC Submission
1	07.25.2023	Schematic Design
REV	REV DATE	DESCRIPTION
		2023.07.14
	PROJECT NO.	2023065
	SCALE:	
	ROJ MGR:	Designer
	DRAWN BY:	Author
	SHEET NUMBER:	

A-801



PROFESSIONAL CERTIFICATION:
 I CERTIFY THAT THESE DOCUMENTS WERE
 PREPARED OR APPROVED BY ME, AND THAT I AM
 A LICENSED ARCHITECT UNDER THE LAWS
 OF THE STATE OF MARYLAND.

CENSE NO.: 001395
PIRATION NO.: 09.23.202

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. 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 APARTMENTS
CLUBHOUSE

ADDRESS
CITY STATE

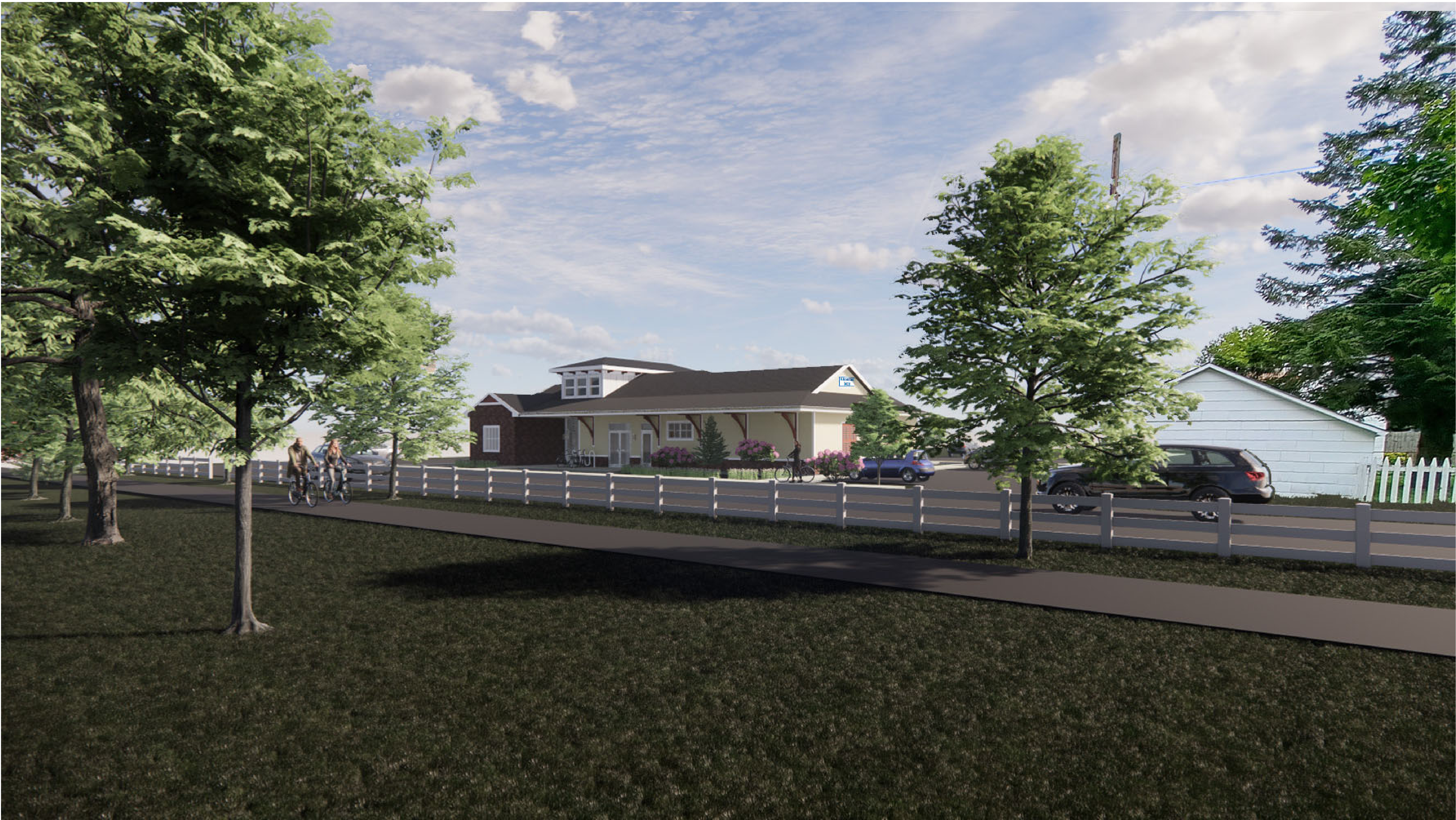
SHEET INFO:

ENDERING - EAST
STREET

[illegible]

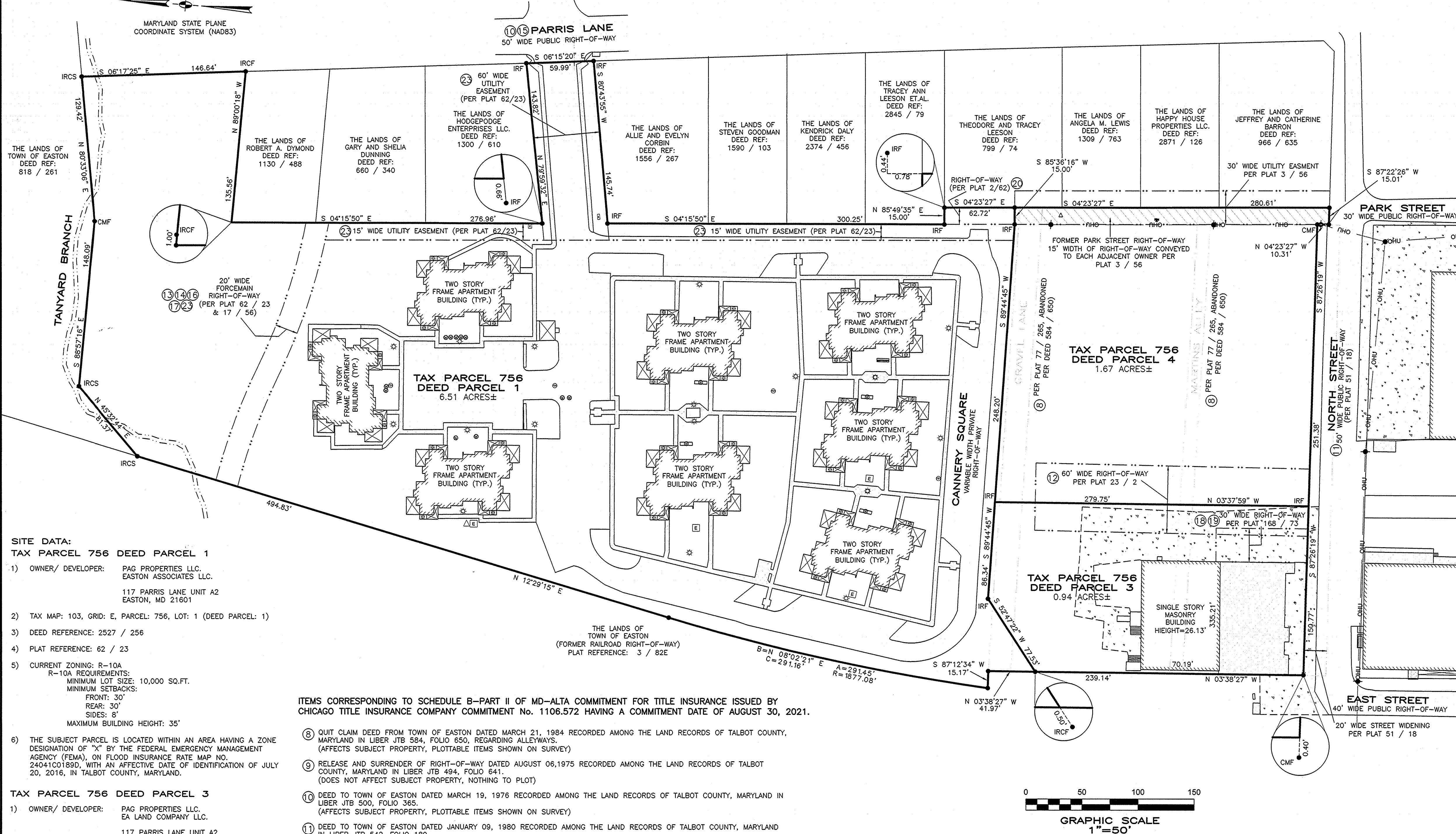
09.13.2023	HDC Resubmission
08.24.2023	HDC Resubmission
08.02.2023	HDC Submission
07.25.2023	Schematic Design
REV DATE	DESCRIPTION
1:	2023.07.14
2: ECT NO.	2023065
3: E:	
4: MGR:	Designer
5: W BY:	Author
6: ET NUMBER:	

4-802



EAST STREET VIEW

TALBOT COUNTY CIRCUIT COURT Subdivision Plats, TA Plat Book KMD 89, p. 189, MSA S1254, 5400. Date available 2021/11/09. Printed 10/31/2023.



SITE DATA:
TAX PARCEL 756 DEED PARCEL 1

1) OWNER/ DEVELOPER: PAG PROPERTIES LLC, EASTON ASSOCIATES LLC.
117 PARRIS LANE UNIT A2
EASTON, MD 21601

2) TAX MAP: 103, GRID: E, PARCEL: 756, LOT: 1 (DEED PARCEL: 1)

3) DEED REFERENCE: 2527 / 256

4) PLAT REFERENCE: 62 / 23

5) CURRENT ZONING: R-10A
R-10A REQUIREMENTS:
MINIMUM LOT SIZE: 10,000 SQ.FT.
MINIMUM SETBACKS:
FRONT: 30'
REAR: 30'
SIDES: 8'
MAXIMUM BUILDING HEIGHT: 35'

6) THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF "X" BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 24041C0189D, WITH AN EFFECTIVE DATE OF IDENTIFICATION OF JULY 20, 2016, IN TALBOT COUNTY, MARYLAND.

TAX PARCEL 756 DEED PARCEL 3

1) OWNER/ DEVELOPER: PAG PROPERTIES LLC, EA LAND COMPANY LLC.
117 PARRIS LANE UNIT A2
EASTON, MD 21601

2) TAX MAP: 103, GRID: E, PARCEL: 756, LOT: 3 (DEED PARCEL:3)

3) DEED REFERENCE: 2527 / 260

4) PLAT REFERENCE: 62 / 23

5) CURRENT ZONING: I1
I1 REQUIREMENTS:
MINIMUM LOT SIZE: 40,000 SQ.FT.
MINIMUM SETBACKS:
FRONT: 40'
REAR: 30'
SIDES: 10'
MAXIMUM BUILDING HEIGHT: 35'

6) THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF "X" BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 24041C0189D, WITH AN EFFECTIVE DATE OF IDENTIFICATION OF JULY 20, 2016, IN TALBOT COUNTY, MARYLAND.

TAX PARCEL 756 DEED PARCEL 4

1) OWNER/ DEVELOPER: PAG PROPERTIES LLC, EA LAND COMPANY LLC.
117 PARRIS LANE UNIT A2
EASTON, MD 21601

2) TAX MAP: 103, GRID: E, PARCEL: 756, LOT: 4 (DEED PARCEL:4)

3) DEED REFERENCE: 2527 / 260

4) PLAT REFERENCE: 62 / 23

5) CURRENT ZONING: I1
I1 REQUIREMENTS:
MINIMUM LOT SIZE: 40,000 SQ.FT.
MINIMUM SETBACKS:
FRONT: 40'
REAR: 30'
SIDES: 10'
MAXIMUM BUILDING HEIGHT: 35'

6) THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF "X" BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 24041C0189D, WITH AN EFFECTIVE DATE OF IDENTIFICATION OF JULY 20, 2016, IN TALBOT COUNTY, MARYLAND.

ITEMS CORRESPONDING TO SCHEDULE B-PART II OF MD-ALTA COMMITMENT FOR TITLE INSURANCE ISSUED BY CHICAGO TITLE INSURANCE COMPANY COMMITMENT NO. 1106.572 HAVING A COMMITMENT DATE OF AUGUST 30, 2021.

- QUIT CLAIM DEED FROM TOWN OF EASTON DATED MARCH 21, 1984 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 584, FOLIO 650, REGARDING ALLEYSWAYS. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- RELEASE AND SURRENDER OF RIGHT-OF-WAY DATED AUGUST 06,1975 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 494, FOLIO 641. (DOES NOT AFFECT SUBJECT PROPERTY, NOTHING TO PLOT)
- DEED TO TOWN OF EASTON DATED MARCH 19, 1976 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 500, FOLIO 365. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- DEED TO TOWN OF EASTON DATED JANUARY 09, 1980 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 542, FOLIO 189. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- RIGHT OF INGRESS/EGRESS SET OUT IN DEED DATED APRIL 28, 1975 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 492, FOLIO 57. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- DEED OF RIGHT OF WAY AND EASEMENT TO TOWN OF EASTON DATED MAY 13, 1974-RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 484, FOLIO 37, (SEE ALSO PLAT JTB 17 / 56) (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- DEED OF RIGHT OF WAY AND EASEMENT TO TOWN OF EASTON DATED MAY 13, 1974-RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 484, FOLIO 39, (SEE ALSO PLAT JTB 17 / 56) (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- DEED TO TOWN OF EASTON DATED JULY 26, 1971 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 454, FOLIO 228, (SEE ALSO PLAT JTB 25 / 47, JTB 38 / 43) (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- DEED OF EASEMENT TO MAYOR & COUNCIL OF EASTON DATED AUGUST 14, 1963 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 388 / 134. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- DEED OF EASEMENT TO MAYOR & COUNCIL OF EASTON DATED AUGUST 14, 1963 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 388 / 493. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- RIGHT OF WAY SET OUT IN DEED DATED JANUARY 24, 1944 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER WLB 257, FOLIO 178. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY, PART OF RIGHT-OF-WAY EXTINGUISHED VIA DEED JTB 494 / 641)
- RIGHT OF WAY SET OUT IN DEED DATED JANUARY 24, 1944 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 230, FOLIO 606. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- RIGHT OF WAY SET OUT IN DEED DATED 07/14/75 RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 494, FOLIO 192. (AFFECTS SUBJECT PROPERTY, PLOTTABLE ITEMS SHOWN ON SURVEY)
- REFERENCE TO "LEASE AGREEMENTS" WITH THE PENNSYLVANIA RAILROAD COMPANY DATED JANUARY 13, 1984 DEED RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER JTB 583, FOLIO 9. (MAY AFFECT SUBJECT PROPERTY, LEASE AGREEMENTS NOT PROVIDED)
- SUBJECT TO SUCH PERTINENT MATTERS, FACTS, RESERVATIONS, EASEMENTS, BUILDING SETBACK RESTRICTIONS, SEWAGE RESERVE AREAS, UTILITY RIGHTS-OF-WAY, ROAD PROVISIONS AND OTHER LIMITATIONS WHICH MAY BE SHOWN ON THE FOLLOWING PLAT "PLAT SHOWING DIVISION OF THE LAND OF PARK ASSOCIATES JOINT VENTURE IN EASTON TALBOT COUNTY, MARYLAND", PREPARED BY MCCRONE DATED FEBRUARY 29, 1984, RECORDED AMONG THE PLAT RECORDS OF TALBOT COUNTY, MARYLAND IN PLAT BOOK JTB 62, PAGE 23.
- RIGHT OF WAY RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY, MARYLAND IN LIBER 185, FOLIO 449. (MAY AFFECT SUBJECT PROPERTY, BLANKET IN NATURE)
- THE PLAT REFERENCED IN EXHIBIT A HEREOF (LIBER 62, FOLIO 23) REFLECTS THAT A FRAME BUILDING ERECTED ON THE PROPERTY ENROACHES OVER THE NORTHERLY PROPERTY LINE BY APPROXIMATELY 16.1'. (DOES NOT AFFECT SUBJECT PROPERTY, ENROACHMENT HAS BEEN REMOVED)

- TABLE A
SURVEY NOTES**
- THE SURVEY AND THE INFORMATION, COURSES AND DISTANCES SHOWN THEREON ARE ACCURATE.
 - THE RECORD DESCRIPTION OF THE SUBJECT PROPERTY FORMS A MATHEMATICALLY CLOSED FIGURE.
 - THE SURVEY ACCURATELY SHOWS THE LOCATION OF ALL BUILDINGS, VISIBLE STRUCTURES AND OTHER VISIBLE IMPROVEMENTS SITUATED ON THE PREMISES.
 - EXCEPT AS SHOWN, THERE ARE NO APPARENT ENROACHMENTS ONTO ADJOINING PREMISES, STREETS, ALLEYS OR EASEMENT AREAS BY ANY BUILDINGS, STRUCTURES OR OTHER IMPROVEMENTS, AND NO ENROACHMENTS ONTO THE PREMISES BY BUILDINGS, STRUCTURES OR OTHER IMPROVEMENTS SITUATED ON ADJOINING PREMISES. A & B SHOWN.
 - ALL UTILITIES SERVING THE PREMISES ENTER THROUGH ADJOINING PUBLIC STREETS AND/OR EASEMENTS OF RECORD AND ARE SHOWN ON THE SURVEY. A & B SHOWN.
 - EXCEPT AS SHOWN, THERE ARE NO VISIBLE OR APPARENT EASEMENTS OR RIGHTS OF WAY ACROSS THE PREMISES.
 - THE PROPERTY DESCRIBED HEREON IS THE SAME AS THE PROPERTY DESCRIBED IN FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. 1106.572 WITH AN EFFECTIVE DATE OF AUGUST 30, 2021 AND THAT ALL EASEMENTS, COVENANTS AND RESTRICTIONS REFERENCED IN SAID TITLE INSURANCE COMMITMENT OR EASEMENTS WHICH THE UNDERSIGNED HAS BEEN ADVISED OR HAS KNOWLEDGE, HAVE BEEN LISTED AND PLOTTED HEREON OR OTHERWISE NOTED AS TO THEIR EFFECT ON THE SUBJECT PROPERTY.
 - PROFESSIONAL LIABILITY INSURANCE POLICY IS OBTAINED BY THE SURVEYOR IN THE MINIMUM AMOUNT OF \$2,000,000 IN THE AGGREGATE OR MORE. THE CERTIFICATE OF INSURANCE TO BE FURNISHED TO THE CLIENT UPON REQUEST.
 - EXCEPT AS SHOWN, THERE IS NO VISIBLE EVIDENCE OF CONSTRUCTION, BUILDING ADDITIONS OR EARTH MOVING WORK.
 - THERE IS NO EVIDENCE OF WETLANDS OBSERVED.
 - THERE IS NO VISIBLE EVIDENCE OF CEMETERIES OR BURIAL GROUNDS FOUND.
 - THE SURVEYOR HAS NO KNOWLEDGE OF ANY PROPOSED STREET WIDENING.

LEGAL DESCRIPTIONS

Tax Parcel 756 Deed Parcel 1
All that lot or parcel of land situate, lying and being in the Town of Easton, Talbot County, Maryland, on the east side of East Avenue and the Delaware Railroad Company Right-of-Way, and being more particularly shown as Parcel 1, containing 6.51 acres, more or less, on a Plat titled "Plat Showing Division of the Land of Park Associates Joint Venture in Easton Talbot County, Maryland," prepared by McCrone, Surveyors, dated February 1984 (revised through March 13, 1984), and recorded among the Plat Records of Talbot County, Maryland in Liber 62, folio 23.

Tax Parcel 756 Deed Parcel 3
All that lot or parcel of land containing 41,190 square feet, more or less, situate, lying and being in the Town of Easton, Talbot County, Maryland, and being more particularly shown and designated as "Parcel No.3" on a Plat prepared by McCrone, Inc., titled "Plat Showing Division of The Land of Park Associates Joint Venture in Easton Talbot County, Maryland," dated February 1984 (revised through March 13, 1984), and recorded among the Plat Records of Talbot County, Maryland in Liber 62, folio 23.

Tax Parcel 756 Deed Parcel 4
All that lot or parcel of land situate, lying and being in the Town of Easton, Talbot County, Maryland, on the westerly side of Park Avenue and the northerly side of North Street, and being more particularly shown as Parcel 4, containing 1.57 acres, more or less, on a Plat titled "Plat Showing Division of The Land of Park Associates Joint Venture in Easton Talbot County, Maryland," prepared by McCrone, Surveyors, dated February 1984 (revised through March 13, 1984), and recorded among the Plat Records of Talbot County, Maryland in Liber 62, folio 23.

LEGEND

- PROPERTY LINE
- STREAM
- EASEMENT
- OVERHEAD UTILITY LINE
- UTILITY POLE
- ELECTRIC BOX
- HVAC UNIT
- MANHOLE
- WATER METER/VALVE
- LIGHT POLE
- CONCRETE AREA
- GRAVEL AREA
- PAVED AREA
- WOODED AREA

● DENOTES COMPUTED POINT
● CMF DENOTES CONCRETE MONUMENT FOUND
● IRCF DENOTES IRON ROD WITH CAP FOUND
● IRF DENOTES IRON ROD FOUND
● IPF DENOTES IRON PIPE FOUND
● IRCS DENOTES IRON ROD WITH CAP SET

BUILDING DIAGRAM

TWO STORY FRAME APARTMENT BUILDING (TYP.)
BUILDING HEIGHT = 30.67'

CONC. PAD WITH HVAC UNIT (TYP.)
PORCH/AWNING (TYP.)

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

SURVEYOR'S STATEMENT

The undersigned, being a registered surveyor of the state of Maryland certifies to McAllister, DeTar, Showalter & Walker, LLC and Chicago Title Insurance Company.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1-3, 6(a), 6(b), 7(a), 7(b), 7(c), 8, 9, 13, 14, 15, 17, 18 & 19 of Table A thereof. The fieldwork was completed on OCTOBER 2021.

Date of Plat or Map:
Davis, Bowen & Friedel, Inc.
by Christopher D. Waters, Agent
11/ 9/ 21

Christopher D. Waters
Professional Land Surveyor
Maryland No. 11052
License Expiration: 2/10/23

REVISIONS

NO.	DATE	DESCRIPTION
1	10/20/21	AS SHOWN
2	10/20/21	AS SHOWN
3	10/20/21	AS SHOWN
4	10/20/21	AS SHOWN
5	10/20/21	AS SHOWN
6	10/20/21	AS SHOWN
7	10/20/21	AS SHOWN
8	10/20/21	AS SHOWN
9	10/20/21	AS SHOWN
10	10/20/21	AS SHOWN
11	10/20/21	AS SHOWN
12	10/20/21	AS SHOWN
13	10/20/21	AS SHOWN
14	10/20/21	AS SHOWN
15	10/20/21	AS SHOWN
16	10/20/21	AS SHOWN
17	10/20/21	AS SHOWN
18	10/20/21	AS SHOWN
19	10/20/21	AS SHOWN
20	10/20/21	AS SHOWN
21	10/20/21	AS SHOWN
22	10/20/21	AS SHOWN
23	10/20/21	AS SHOWN
24	10/20/21	AS SHOWN
25	10/20/21	AS SHOWN
26	10/20/21	AS SHOWN
27	10/20/21	AS SHOWN
28	10/20/21	AS SHOWN
29	10/20/21	AS SHOWN
30	10/20/21	AS SHOWN
31	10/20/21	AS SHOWN
32	10/20/21	AS SHOWN
33	10/20/21	AS SHOWN
34	10/20/21	AS SHOWN
35	10/20/21	AS SHOWN
36	10/20/21	AS SHOWN
37	10/20/21	AS SHOWN
38	10/20/21	AS SHOWN
39	10/20/21	AS SHOWN
40	10/20/21	AS SHOWN
41	10/20/21	AS SHOWN
42	10/20/21	AS SHOWN
43	10/20/21	AS SHOWN
44	10/20/21	AS SHOWN
45	10/20/21	AS SHOWN
46	10/20/21	AS SHOWN
47	10/20/21	AS SHOWN
48	10/20/21	AS SHOWN
49	10/20/21	AS SHOWN
50	10/20/21	AS SHOWN

SEAL OF THE STATE OF MARYLAND
CHRISTOPHER D. WATERS
REGISTERED PROFESSIONAL LAND SURVEYOR
No. 11052
EXPIRATION DATE 2/10/23

DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS ENGINEERS SURVEYORS
EASTON, MARYLAND (410) 770-4744
SALESBURY, MARYLAND (410) 543-9091
MILFORD, DELAWARE (302) 424-1441

ALTA / ACSM LAND TITLE SURVEY
THE LANDS OF
EASTON ASSOCIATES LLC
AND
PAG PROPERTIES LLC
TAX MAP: 103, GRID: E, PARCEL: 756
IN THE FIRST ELECTION DISTRICT, TALBOT COUNTY, MARYLAND

Date: 10/20/21
Scale: 1" = 50'
Dwn.By: J. MILLS
Proj.No.: 2825
Dwg.No.: 1 OF 1

Page 342 of 533

APPENDIX B

SKETCH PLAN SUBMITTAL CHECKLIST

NOTE: THIS CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED ON A SITE PLAN. ADDITIONAL INFORMATION MAY BE REQUIRED FOR UNIQUE SITUATIONS.

COMPLETE THE CHECKLIST AND SUBMIT IT WITH THE PLAN. IF AN ITEM IS NOT APPLICABLE, ENTER "N/A".

1. Location map,	<u>X</u>
2. Boundary,	<u>X</u>
3. Topography,	<u>X</u>
4. General proposed land uses drawn to scale, and	<u>X</u>
5. The Forest Stand Delineation as detailed in the Town of Easton's Forest Conservation Ordinance.	<u>X</u>
6. The location of any easements, rights-of-way or any other encumbrances which pertain to the property subject to the site plan review.	<u>X</u>
7. Conditions of concern, for example, water courses, wetlands, floodplains, or other environmentally sensitive features.	<u>X</u>
8. Location of refuse collection, exterior lighting, fencing, and all pedestrian walkways and sidewalks.	<u>X</u>
9. General location and description (r.e. intended function, proposed species, etc.) of proposed landscaping.	<u>X</u>
10. Location of parking including layout and landscaping.	<u>X</u>
11. Conceptual building elevations or renderings illustrating the character, scale, and materials of all proposed structures. Such elevations or renderings shall be sealed by a licensed professional as described above.	<u>X</u>
12. A statement describing the extent to which the application complies with the Recommended Design Principles for Easton set forth on pages 29-31 of the Comprehensive Plan.	<u>X</u>

APPENDIX B-2

SKETCH STORMWATER MANAGEMENT PLAN SUBMITTAL CHECKLIST

EFFECTIVE MAY 4, 2010

NOTE: THE FOLLOWING CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED FOR SUPPORT OF A STORMWATER MANAGEMENT CONCEPT PLAN, SITE DEVELOPMENT PLAN, AND/OR FINAL DESIGN PLAN. THE TOWN MAY REQUEST ADDITIONAL INFORMATION AS DEEMED NECESSARY.

COMPLETE THE APPROPRIATE CHECKLIST AND SUBMIT IT WITH THE PLANS, APPLICATION FORM, NARRATIVE OR REPORT, AND FEE. ITEMS IN BOLD ARE REQUIRED FOR CONCEPT AND/OR SITE DEVELOPMENT PHASE REVIEW.

I. Sketch Plan Submittal

A. Site and Resource Map

Natural Resources Identified on Plan, including, but not limited to:

Please use these responses for the following:

(Provided = P; Not Provided = NP; Not Applicable = N/A)

Tidal and Non-Tidal Wetland Boundaries

P P

Wetland Buffers

N/A

Floodplain Boundaries and Elevations

P

Streams and other Waterways

N/A

Stream Buffers

N/A

Forest Boundaries

N/A

Forest Buffers

N/A

Critical Areas

P

Steep Slopes (>25%)

N/A

Erodible Soils

N/A

Areas of High Recharge

N/A

Springs

P

Soil Types and Hydrologic Soil Groups

N/A

Bedrock and/or other Geologic Features

P

Vegetative Cover

P

Existing Drainage Areas and Flow Patterns

P

Existing Stormwater Outfalls

P

Site and Resource Map field verified by a properly
licensed design professional.

Existing contours (1' max intervals) and utilities shown. P

Large tracts of contiguous open spaces, forested areas and
other important resources protected by conservation
easements.

N/A

Opportunities for afforestation identified.

N/A

Wetland, stream and forest buffers enhanced and/or

expanded.

NA

B. Site Fingerprinting and Development Layout

Locations of proposed impervious areas provided.

P

Proposed contours (1' max intervals) and utilities shown.

P

Preliminary locations of proposed Environmental Site Design (ESD) practices provided.

P

Locations of stormwater outfalls and conveyance provided with offsite storm drains, culverts and grass channels with size and slope.

P

Limit of disturbance and extent of clearing & grading.

P

Site natural resources protected during construction.
If site natural resources must be disturbed during construction, please include an explanation in the stormwater narrative.

NA

Better Site Design Techniques incorporated, including:

Sheetflow and overland flow provided wherever possible

P

Building footprint and site layout designed to protect conservation areas

P

Proposed streets, rights of way, and/or sidewalks with modifications to reduce impervious area

P

Landscaped medians and/or cul-de-sacs

P

Stormwater management features in medians or cul-de-sacs

P

Private open road section with grass channels and/or biofilters

NA

Minimize numbers of parking spaces and sizes

P

Narrow frontages to reduce road length

P

Site graded to encourage runoff from impervious areas to pervious areas or other natural conveyance systems

P

C. Stormwater Narrative

Title Page includes:

Job Name

Owner/Developer

Design Professional

Date Prepared

Seal and Signature (properly licensed Design Professional)

P

P

P

Project is identified as new development or redevelopment.
(Redevelopment projects have $\geq 40\%$ total site imperviousness)

P

Project and streets designed for 2-year and 10-year quantitative management.

P

Project is identified as being within the Tanyard Branch Watershed. (Projects within this watershed must manage proposed 10-year storm flows to the existing 2-year storm discharge rate.)

P

A narrative that supports the concept and describes how the design will achieve:

Natural resource protection and enhancement

Maintenance of natural flow patterns

Reduction of impervious areas through better site design, alternative surfaces, and non-structural practices

Implementation of ESD planning techniques and practices to the Maximum Extent Practicable (MEP)

Preliminary ESD sizing calculations provided

Integration of erosion and sediment controls (ESC) into the stormwater strategy

P
P
P
P
P

D. Sketch Plan Meeting

Following the Sketch Plan submittal, a meeting will be scheduled between the Town of Easton Planning & Zoning, Town Engineer, the Talbot County Soil Conservation District (SCD) ESC reviewer, the owner/developer, the SWM and ESC designer(s), and any other reviewers deemed necessary by the Town of Easton and/or the Talbot County SCD. Official Minutes from the Sketch Plan Meeting must be submitted for review and acceptance by all parties. These minutes must accompany all future submittals.

OK

This checklist completed by Alan F. Cho Date 11-1-23



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
Representative, Historic District Commission

10/24/2023
Date

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

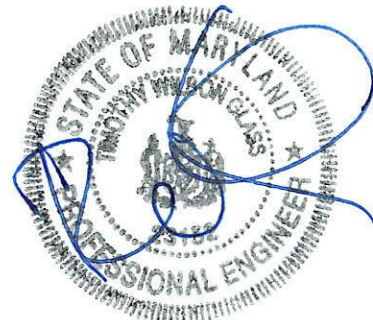
Date Revised

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 pursuing 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 daylight 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-Bioreentions and a Bio-Swale. A network of piping, inlets, and curbing will keep the Micro-Bioreentions 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 bioreentions 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:

$$\begin{aligned} R_v &= 0.05 + 0.009(I) \\ &= 0.49 \end{aligned}$$

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**

$$\begin{aligned} \text{ESD}_v &= \frac{(P_E)(R_v)(A)}{12} \\ &= 10,634 \quad \text{cf} \end{aligned}$$

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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	15,217 sf	
Percent Impervious (I)	76 %	= 2,205 cf
$R_v = 0.05 + 0.009(I)$	0.73	75% of target= 1,654 cf

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

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

$$V = \frac{(P)(R_v)(A)}{12} = 3,431 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 2,591 \text{ cf}$$

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-bioretenention practice is **2,591 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	13,703 sf	
Percent Impervious (I)	72 %	= 1,992 cf
$R_v = 0.05 + 0.009(I)$	0.70	75% of target = 1,494 cf

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

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

$$V = \frac{(P)(R_v)(A)}{12} = 3,099 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,462 \text{ cf}$$

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-bioretenention practice is **2,462 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	8,462 sf	
Percent Impervious (I)	41 %	= 1,297 cf
$R_v = 0.05 + 0.009(I)$	0.42	75% of target = 973 cf

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

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

$$V = \frac{(P)(R_v)(A)}{12} = 2,018 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,881 \text{ cf}$$

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-bioretenention practice is **2,018 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	12,973 sf	
Percent Impervious (I)	72 %	= 1,886 cf
$R_v = 0.05 + 0.009(I)$	0.70	75% of target= 1,414 cf

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

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

$$V = \frac{(P)(R_v)(A)}{12} = 2,933 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,684 \text{ cf}$$

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-bioretenention practice is **2,684 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
Impervious Area	8,533 sf	
Percent Impervious (I)	38 %	= 1,321 cf
$R_v = 0.05 + 0.009(I)$	0.39	75% of target= 991 cf

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

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

$$V = \frac{(P)(R_v)(A)}{12} = 2,055 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media})$$

$$= 3,795 \text{ cf}$$

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-bioretenention practice is **2,055 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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-Bioretenention 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 = $\frac{(P_e)(R_v)(A)}{12}$
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 Cvp storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(R_v)(A)}{12} = 2,375 \text{ cf}$$

The computed ESDv provided is:

$$\text{ESDv} = (\text{Ponding storage}) + (\text{Storage in media}) \\ = 2,279 \text{ cf}$$

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-bioretenention practice is **2,279 cf.**

Now check for compliance with design criteria:

Micro-Bioretenention 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

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 2

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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

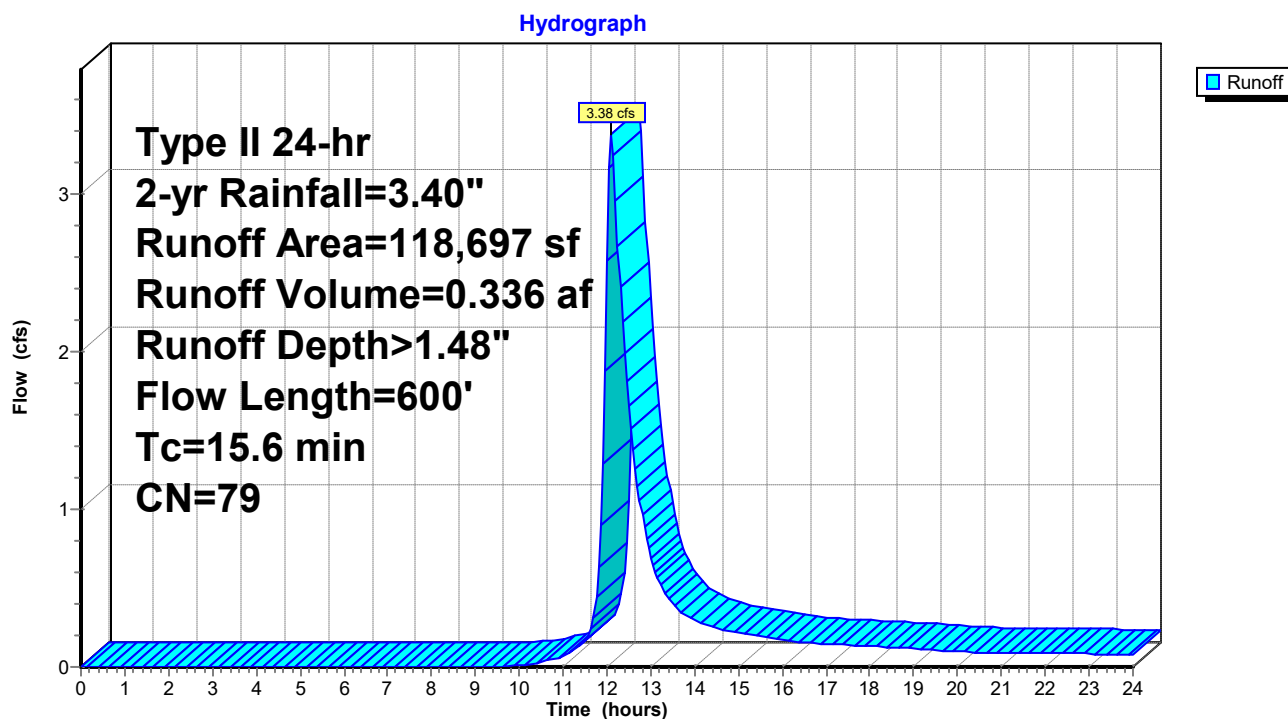
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 3

Subcatchment EX-1: EX (GRAY)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 4

Summary for Subcatchment EX-2: Ex. Easton Ice Parcel

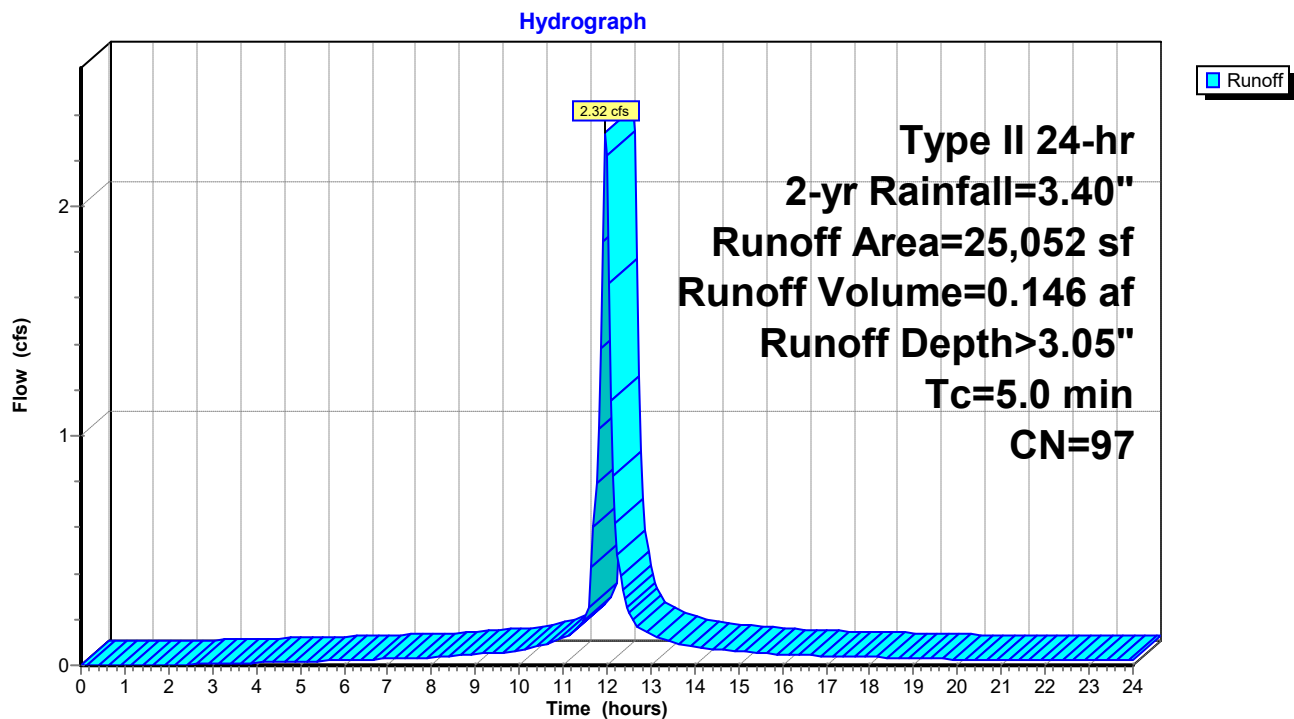
Runoff = 2.32 cfs @ 11.97 hrs, Volume= 0.146 af, Depth> 3.05"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 5

Summary for Subcatchment PR-1A: Parking Lot & SWM Feature (Green)

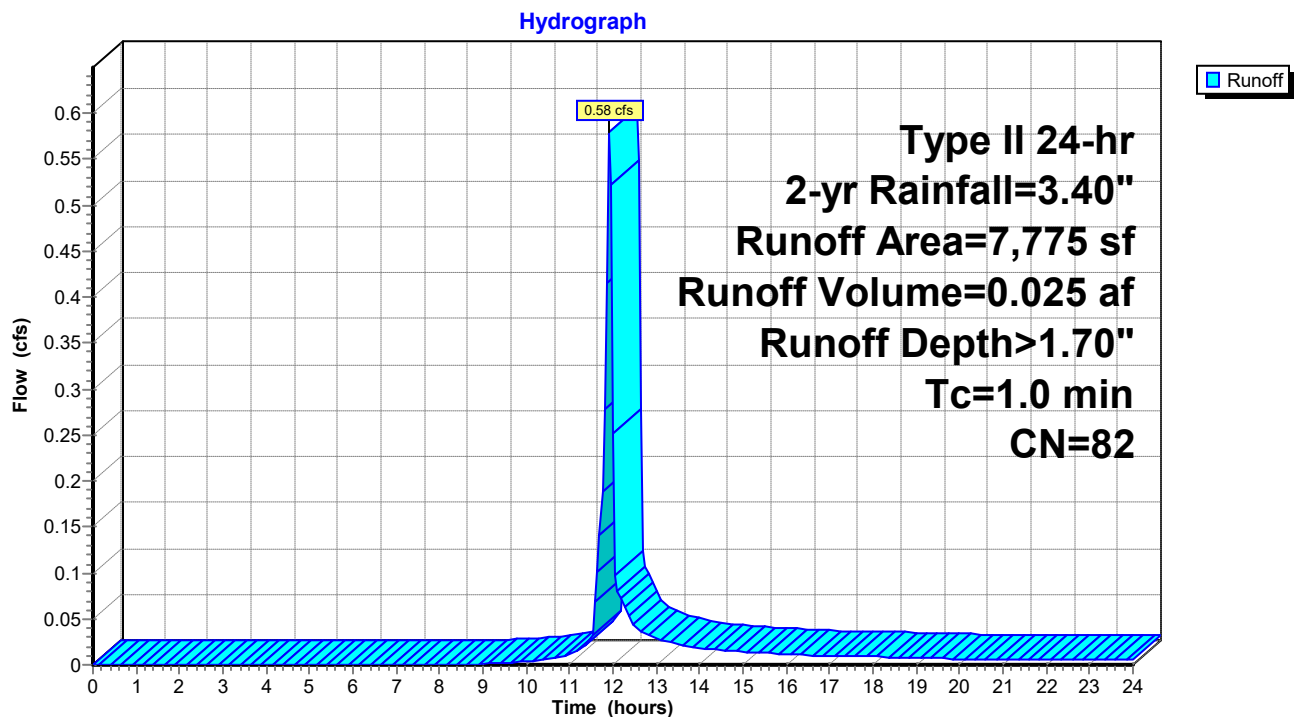
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.025 af, Depth> 1.70"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 6

Summary for Subcatchment PR-1B: Green (Roof)

Runoff = 0.73 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

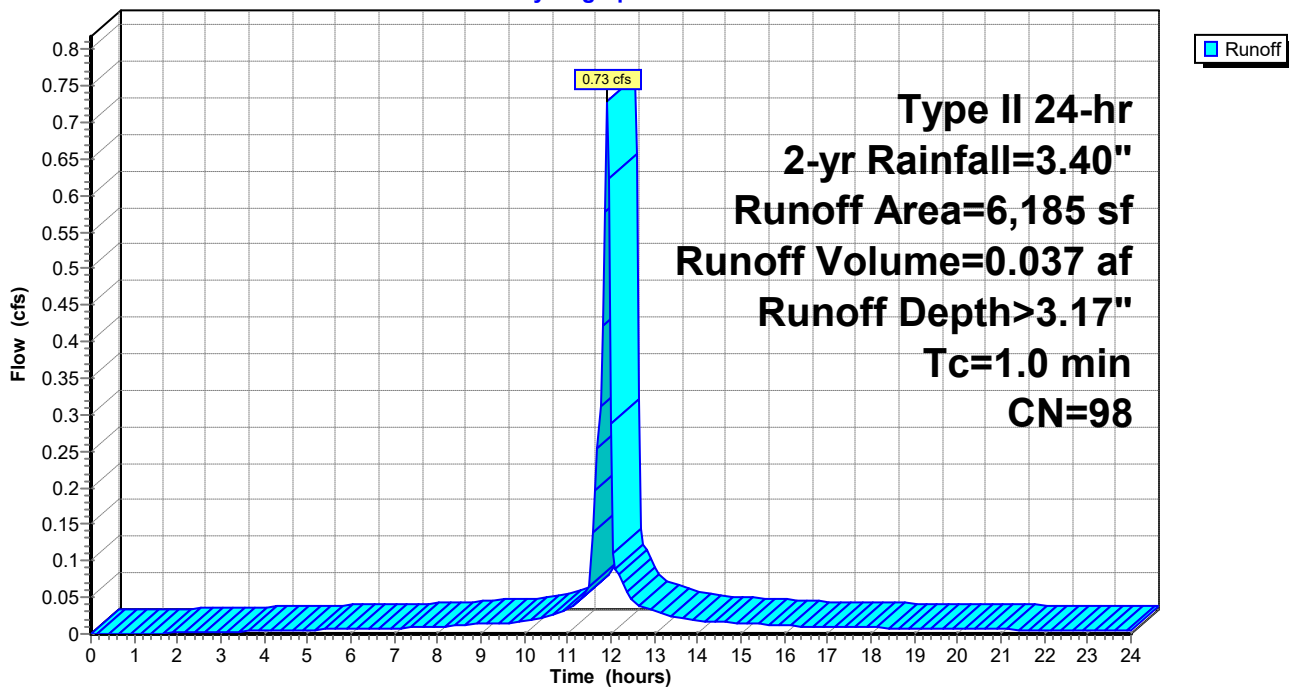
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 7

Summary for Subcatchment PR-1C: Green (Roof)

Runoff = 0.73 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

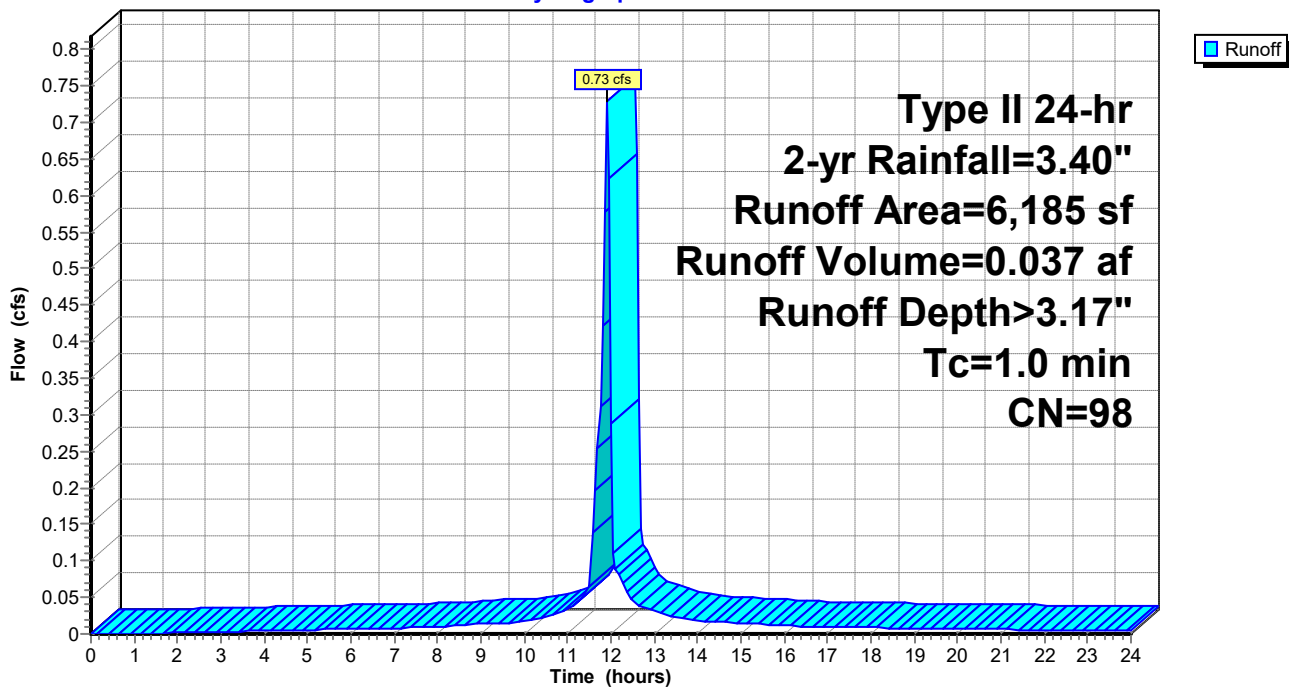
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 8

Summary for Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)

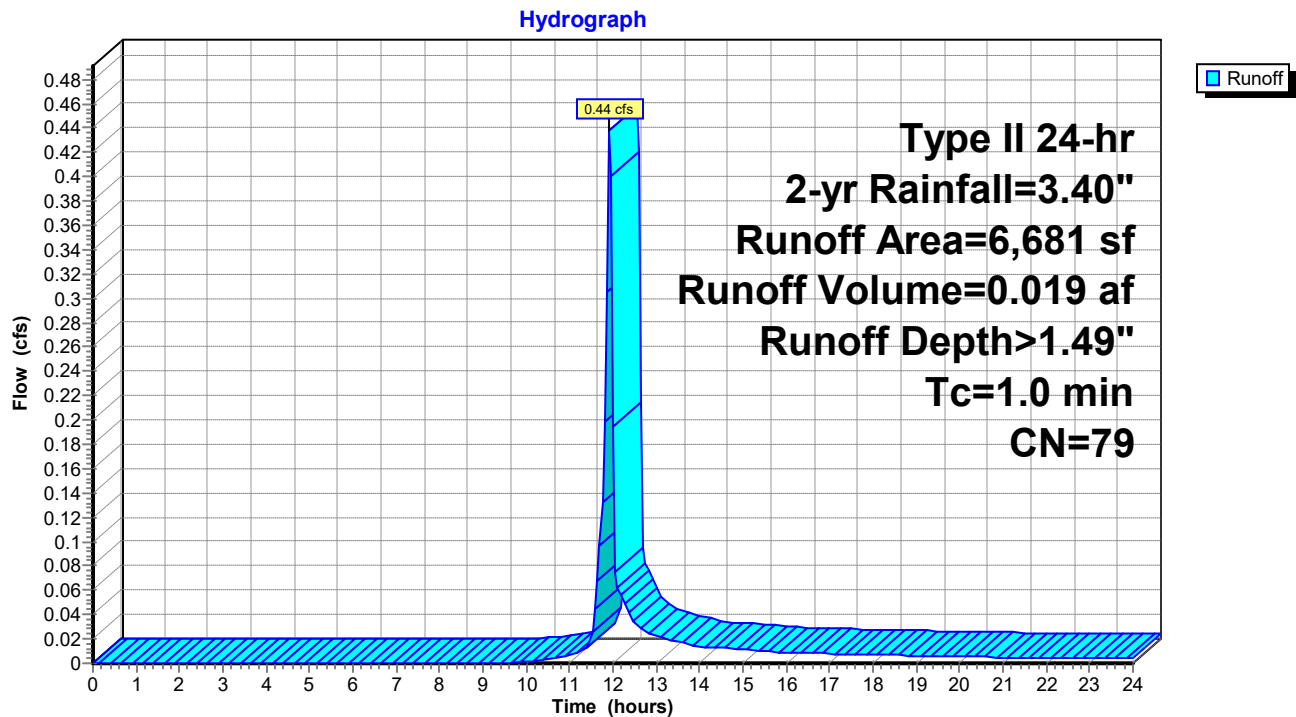
Runoff = 0.44 cfs @ 11.92 hrs, Volume= 0.019 af, Depth> 1.49"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 9

Summary for Subcatchment PR-2B: Purple (Roof)

Runoff = 0.73 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

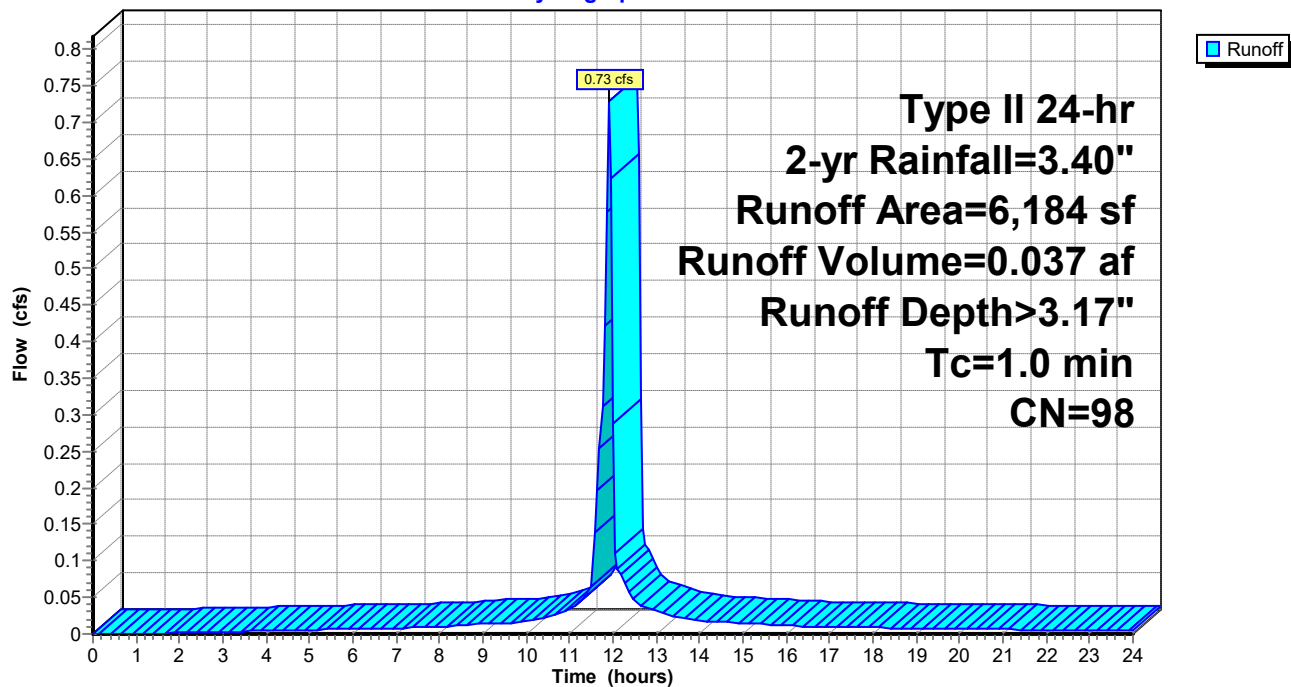
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 10

Summary for Subcatchment PR-2C: Purple (Roof)

Runoff = 0.72 cfs @ 11.90 hrs, Volume= 0.037 af, Depth> 3.17"

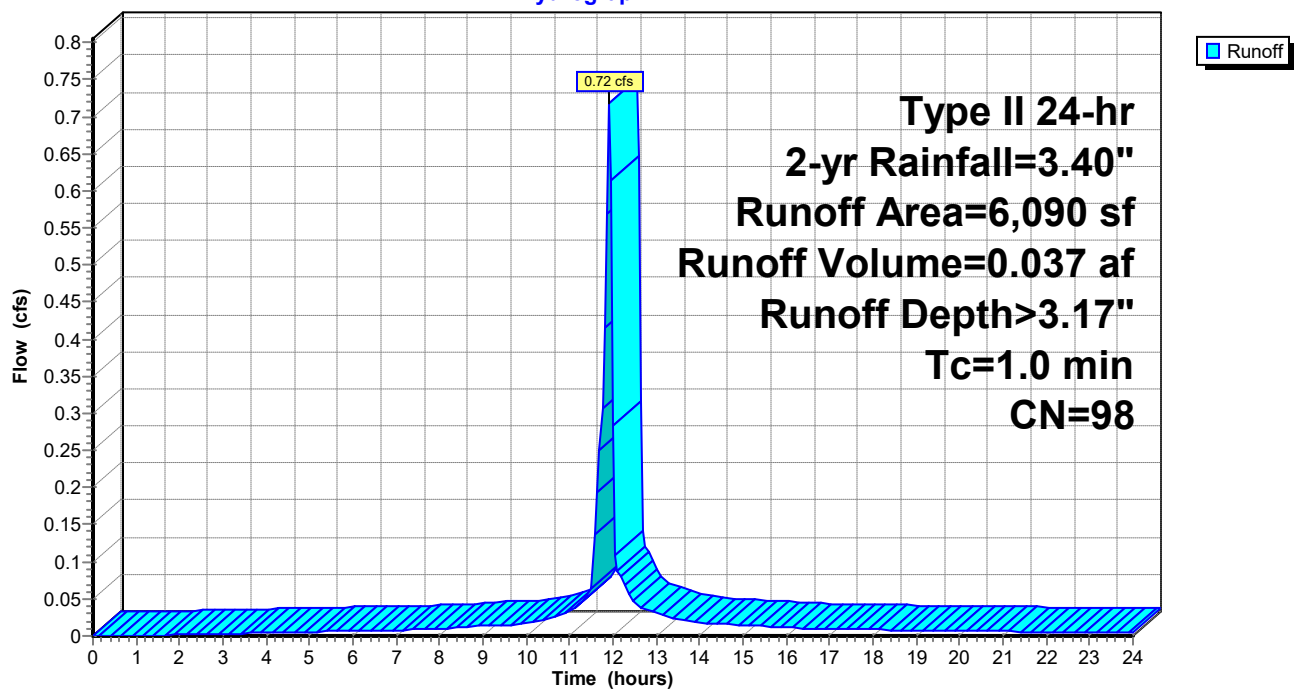
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 11

Summary for Subcatchment PR-3A: Parking & Sidewalk (Blue A)

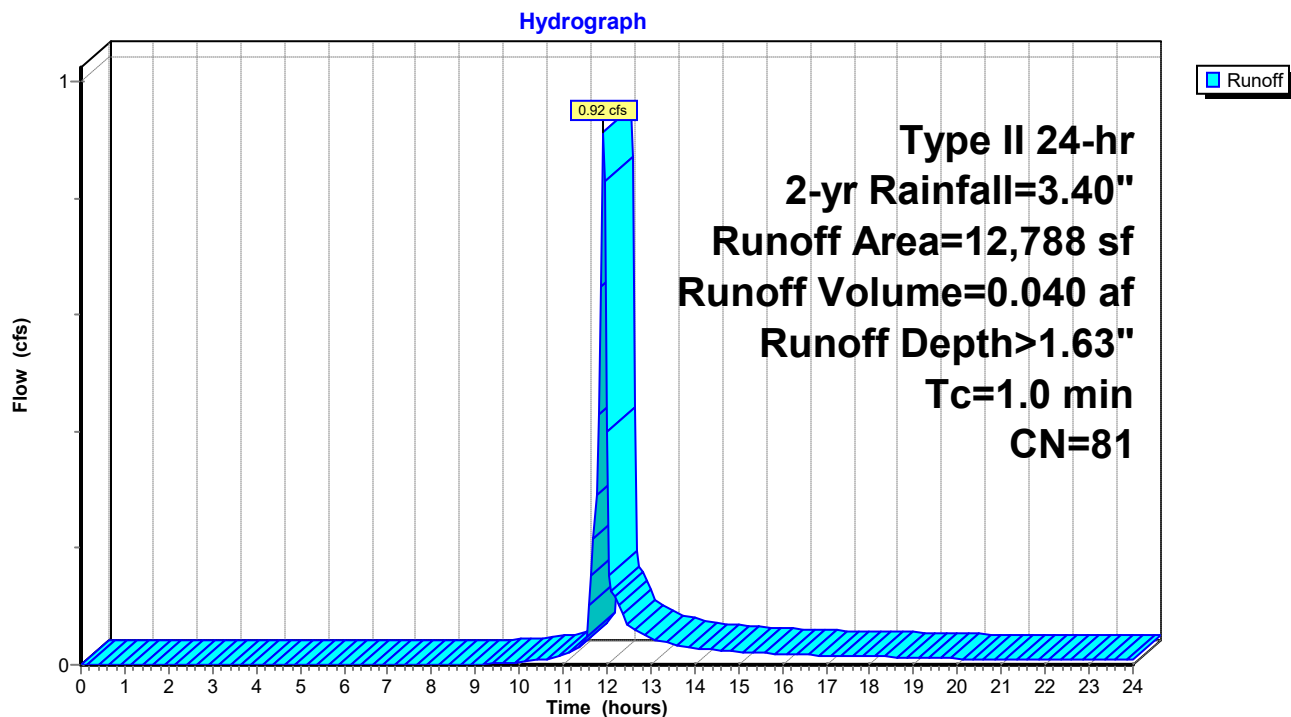
Runoff = 0.92 cfs @ 11.91 hrs, Volume= 0.040 af, Depth> 1.63"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 12

Summary for Subcatchment PR-3B: Parking & Sidewalk (Blue B)

Runoff = 0.32 cfs @ 11.91 hrs, Volume= 0.014 af, Depth> 2.09"

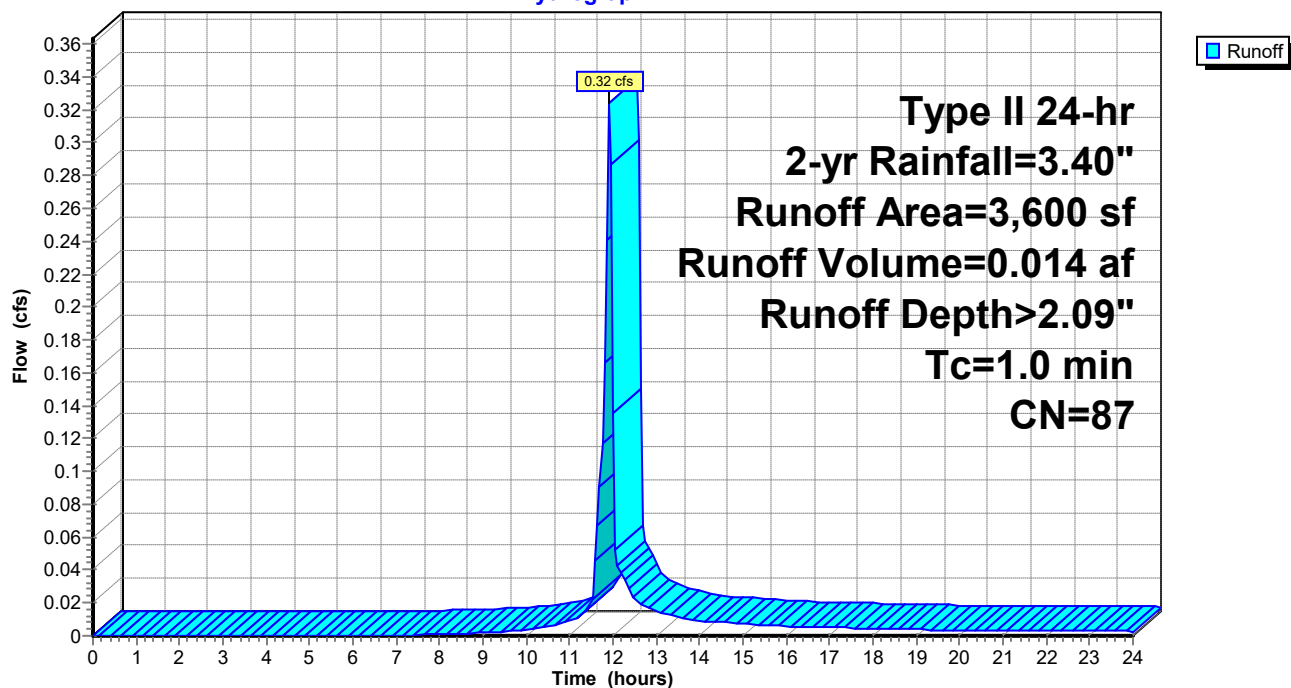
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 13

Summary for Subcatchment PR-3C: Parking & Sidewalk (Blue C)

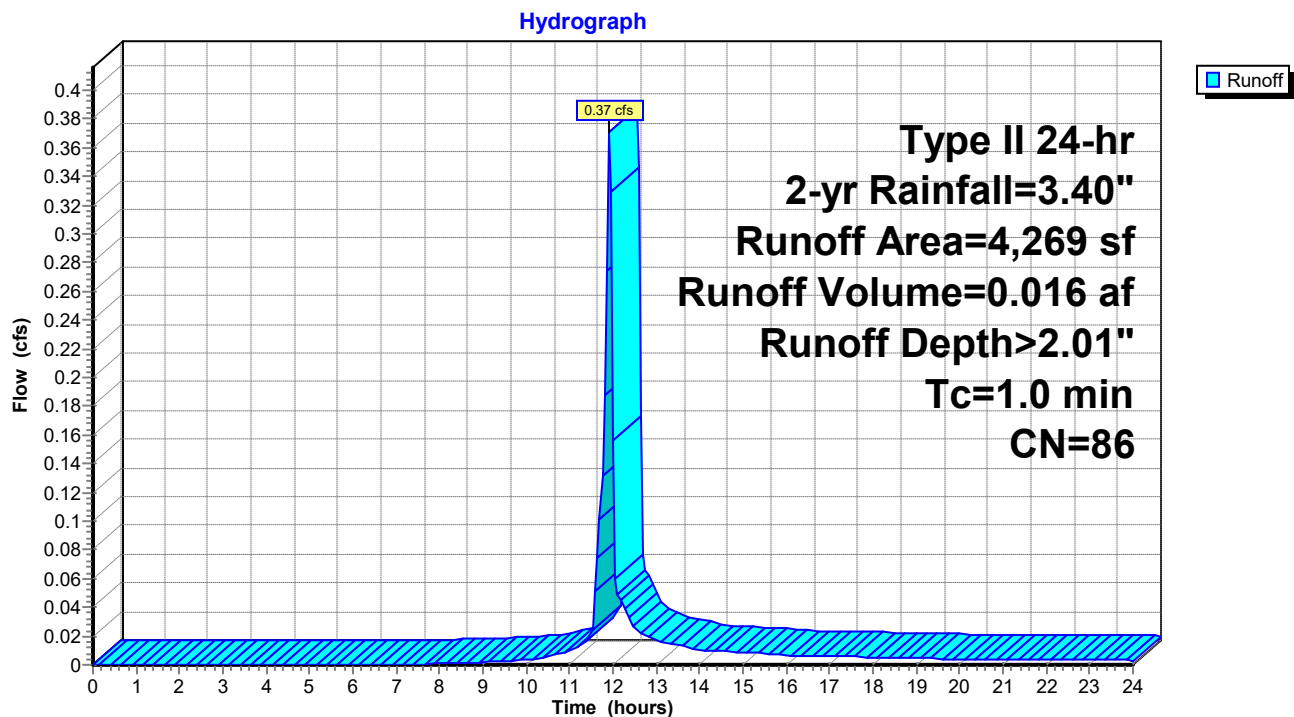
Runoff = 0.37 cfs @ 11.91 hrs, Volume= 0.016 af, Depth> 2.01"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 14

Summary for Subcatchment PR-4A: Roof & SWM Feature (Turquoise)

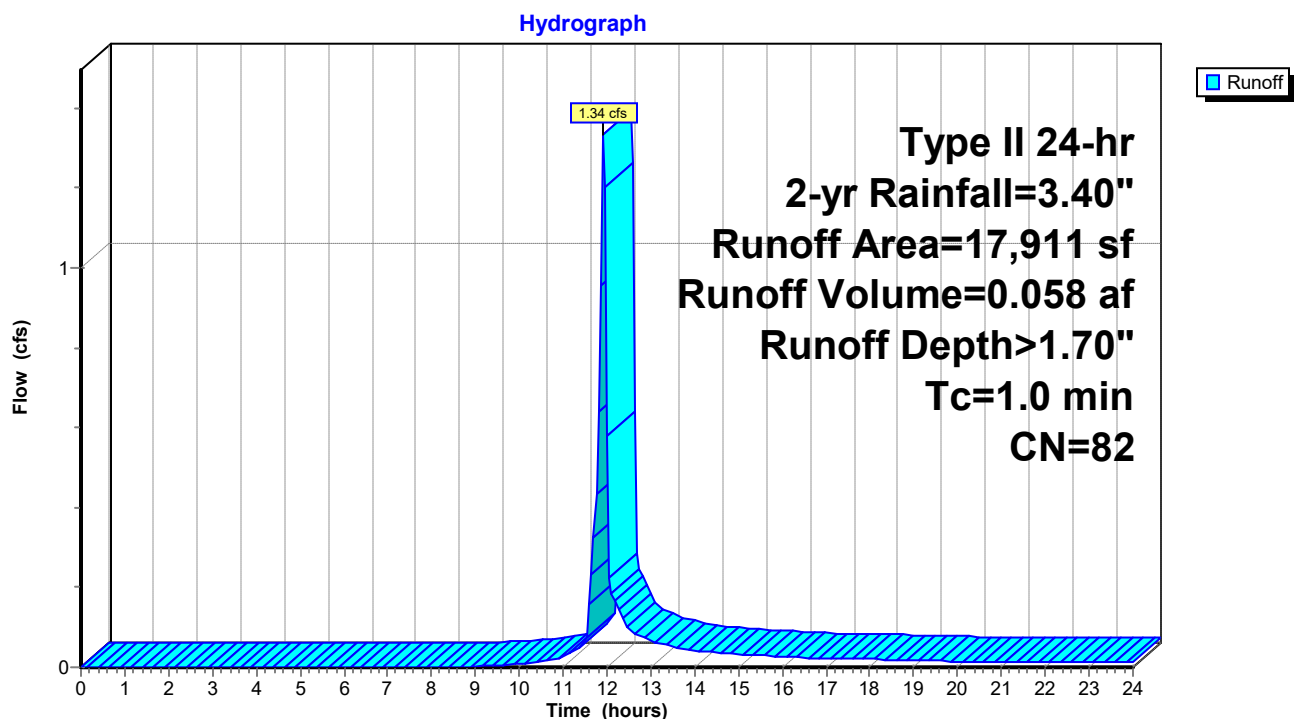
Runoff = 1.34 cfs @ 11.91 hrs, Volume= 0.058 af, Depth> 1.70"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 15

Summary for Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)

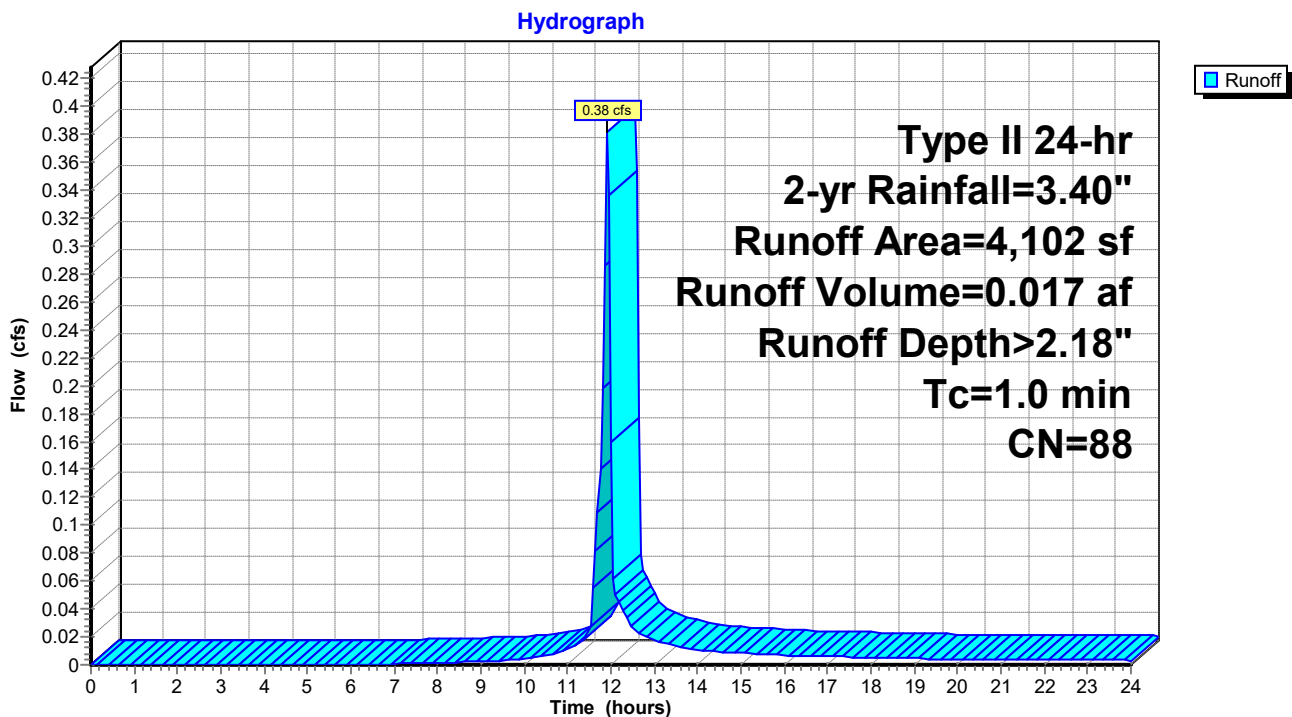
Runoff = 0.38 cfs @ 11.91 hrs, Volume= 0.017 af, Depth> 2.18"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 16

Summary for Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)

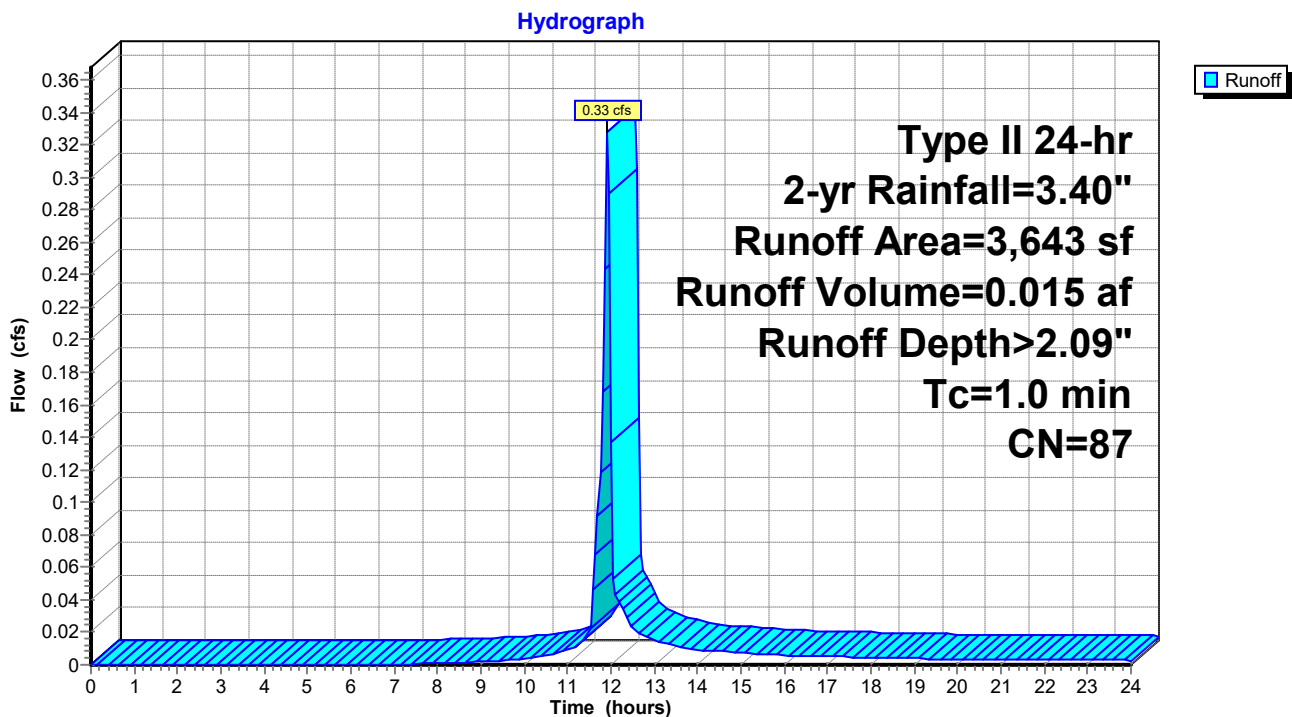
Runoff = 0.33 cfs @ 11.91 hrs, Volume= 0.015 af, Depth> 2.09"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 17

Summary for Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)

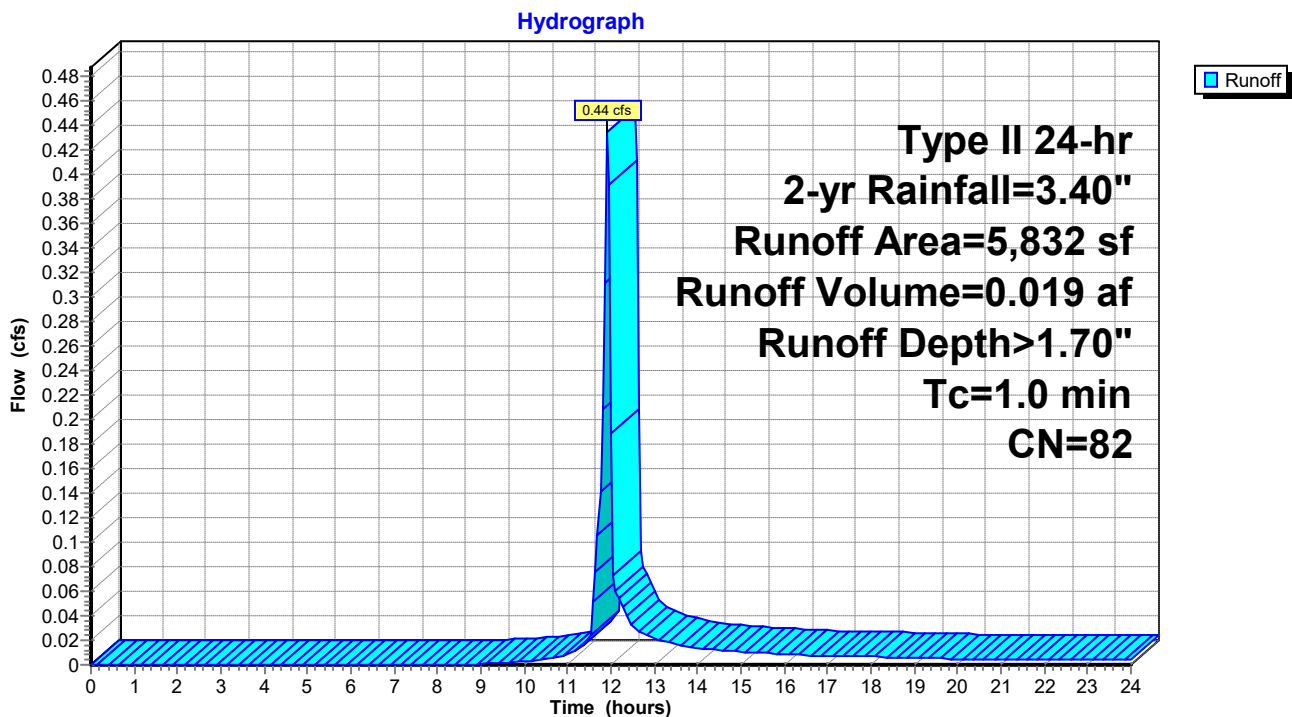
Runoff = 0.44 cfs @ 11.91 hrs, Volume= 0.019 af, Depth> 1.70"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 18

Summary for Subcatchment PR-5: Amenity Building & Parking (Red)

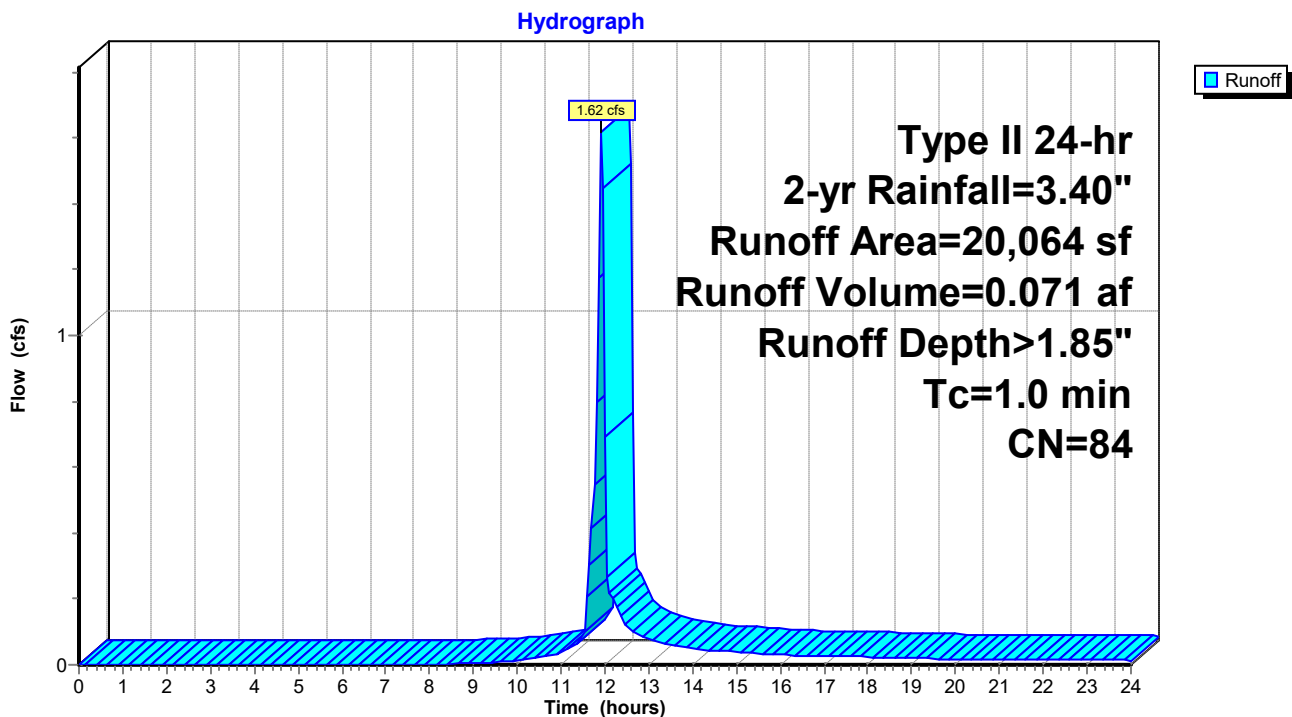
Runoff = 1.62 cfs @ 11.91 hrs, Volume= 0.071 af, Depth> 1.85"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 19

Summary for Subcatchment PR-6: Orange

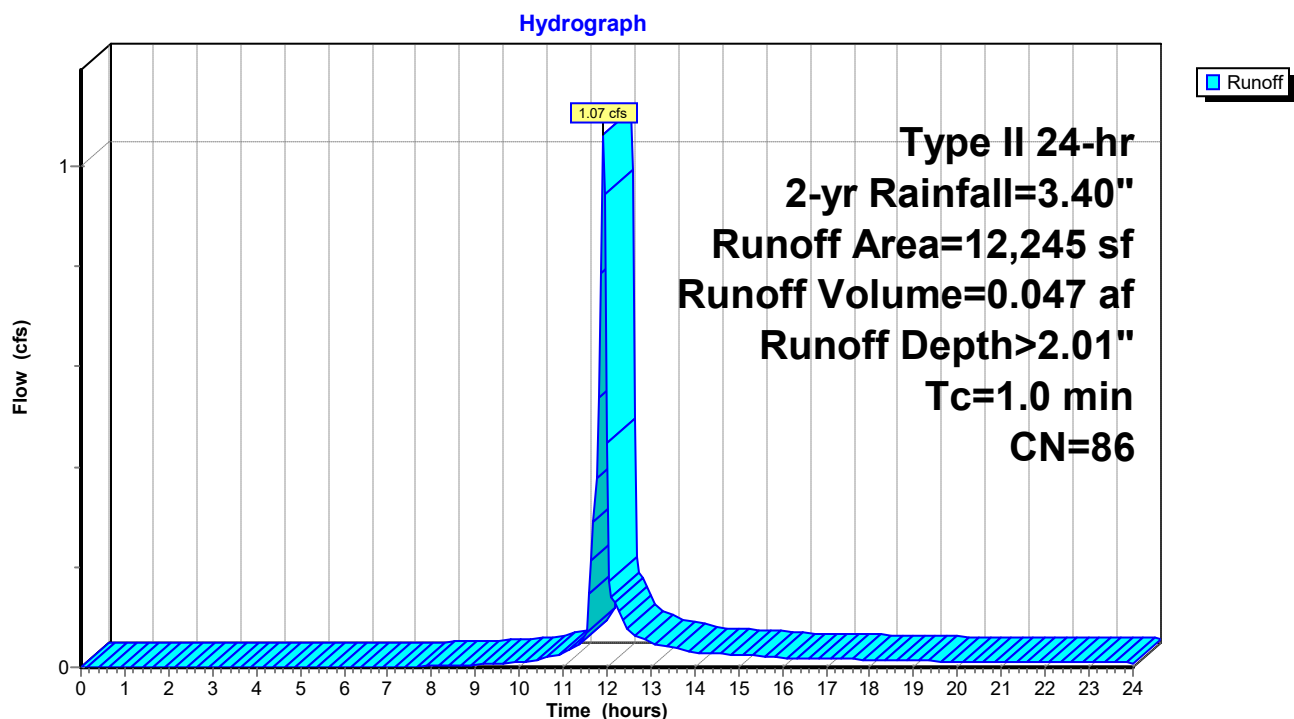
Runoff = 1.07 cfs @ 11.91 hrs, Volume= 0.047 af, Depth> 2.01"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 20

Summary for Subcatchment PR-7: Yellow

Runoff = 0.74 cfs @ 11.91 hrs, Volume= 0.032 af, Depth> 1.63"

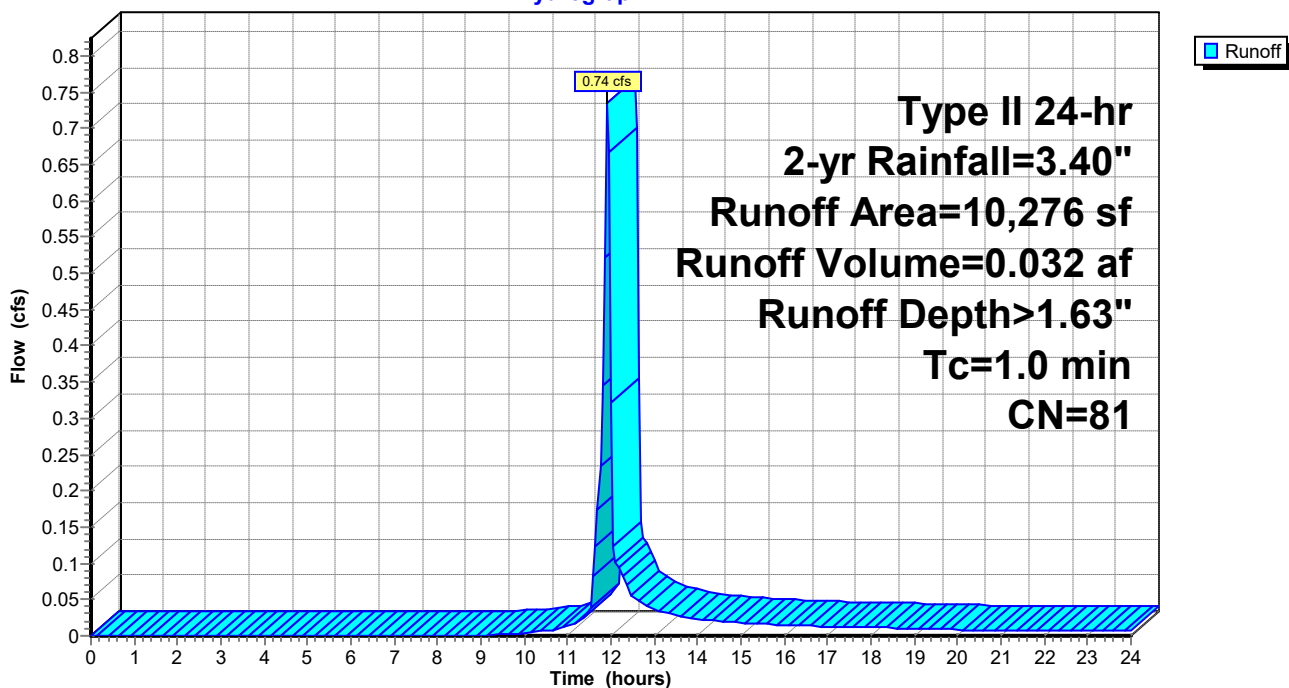
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

	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: Yellow

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 21

Summary for Subcatchment RD-8: Residue of Property (Adj. North Street)

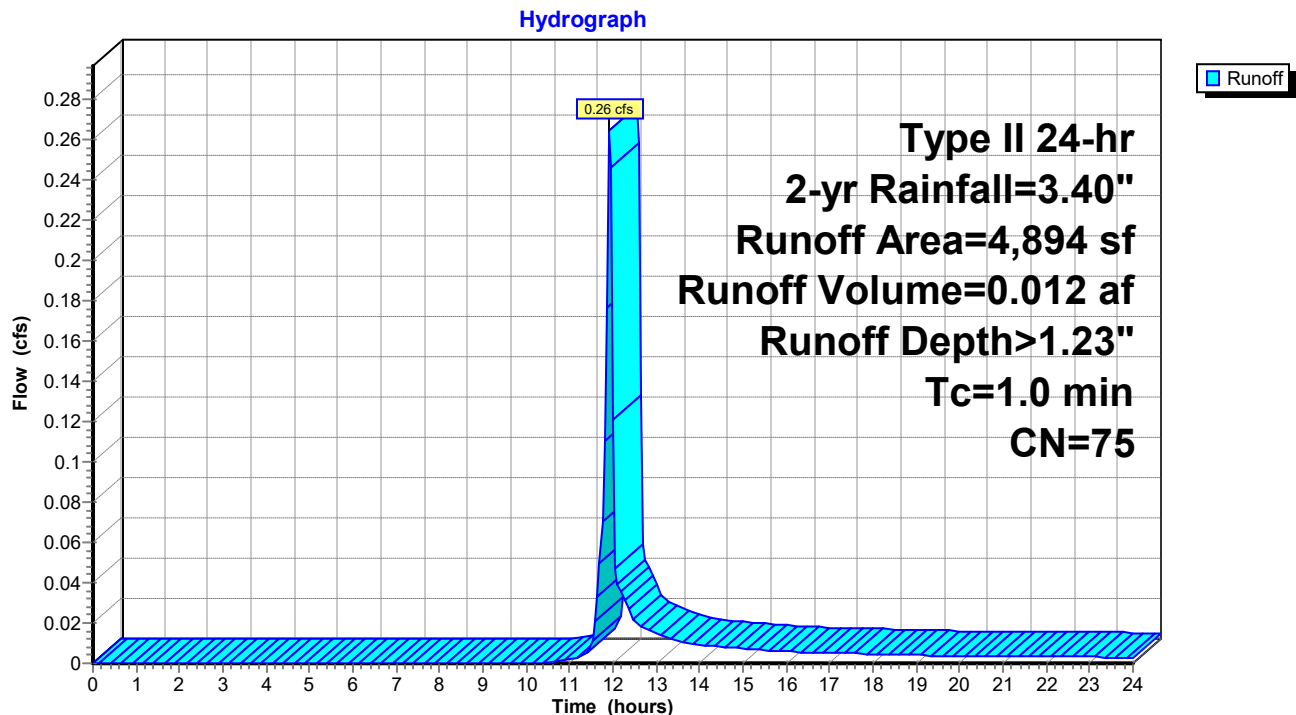
Runoff = 0.26 cfs @ 11.92 hrs, Volume= 0.012 af, Depth> 1.23"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 22

Summary for Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building

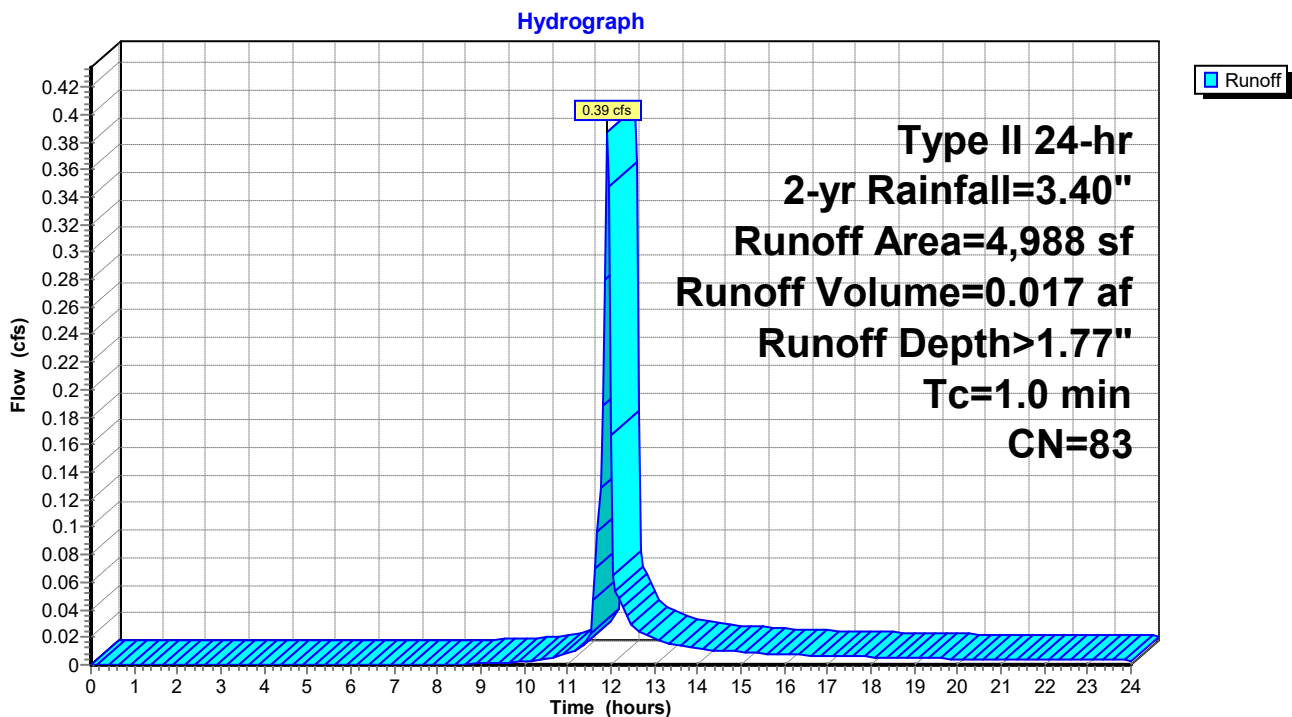
Runoff = 0.39 cfs @ 11.91 hrs, Volume= 0.017 af, Depth> 1.77"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 23

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

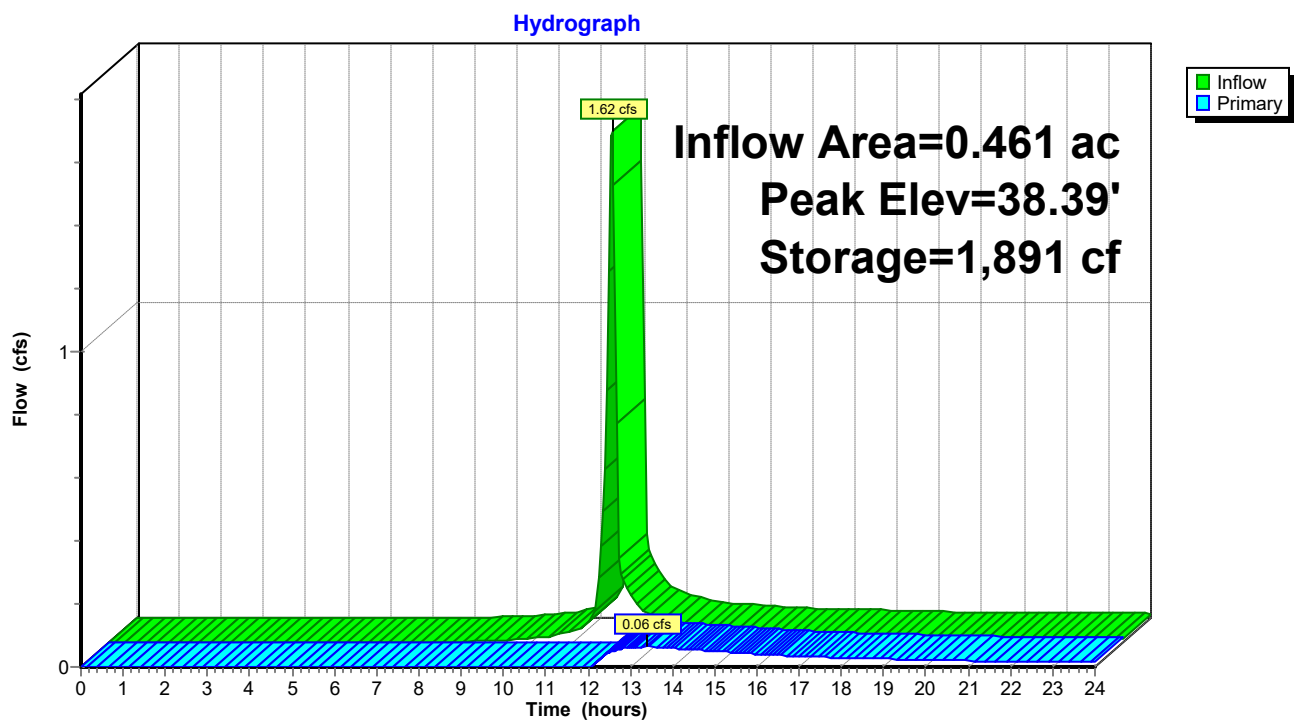
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 24

Pond 3P: MicroBioretention #5



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 25

Stage-Area-Storage for Pond 3P: MicroBioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.14	650	0	37.69	1,020	974
35.19	650	13	37.74	1,059	1,026
35.24	650	26	37.79	1,098	1,080
35.29	650	39	37.84	1,138	1,135
35.34	650	52	37.89	1,178	1,193
35.39	650	65	37.94	1,220	1,253
35.44	650	78	37.99	1,262	1,315
35.49	650	91	38.04	1,304	1,379
35.54	650	104	38.09	1,348	1,446
35.59	650	117	38.14	1,392	1,514
35.64	650	130	38.19	1,431	1,585
35.69	650	143	38.24	1,469	1,657
35.74	650	156	38.29	1,508	1,732
35.79	650	169	38.34	1,547	1,808
35.84	650	182	38.39	1,587	1,887
35.89	650	195	38.44	1,627	1,967
35.94	650	208	38.49	1,668	2,049
35.99	650	221	38.54	1,709	2,134
36.04	650	234	38.59	1,751	2,220
36.09	650	247	38.64	1,793	2,309
36.14	650	260	38.69	1,836	2,399
36.19	650	273	38.74	1,879	2,492
36.24	650	286	38.79	1,922	2,587
36.29	650	299	38.84	1,967	2,685
36.34	650	312	38.89	2,011	2,784
36.39	650	325	38.94	2,057	2,886
36.44	650	338	38.99	2,102	2,990
36.49	650	351	39.04	2,149	3,096
36.54	650	364	39.09	2,195	3,205
36.59	650	377	39.14	2,242	3,316
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 26

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

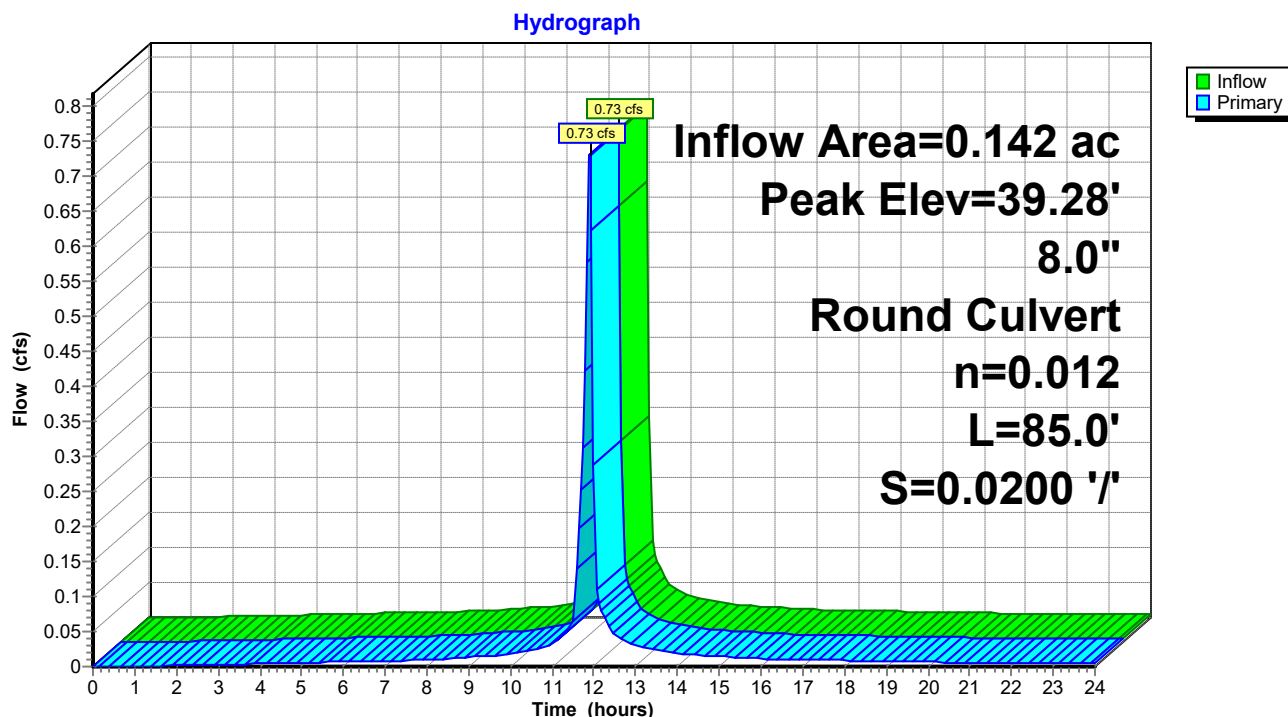
Peak Elev= 39.28' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 27

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 28

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

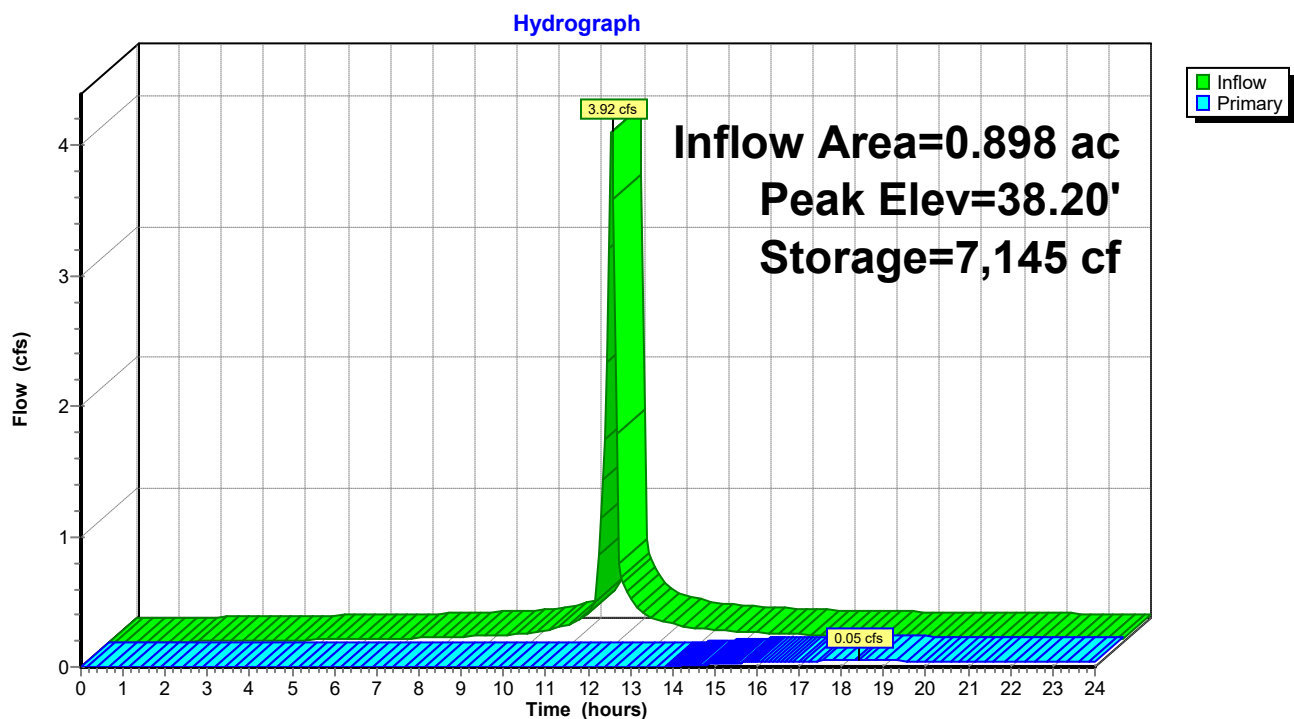
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 29

Pond 6P: MicroBioRetention #1 & #2



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 30

Stage-Area-Storage for Pond 6P: MicroBioRetention #1 & #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
32.99	2,323	0	38.09	3,270	6,778
33.09	2,323	93	38.19	3,356	7,109
33.19	2,323	186	38.29	3,443	7,449
33.29	2,323	279	38.39	3,531	7,798
33.39	2,323	372	38.49	3,620	8,155
33.49	2,323	465	38.59	3,710	8,522
33.59	2,323	558	38.69	3,801	8,897
33.69	2,323	650	38.79	3,894	9,282
33.79	2,323	743	38.89	3,987	9,676
33.89	2,323	836	38.99	4,082	10,080
33.99	2,323	929	39.09	4,178	10,493
34.09	2,323	1,022	39.19	4,275	10,915
34.19	2,323	1,115	39.29	4,373	11,348
34.29	2,323	1,208	39.39	4,472	11,790
34.39	2,323	1,301	39.49	4,572	12,242
34.49	2,323	1,394	39.59	4,673	12,704
34.59	2,323	1,487	39.69	4,775	13,177
34.69	2,323	1,580	39.79	4,879	13,659
34.79	2,323	1,673	39.89	4,984	14,152
34.89	2,323	1,765	39.99	5,089	14,656
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 31

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 ' 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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

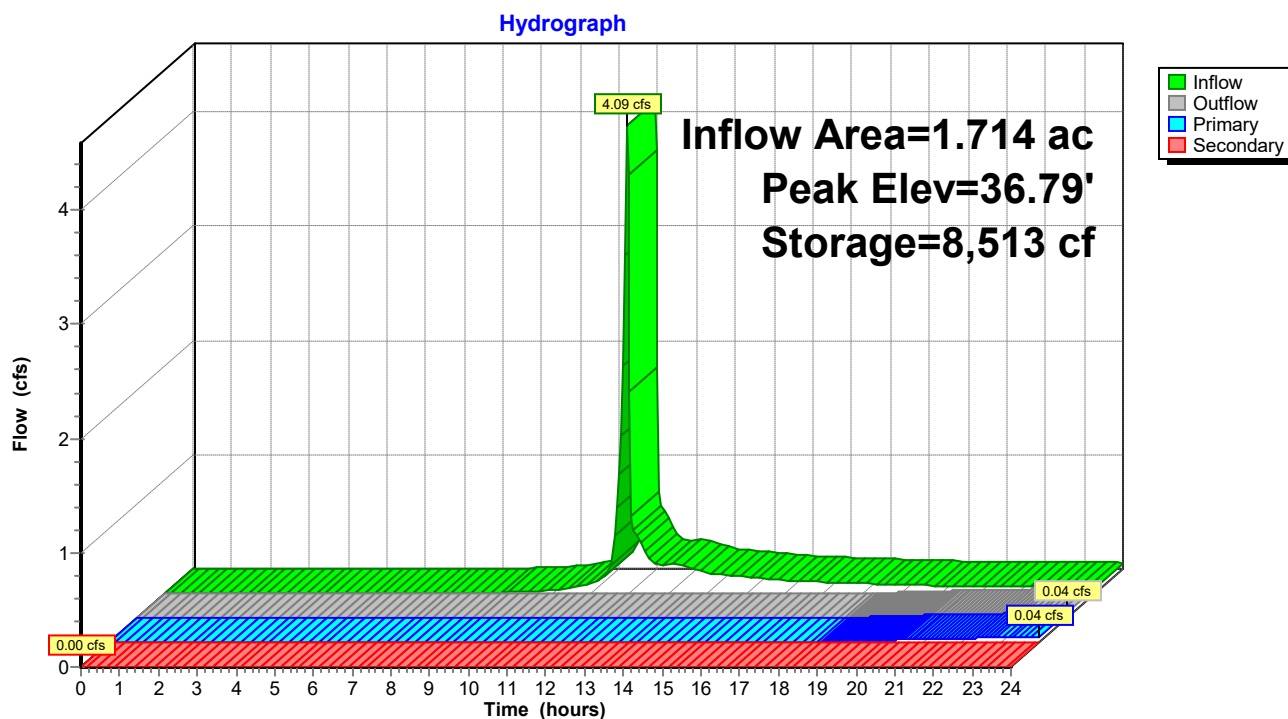
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 32

Pond 8P: MicroBioRetention #3 & #4



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 33

Stage-Area-Storage for Pond 8P: MicroBioRetention #3 & #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.59	2,680	0	36.69	4,276	8,072
31.69	2,680	107	36.79	4,441	8,508
31.79	2,680	214	36.89	4,609	8,960
31.89	2,680	322	36.99	4,780	9,430
31.99	2,680	429	37.09	4,954	9,916
32.09	2,680	536	37.19	5,132	10,421
32.19	2,680	643	37.29	5,312	10,943
32.29	2,680	750	37.39	5,496	11,483
32.39	2,680	858	37.49	5,683	12,042
32.49	2,680	965	37.59	5,873	12,620
32.59	2,680	1,072	37.69	6,030	13,215
32.69	2,680	1,179	37.79	6,186	13,826
32.79	2,680	1,286	37.89	6,344	14,452
32.89	2,680	1,394	37.99	6,504	15,095
32.99	2,680	1,501	38.09	6,665	15,753
33.09	2,680	1,608	38.19	6,829	16,428
33.19	2,680	1,715	38.29	6,995	17,119
33.29	2,680	1,822	38.39	7,162	17,827
33.39	2,680	1,930	38.49	7,332	18,552
33.49	2,680	2,037	38.59	7,504	19,293
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 34

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

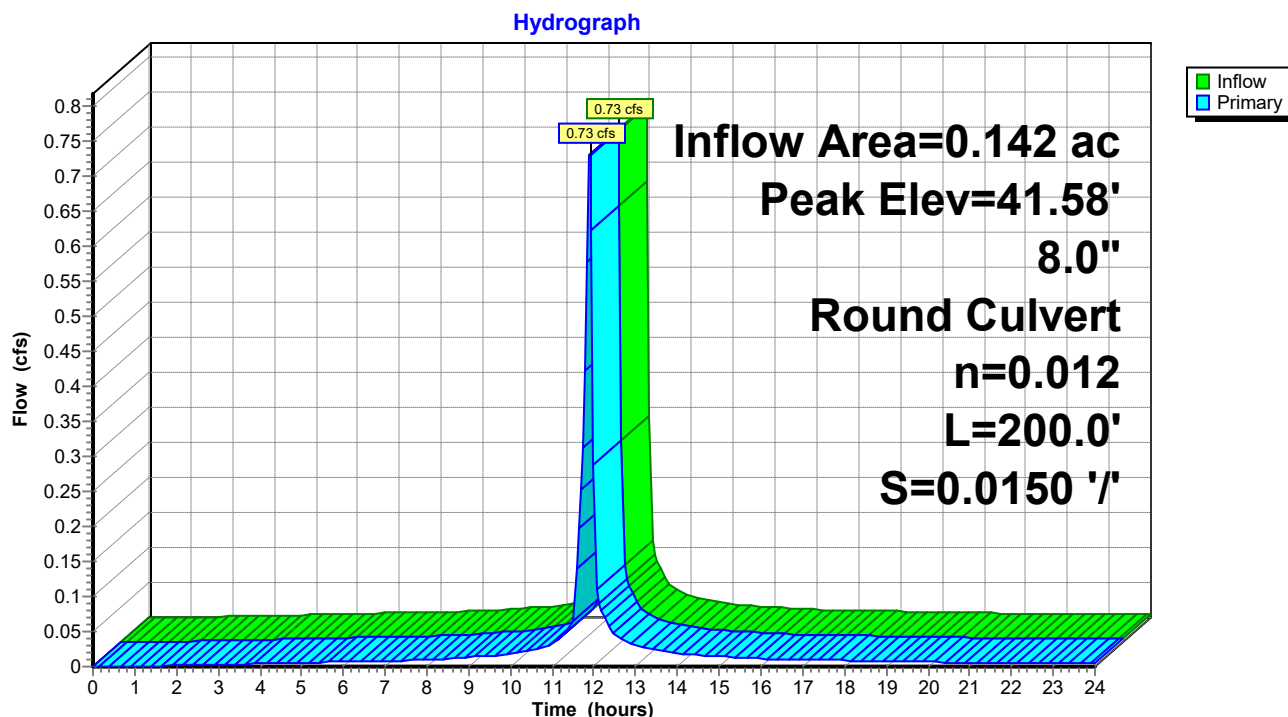
Peak Elev= 41.58' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 35

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 36

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

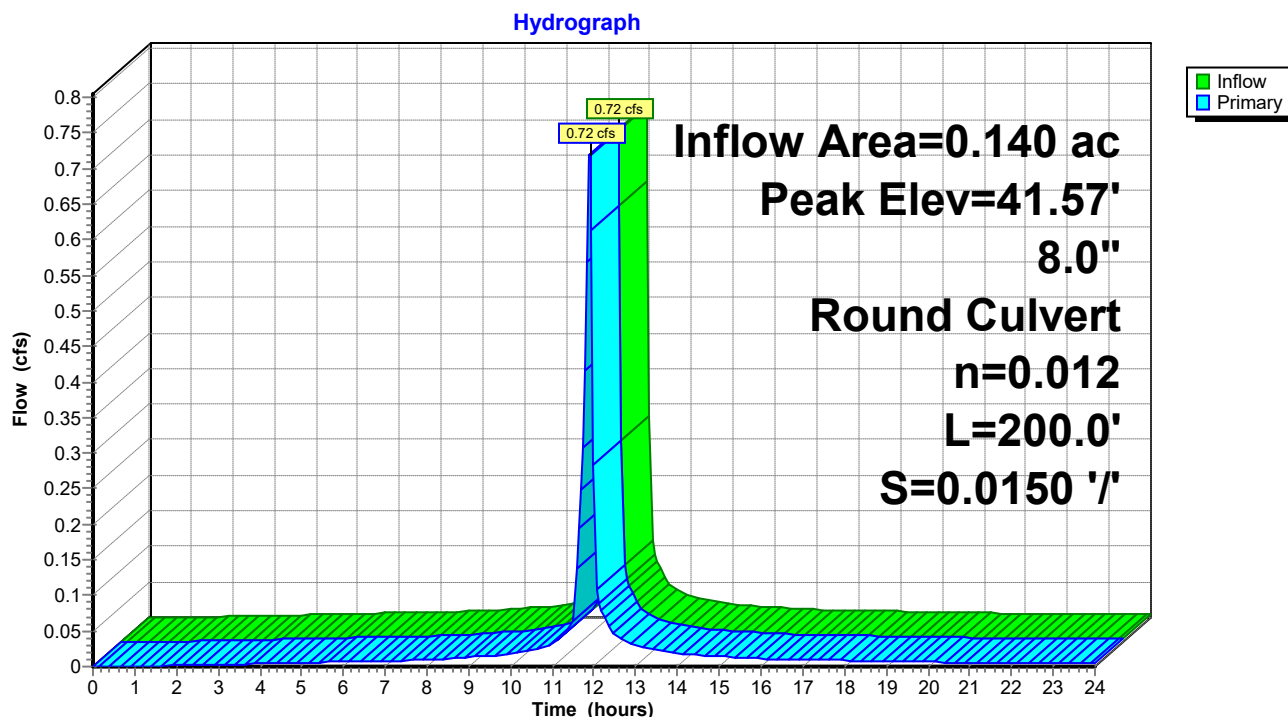
Peak Elev= 41.57' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 37

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 38

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

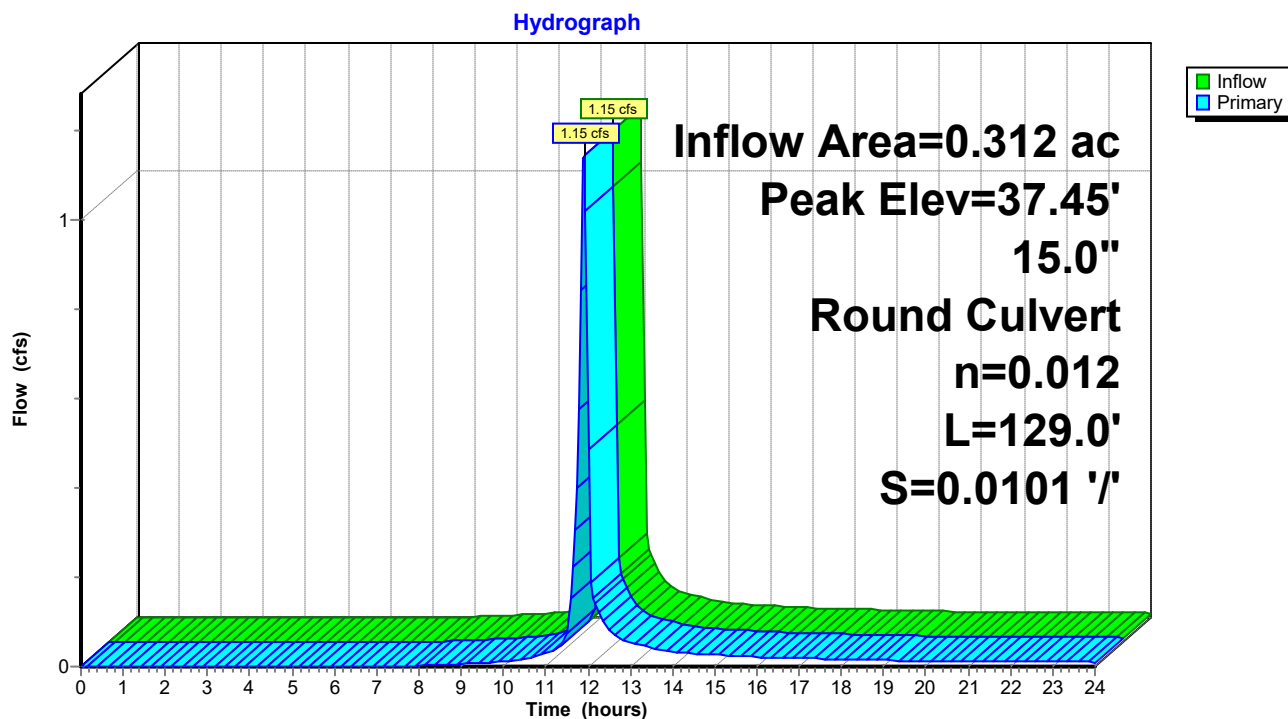
Peak Elev= 37.45' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 39

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 40

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

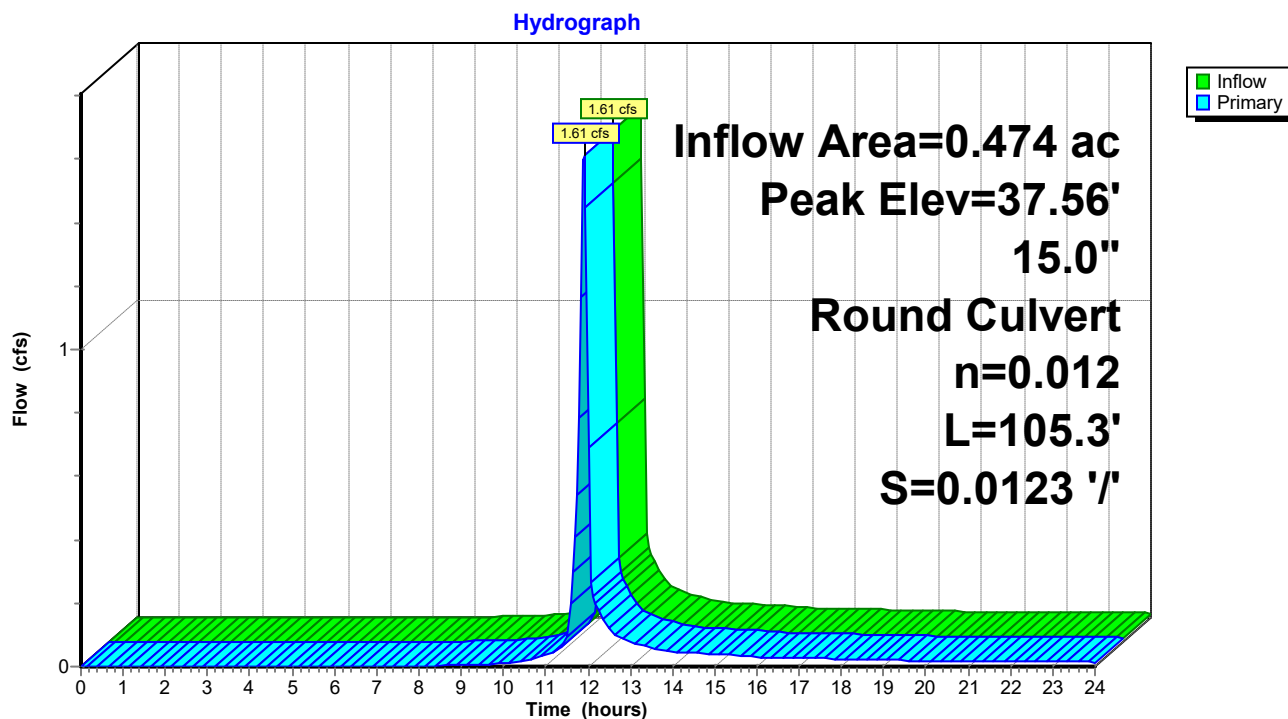
Peak Elev= 37.56' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 41

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 42

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

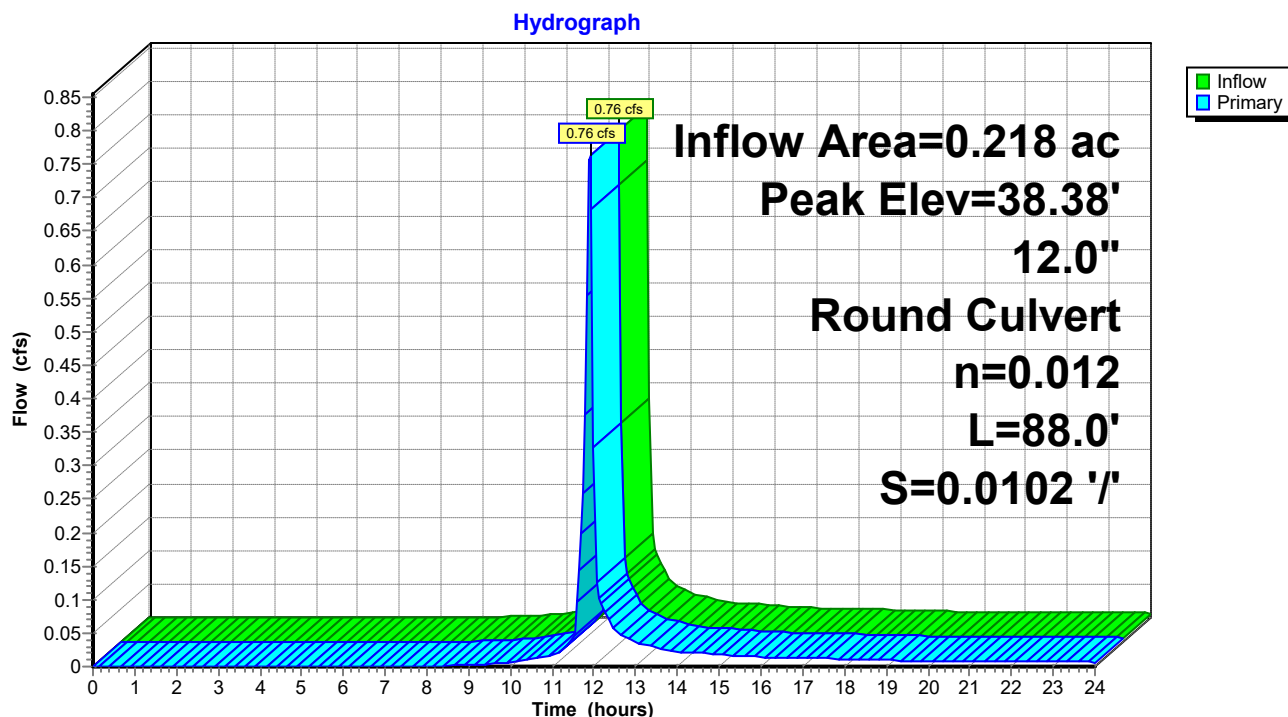
Peak Elev= 38.38' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 43

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 44

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

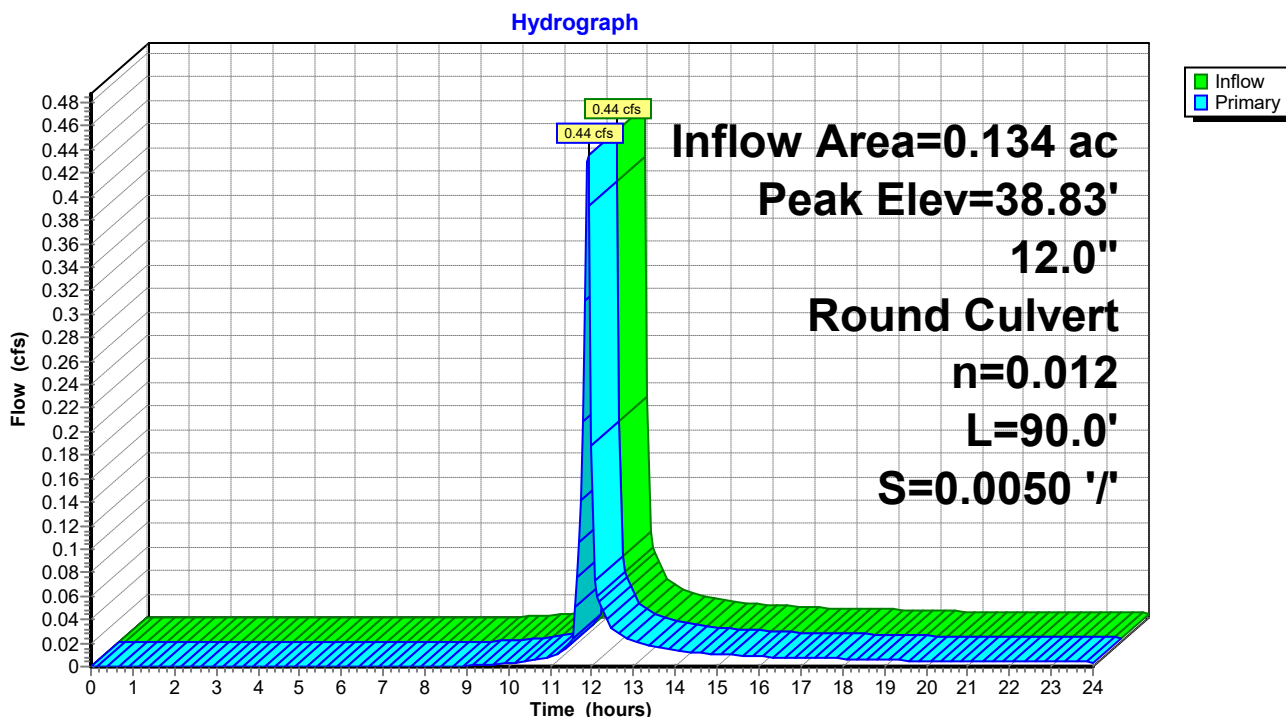
Peak Elev= 38.83' @ 11.92 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 45

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 46

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

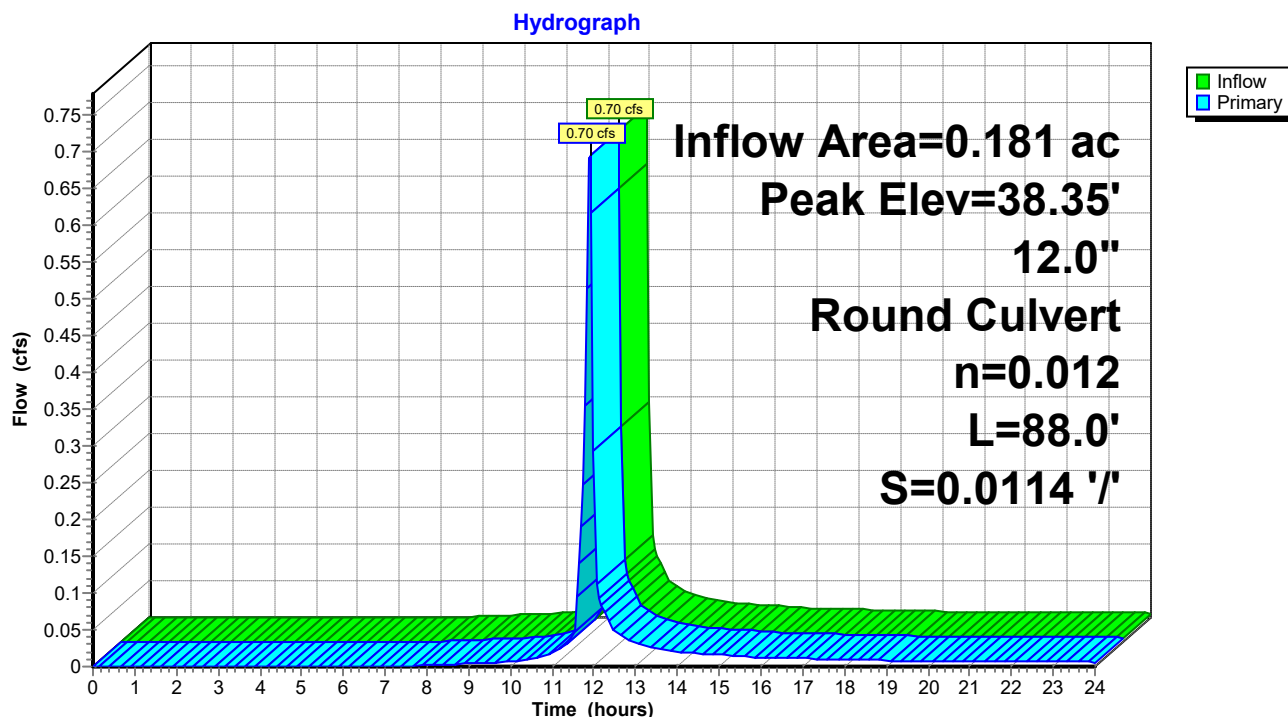
Peak Elev= 38.35' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 47

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 48

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

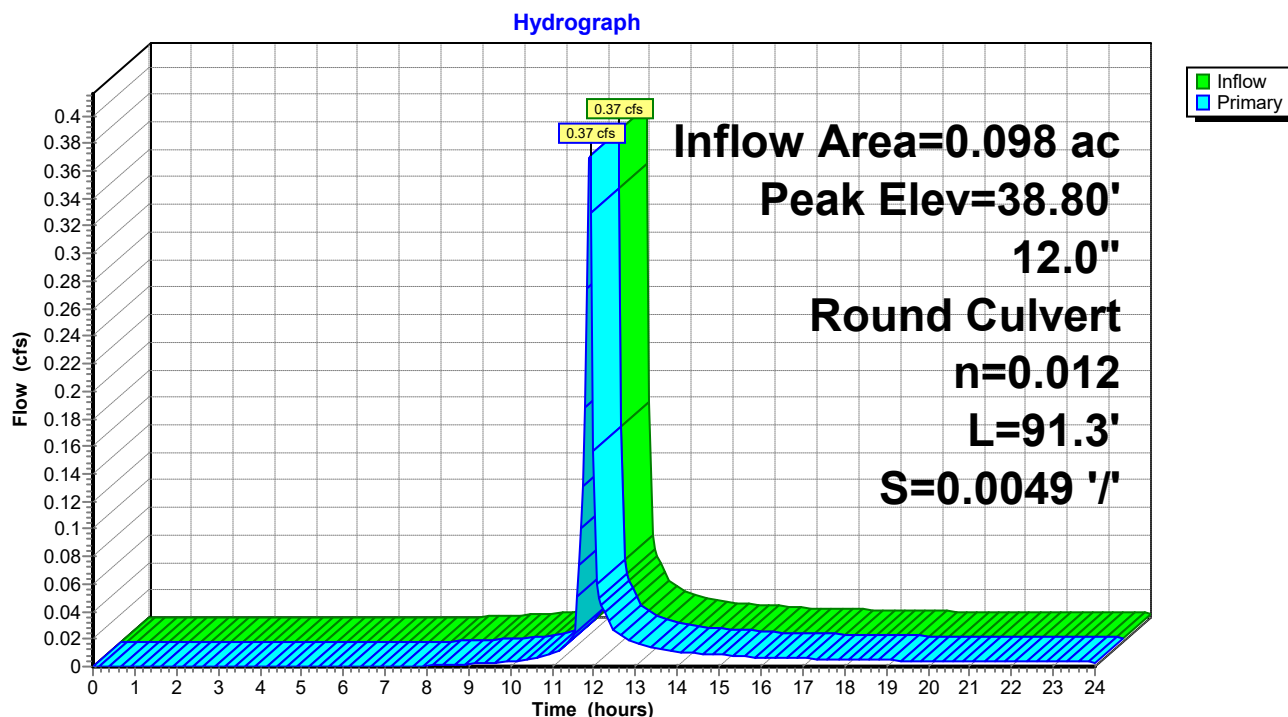
Peak Elev= 38.80' @ 11.92 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 49

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 50

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

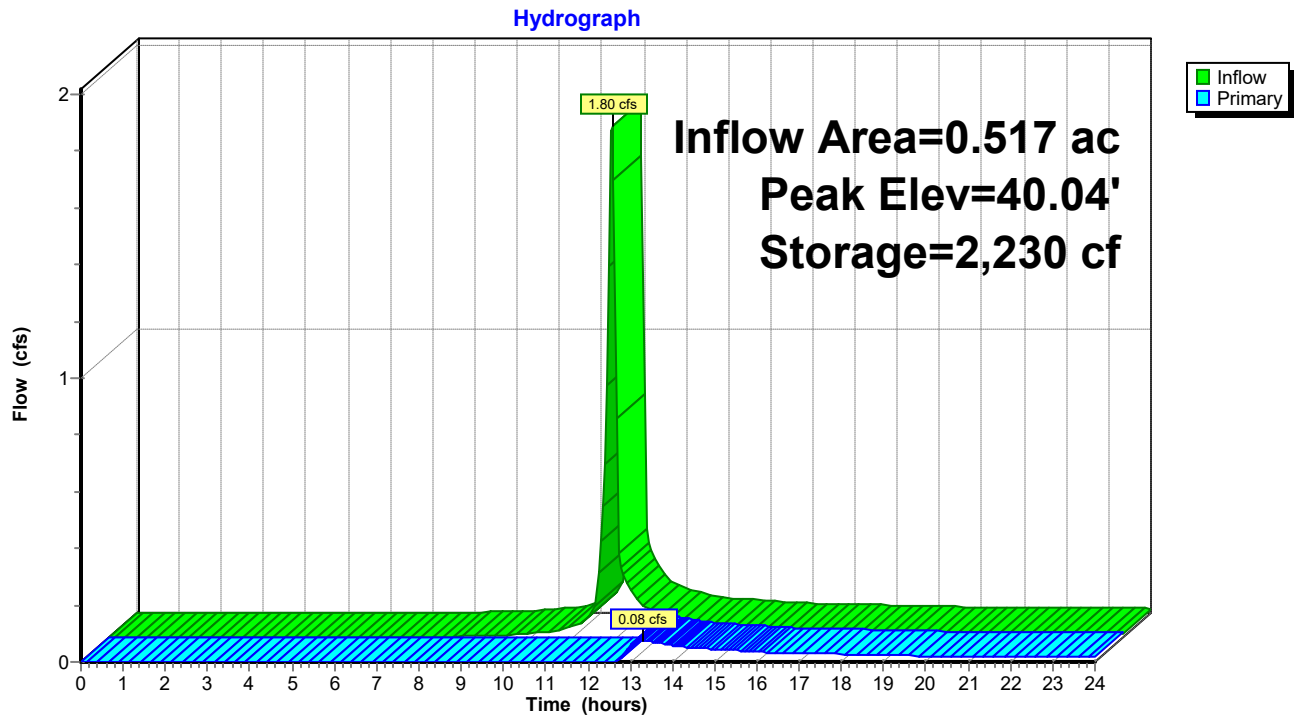
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 51

Pond BSW: BioSwale (M-8)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

Page 52

Stage-Area-Storage for Pond BSW: BioSwale (M-8)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.99	631	0	40.09	1,876	2,322
35.09	631	25	40.19	2,024	2,517
35.19	631	50	40.29	2,177	2,727
35.29	631	76	40.39	2,335	2,953
35.39	631	101	40.49	2,499	3,194
35.49	631	126	40.59	2,669	3,453
35.59	631	151	40.69	2,844	3,728
35.69	631	177	40.79	3,025	4,022
35.79	631	202	40.89	3,212	4,334
35.89	631	227	40.99	3,403	4,664
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

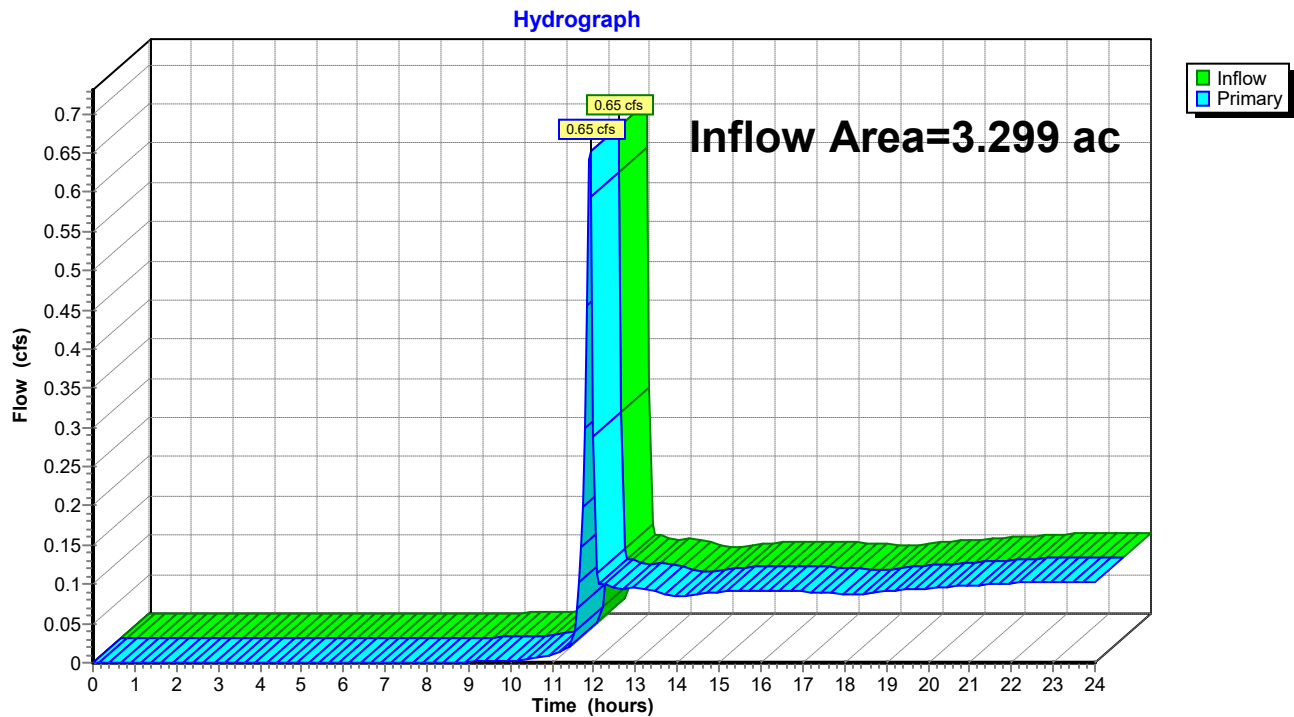
Page 53

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 2-yr Rainfall=3.40"

Printed 10/31/2023

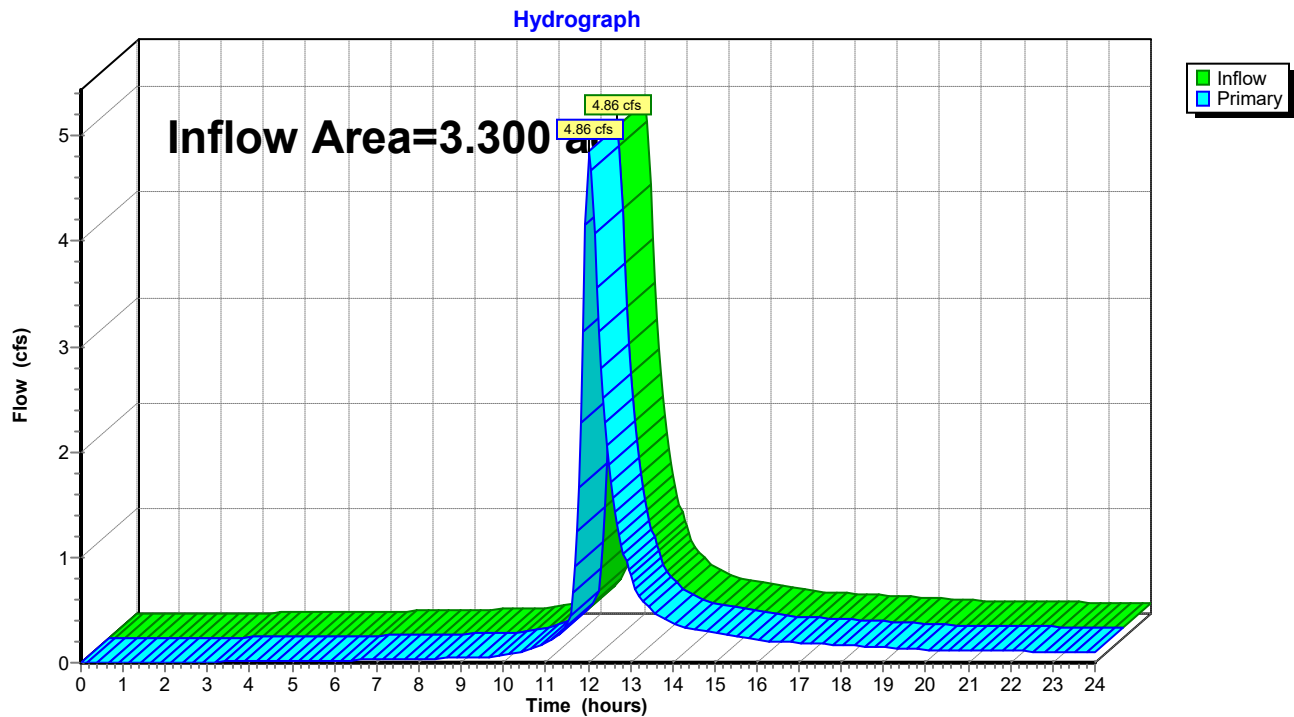
Page 54

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 55

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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

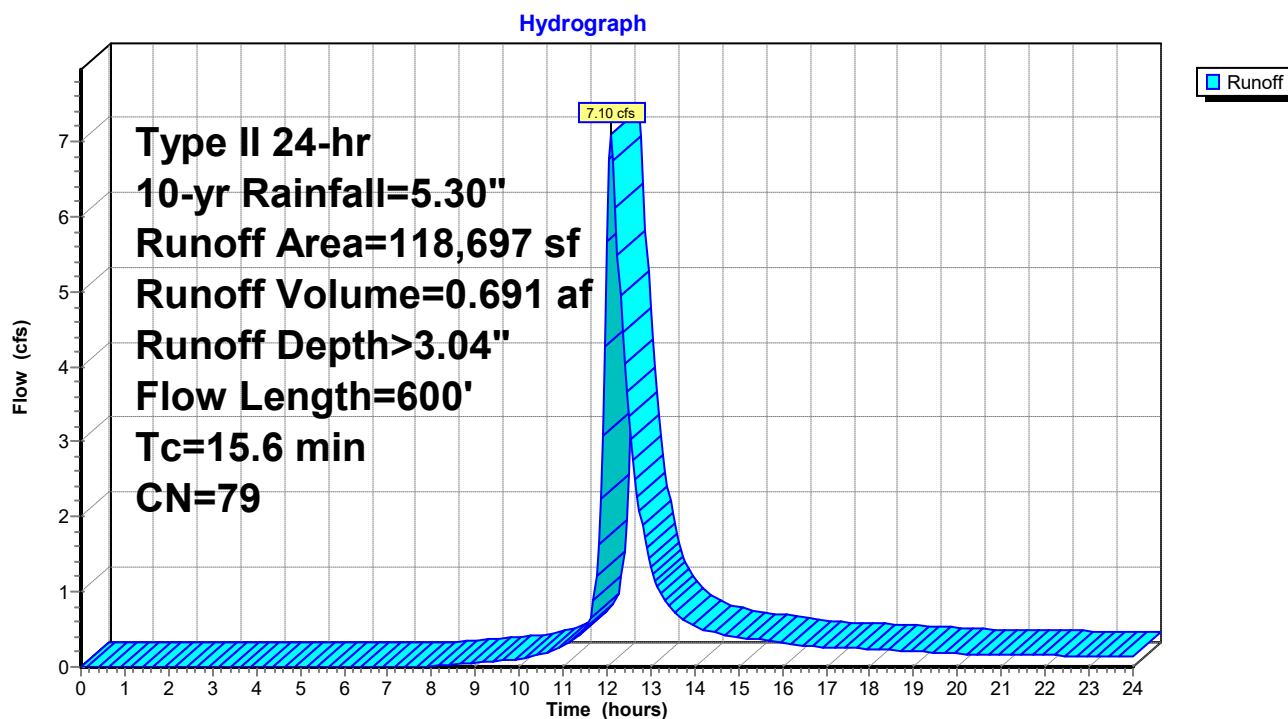
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 56

Subcatchment EX-1: EX (GRAY)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 57

Summary for Subcatchment EX-2: Ex. Easton Ice Parcel

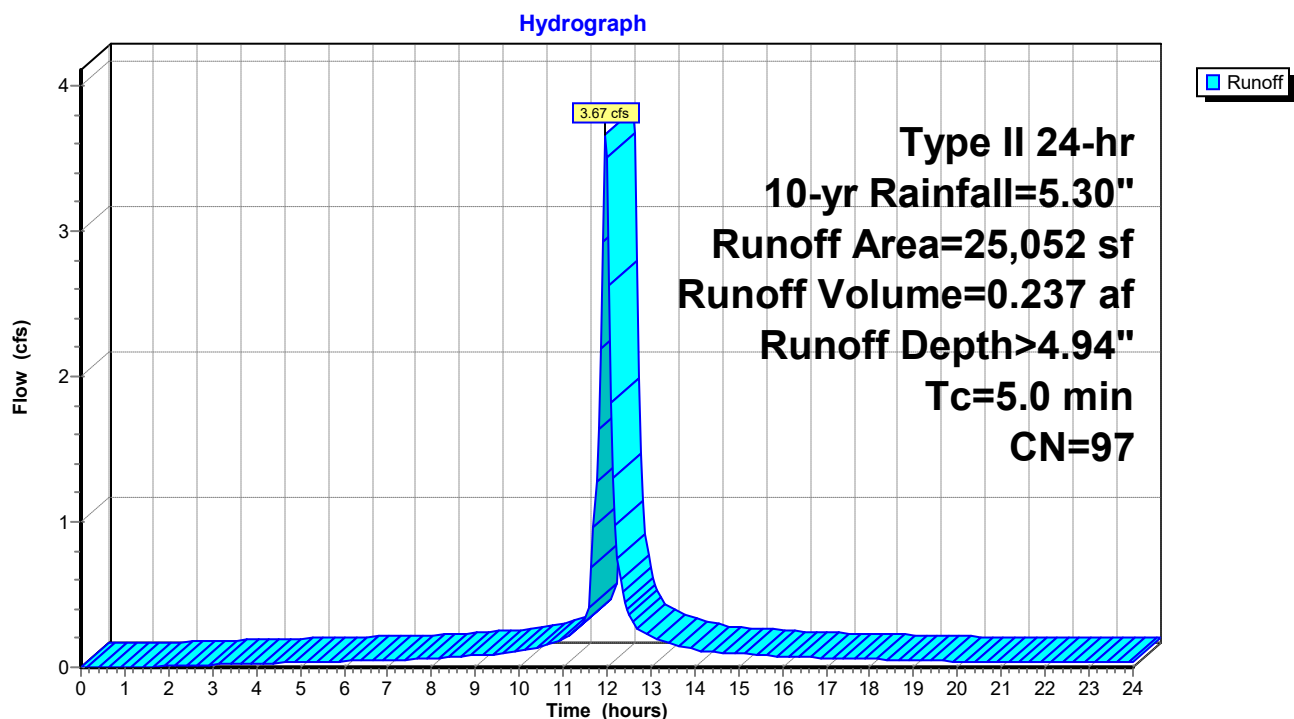
Runoff = 3.67 cfs @ 11.97 hrs, Volume= 0.237 af, Depth> 4.94"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 58

Summary for Subcatchment PR-1A: Parking Lot & SWM Feature (Green)

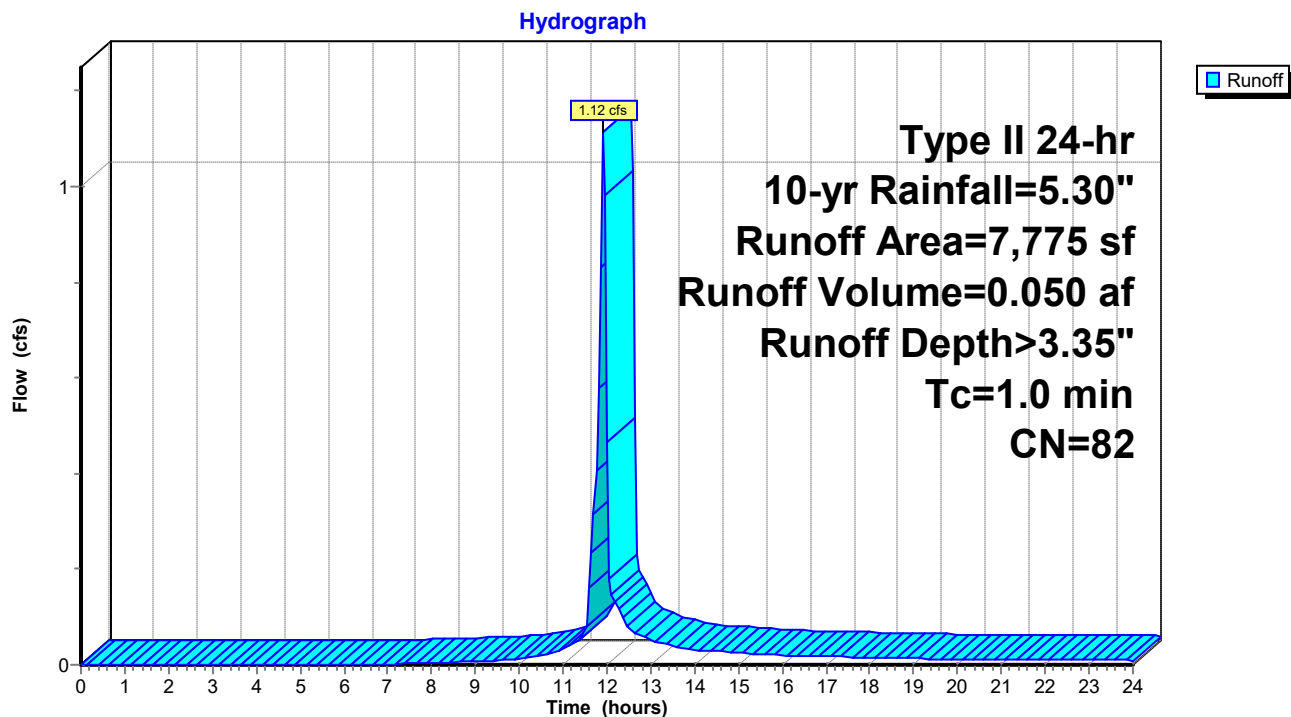
Runoff = 1.12 cfs @ 11.91 hrs, Volume= 0.050 af, Depth> 3.35"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 59

Summary for Subcatchment PR-1B: Green (Roof)

Runoff = 1.15 cfs @ 11.90 hrs, Volume= 0.060 af, Depth> 5.06"

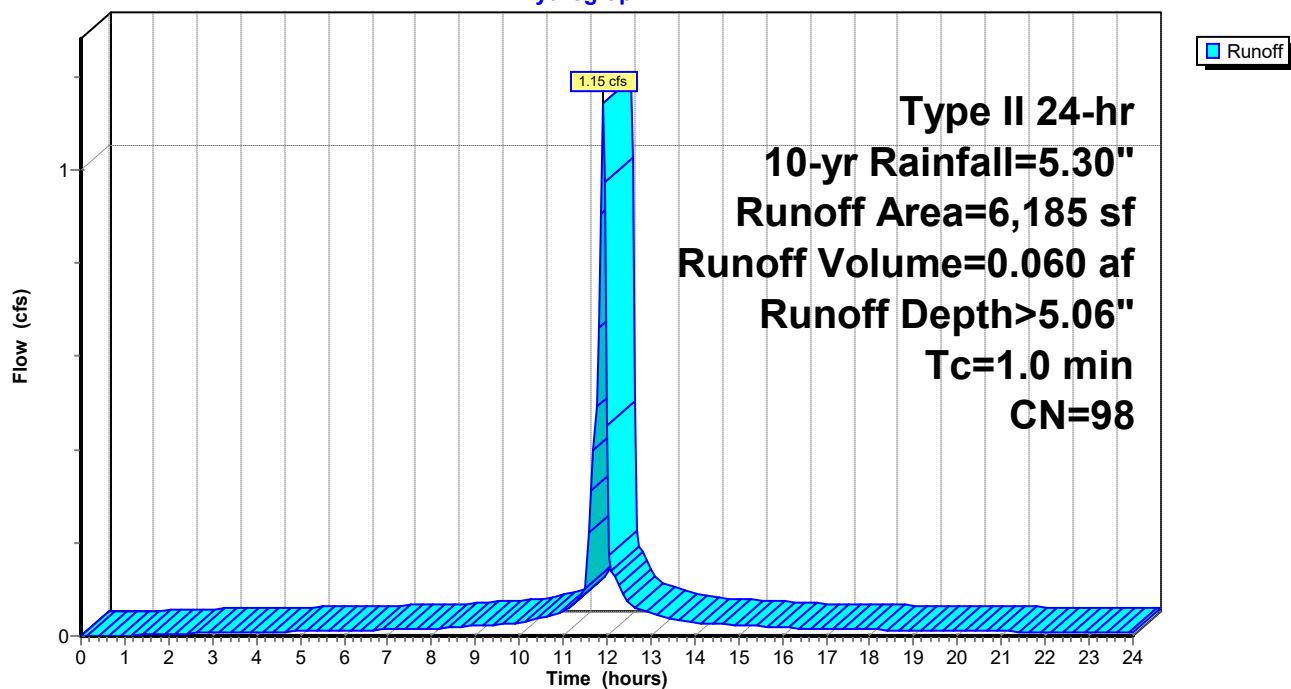
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 60

Summary for Subcatchment PR-1C: Green (Roof)

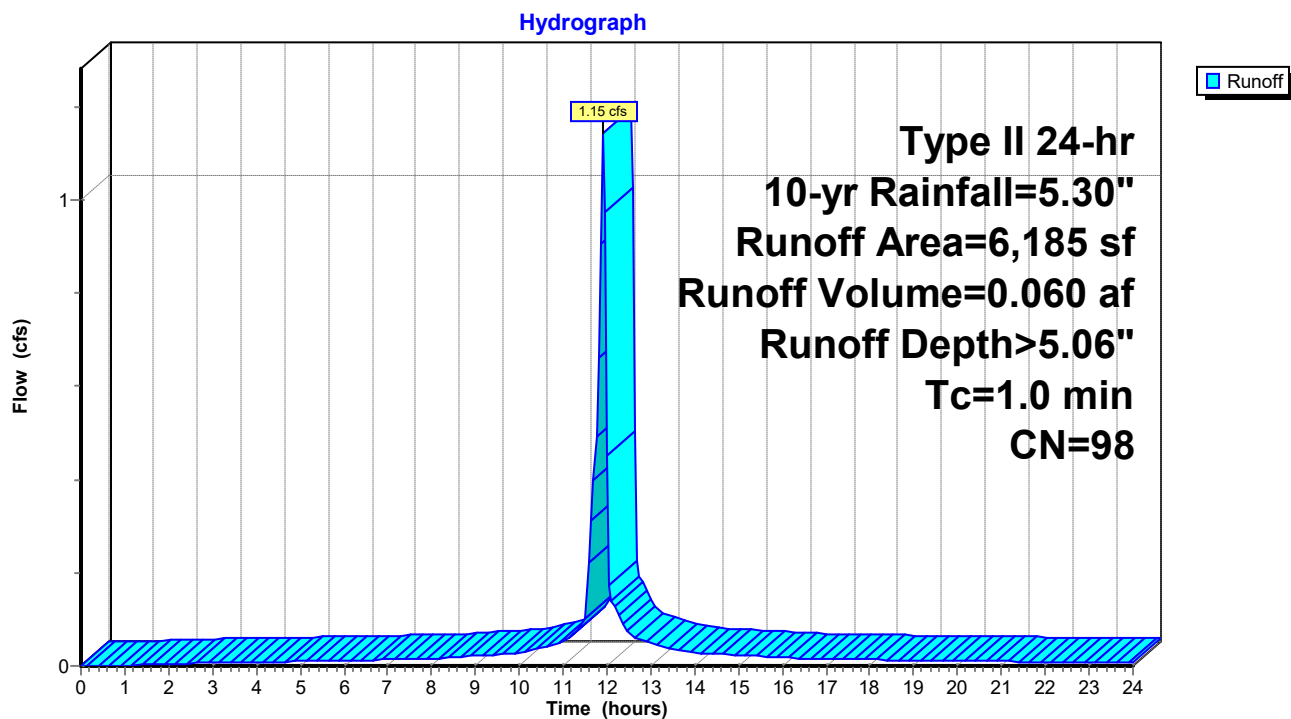
Runoff = 1.15 cfs @ 11.90 hrs, Volume= 0.060 af, Depth> 5.06"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 61

Summary for Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)

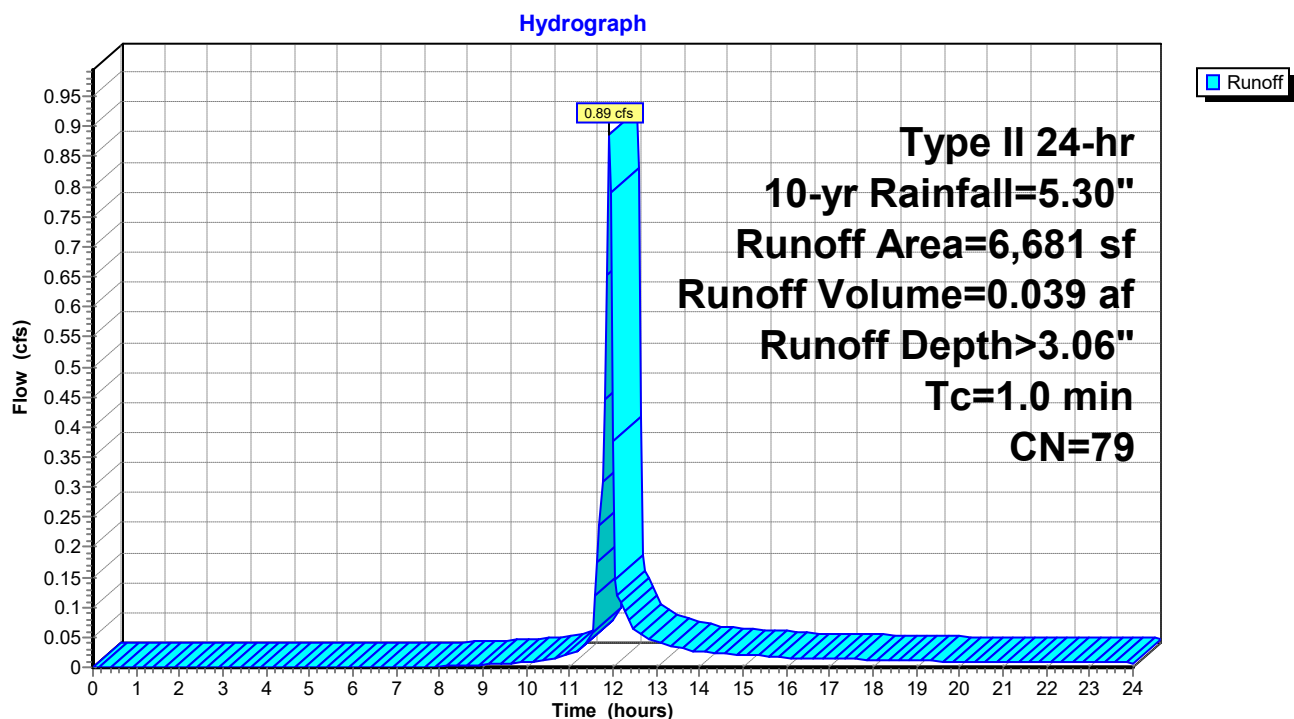
Runoff = 0.89 cfs @ 11.91 hrs, Volume= 0.039 af, Depth> 3.06"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 62

Summary for Subcatchment PR-2B: Purple (Roof)

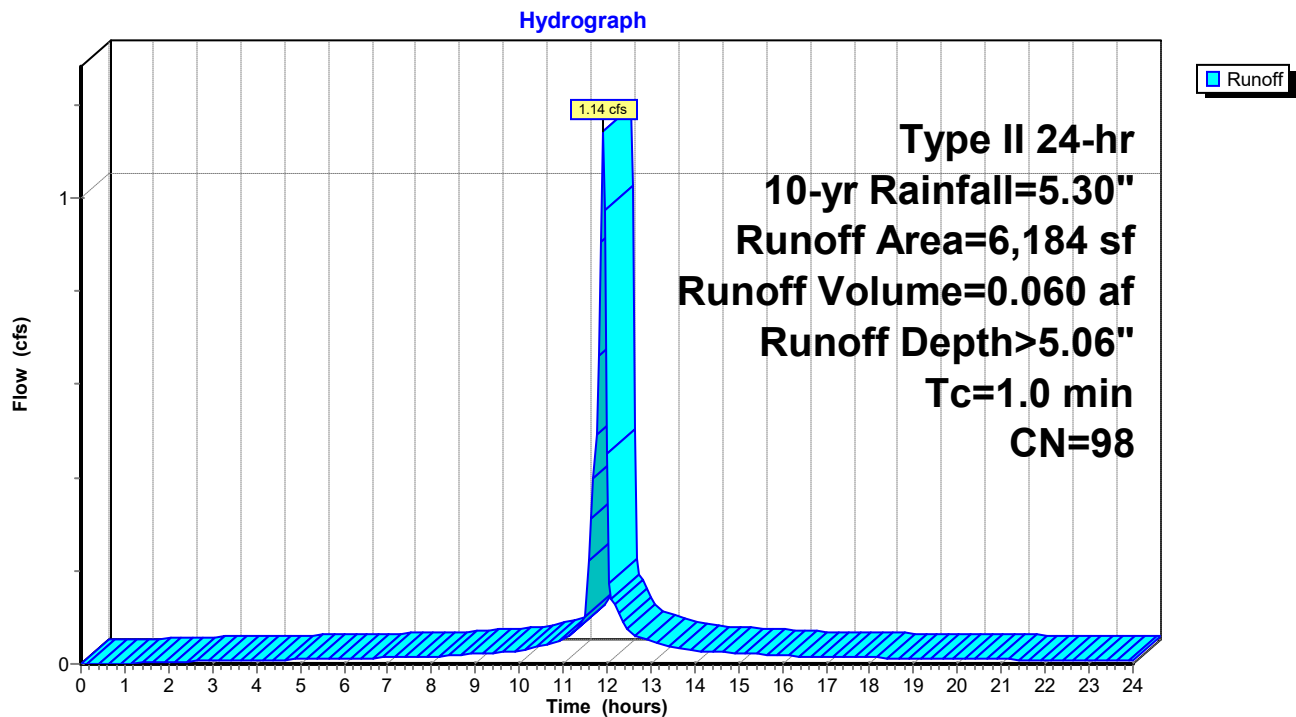
Runoff = 1.14 cfs @ 11.90 hrs, Volume= 0.060 af, Depth> 5.06"

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

Subcatchment PR-2B: Purple (Roof)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 63

Summary for Subcatchment PR-2C: Purple (Roof)

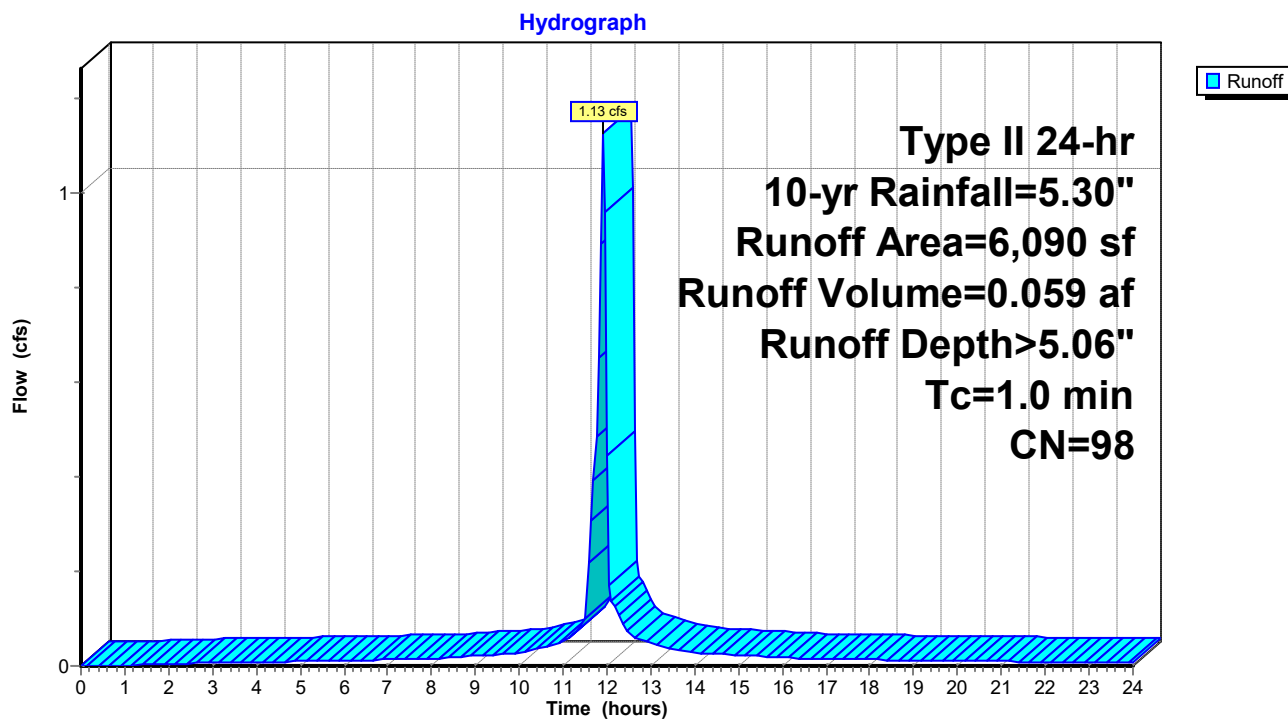
Runoff = 1.13 cfs @ 11.90 hrs, Volume= 0.059 af, Depth> 5.06"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 64

Summary for Subcatchment PR-3A: Parking & Sidewalk (Blue A)

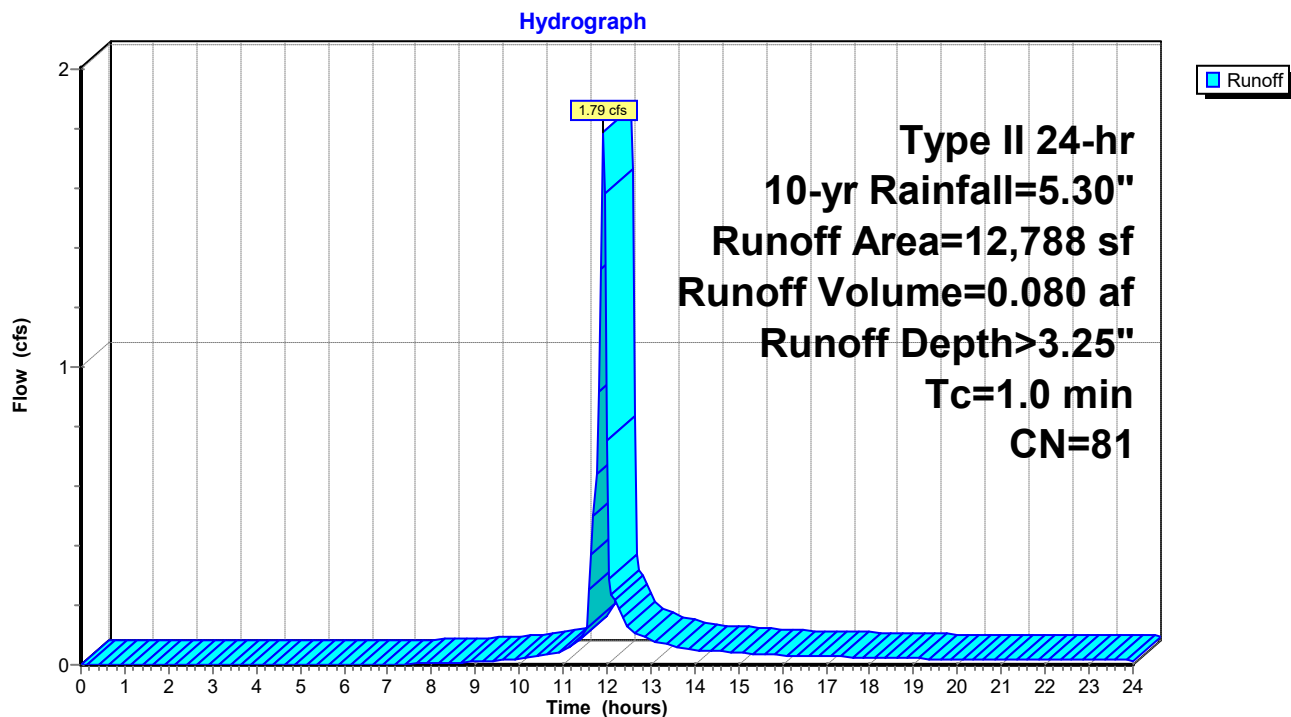
Runoff = 1.79 cfs @ 11.91 hrs, Volume= 0.080 af, Depth> 3.25"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 65

Summary for Subcatchment PR-3B: Parking & Sidewalk (Blue B)

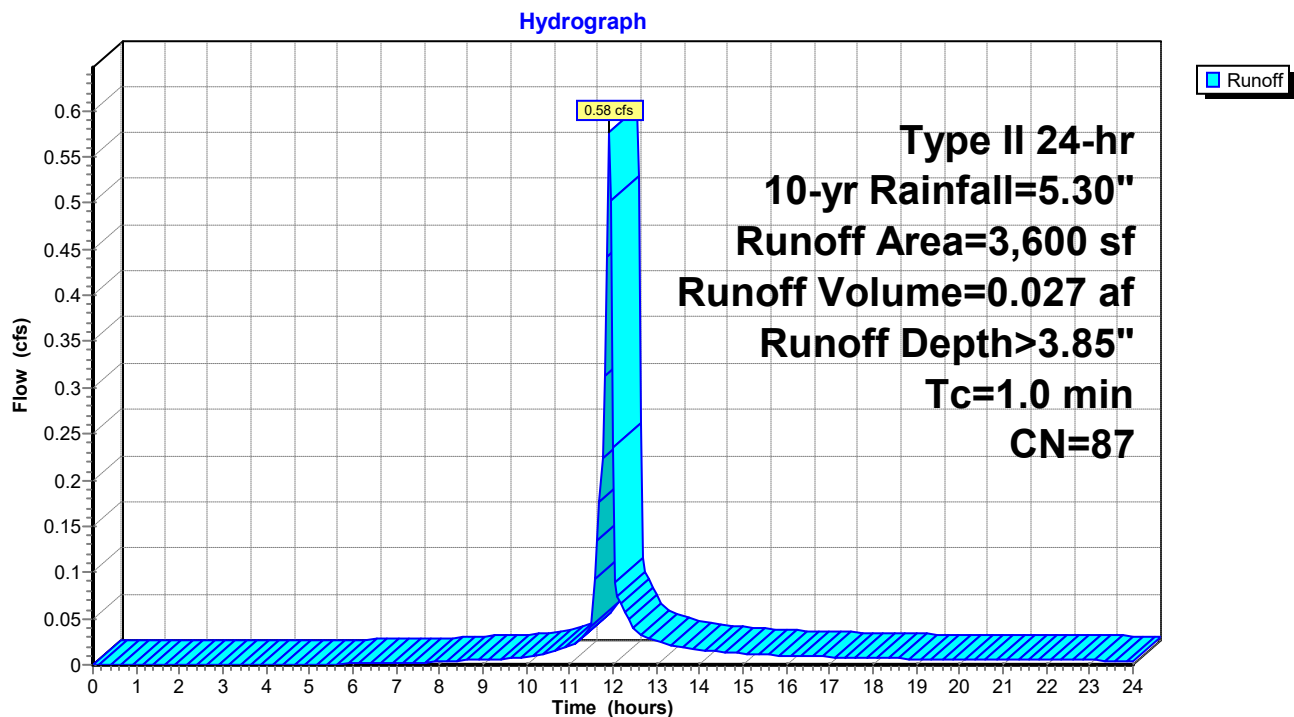
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.027 af, Depth> 3.85"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 66

Summary for Subcatchment PR-3C: Parking & Sidewalk (Blue C)

Runoff = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af, Depth> 3.75"

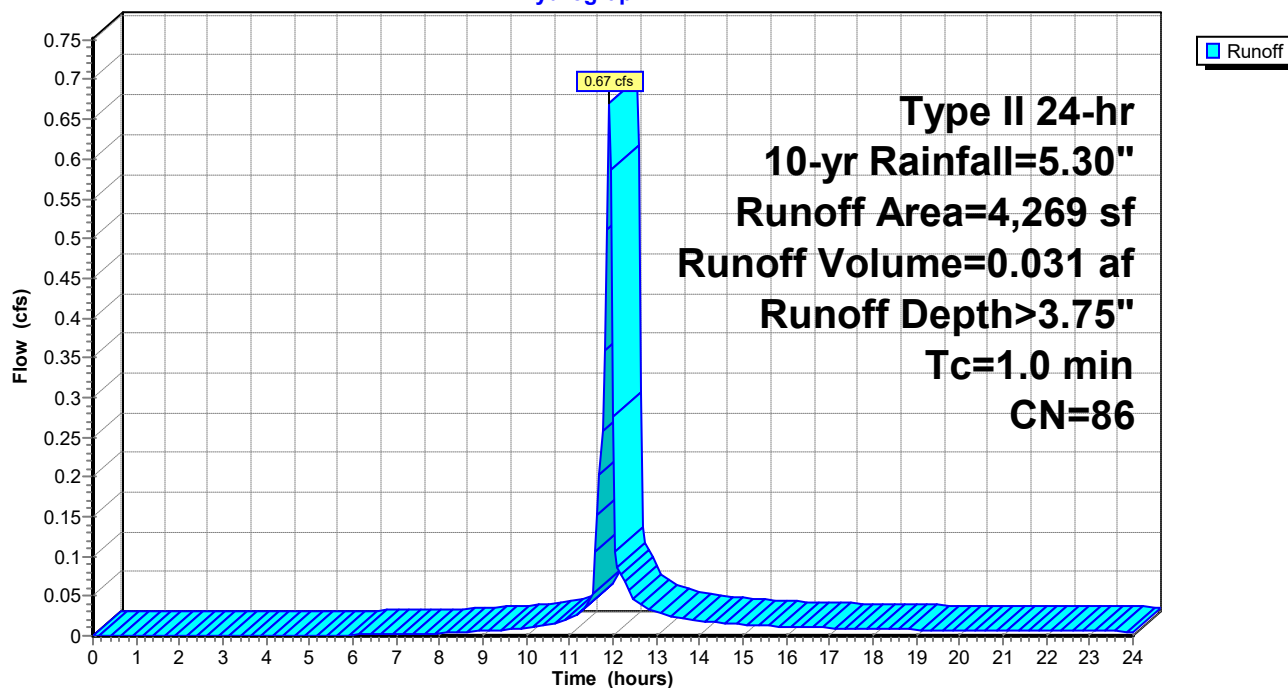
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 67

Summary for Subcatchment PR-4A: Roof & SWM Feature (Turquoise)

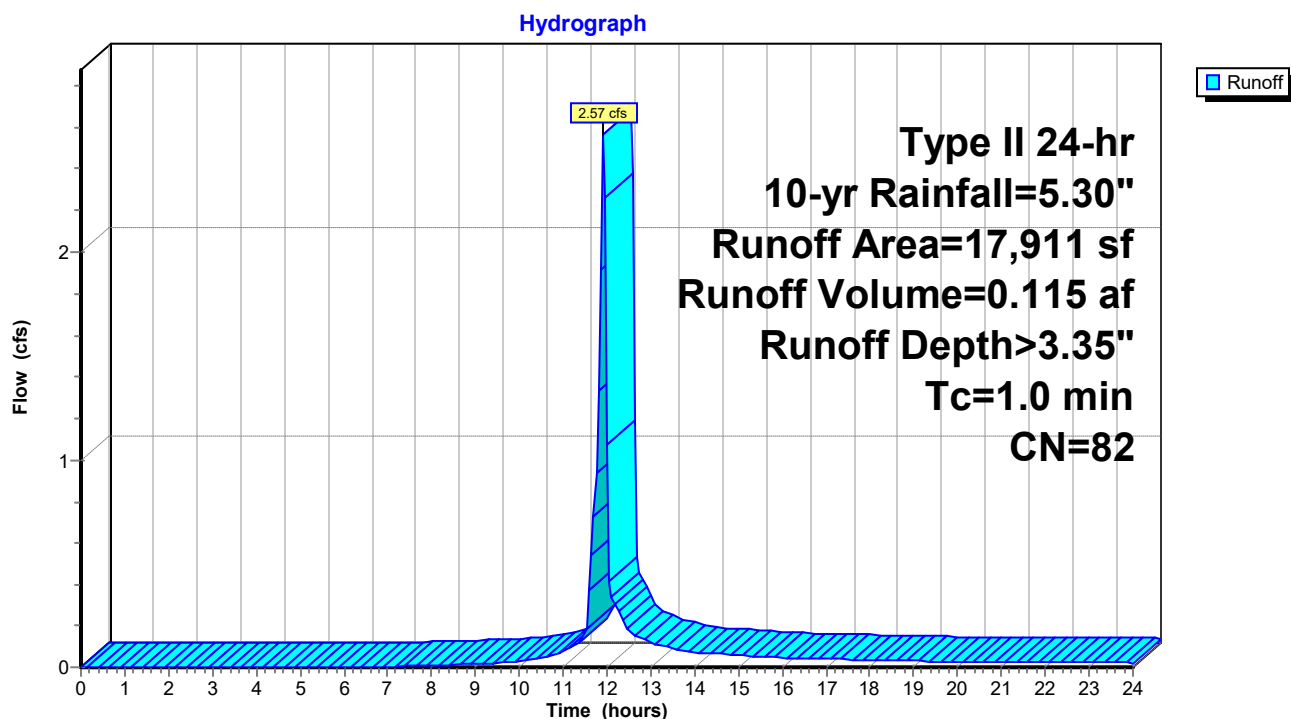
Runoff = 2.57 cfs @ 11.91 hrs, Volume= 0.115 af, Depth> 3.35"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 68

Summary for Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)

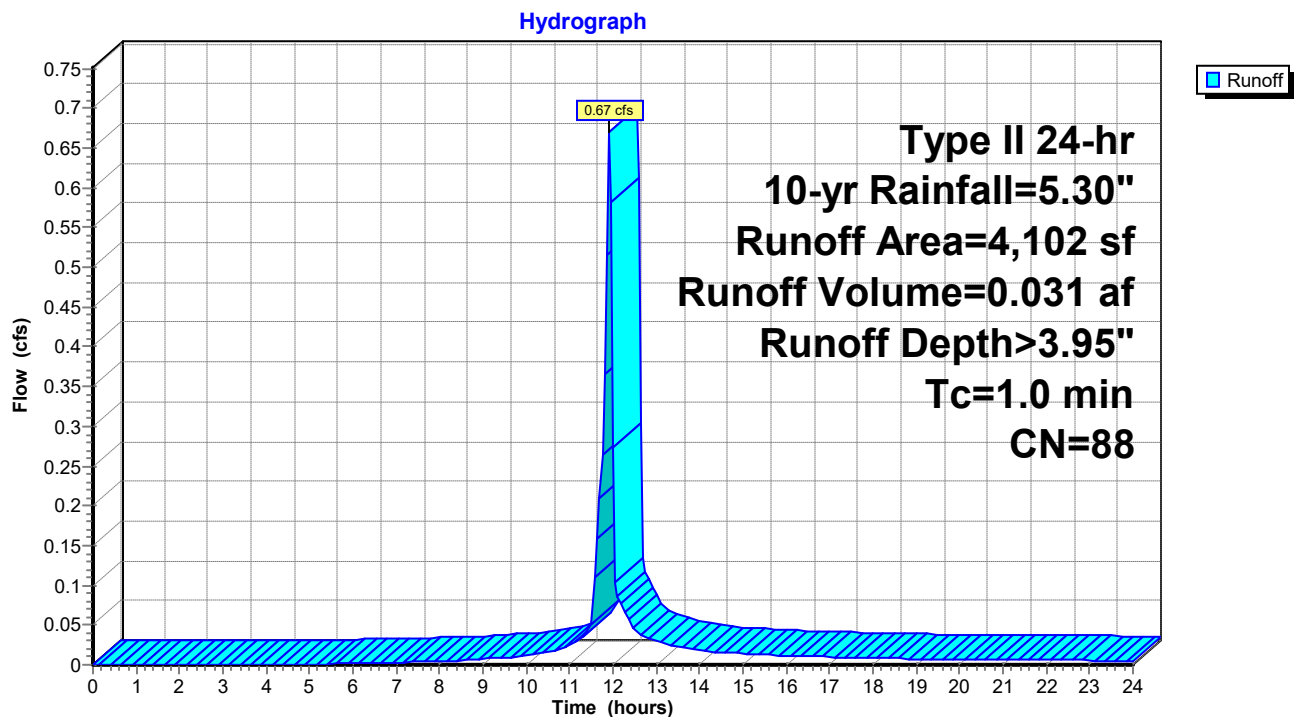
Runoff = 0.67 cfs @ 11.91 hrs, Volume= 0.031 af, Depth> 3.95"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 69

Summary for Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)

Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.027 af, Depth> 3.85"

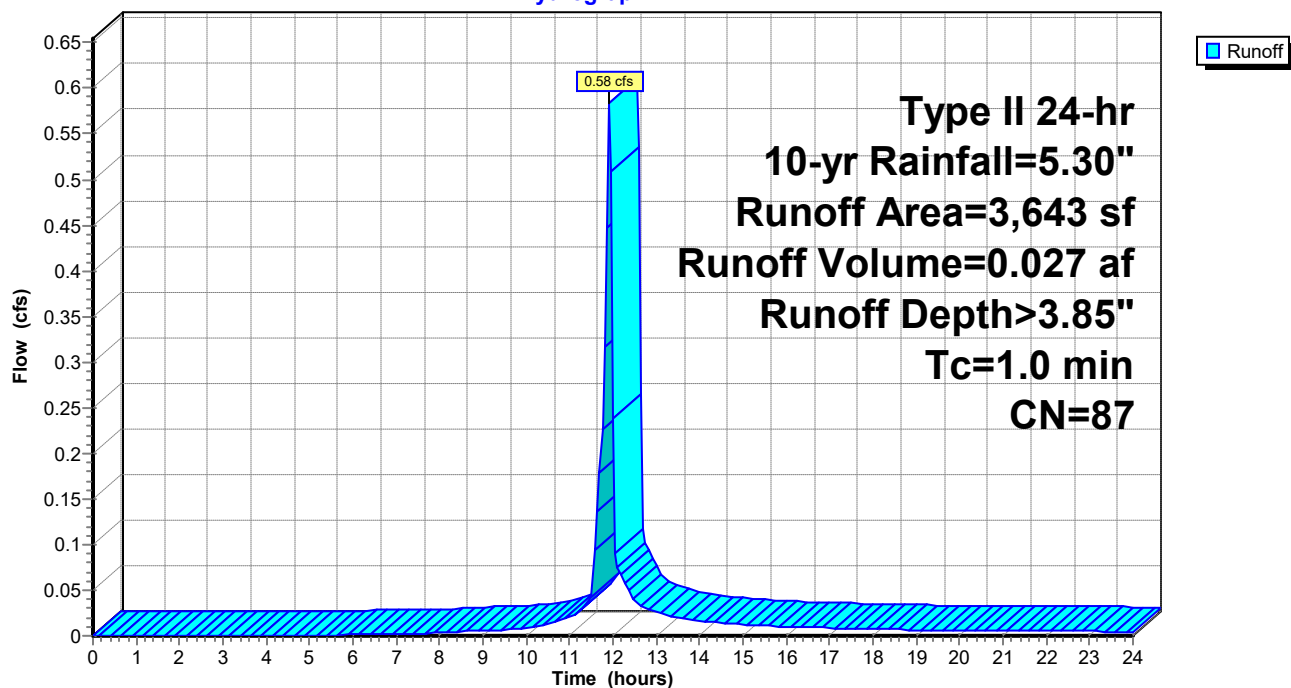
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 70

Summary for Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)

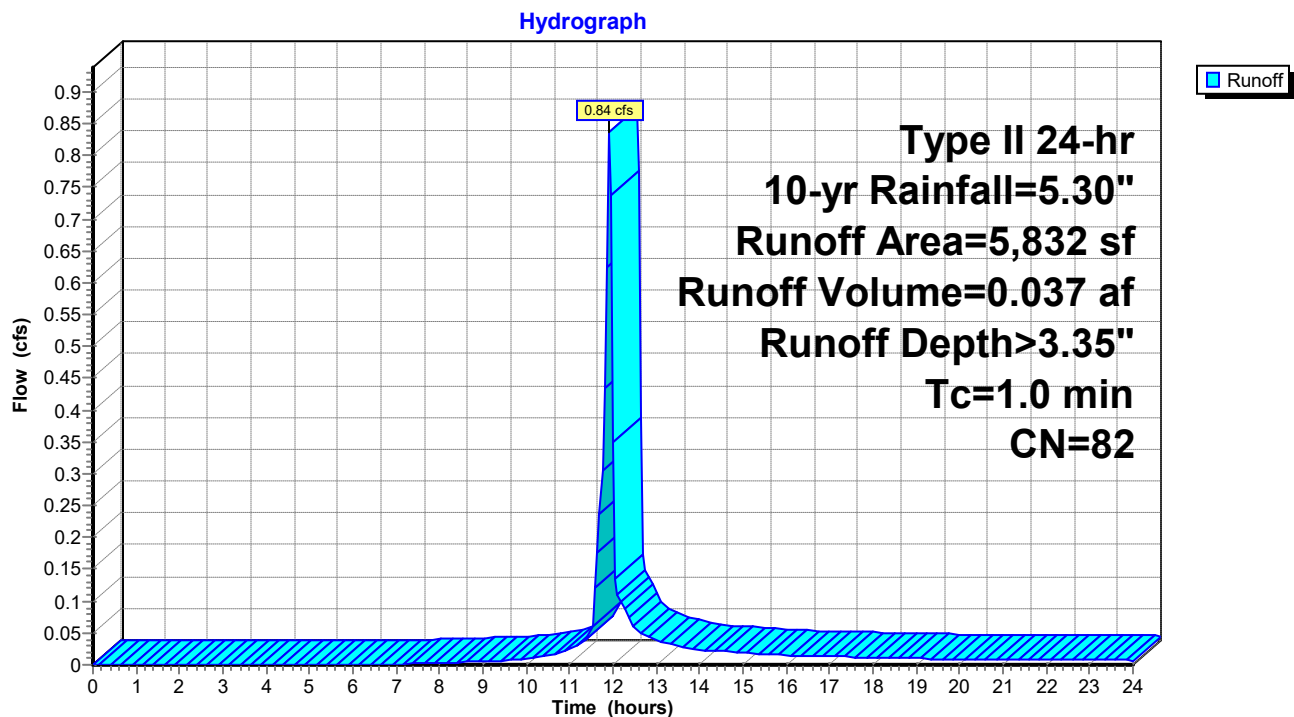
Runoff = 0.84 cfs @ 11.91 hrs, Volume= 0.037 af, Depth> 3.35"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 71

Summary for Subcatchment PR-5: Amenity Building & Parking (Red)

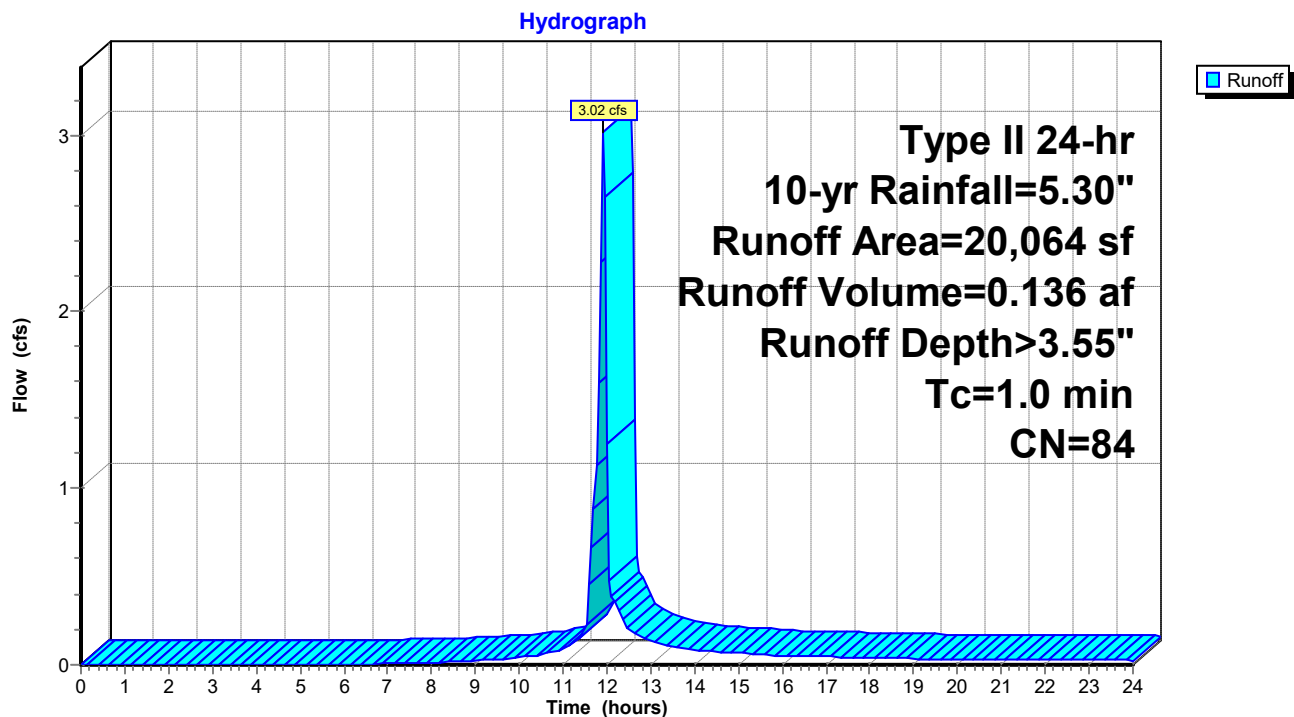
Runoff = 3.02 cfs @ 11.91 hrs, Volume= 0.136 af, Depth> 3.55"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 72

Summary for Subcatchment PR-6: Orange

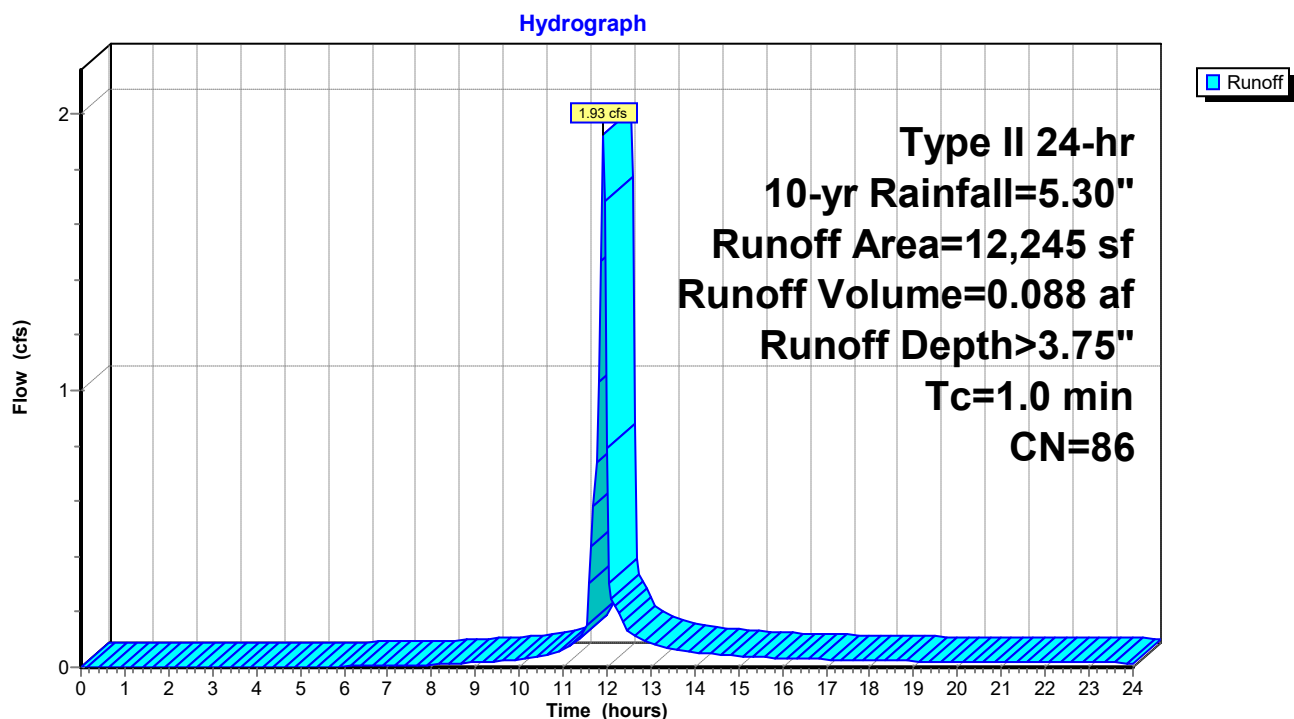
Runoff = 1.93 cfs @ 11.91 hrs, Volume= 0.088 af, Depth> 3.75"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 73

Summary for Subcatchment PR-7: Yellow

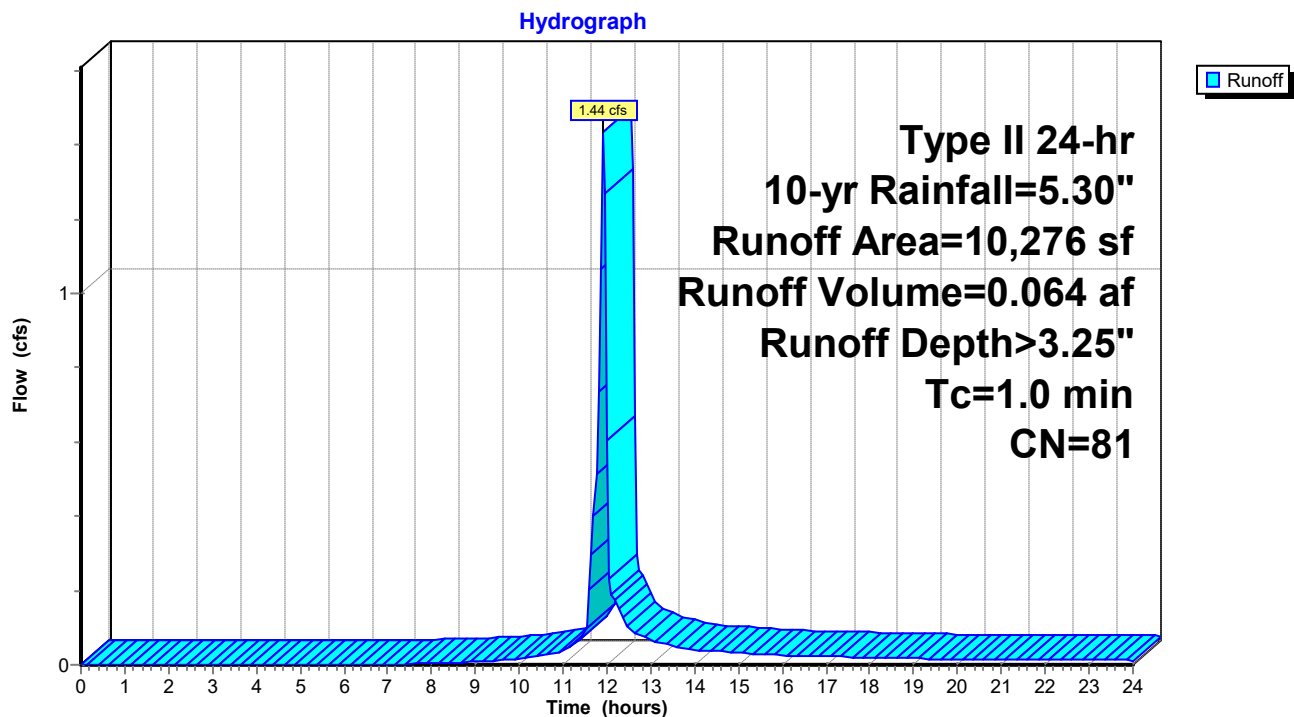
Runoff = 1.44 cfs @ 11.91 hrs, Volume= 0.064 af, Depth> 3.25"

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: Yellow



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 74

Summary for Subcatchment RD-8: Residue of Property (Adj. North Street)

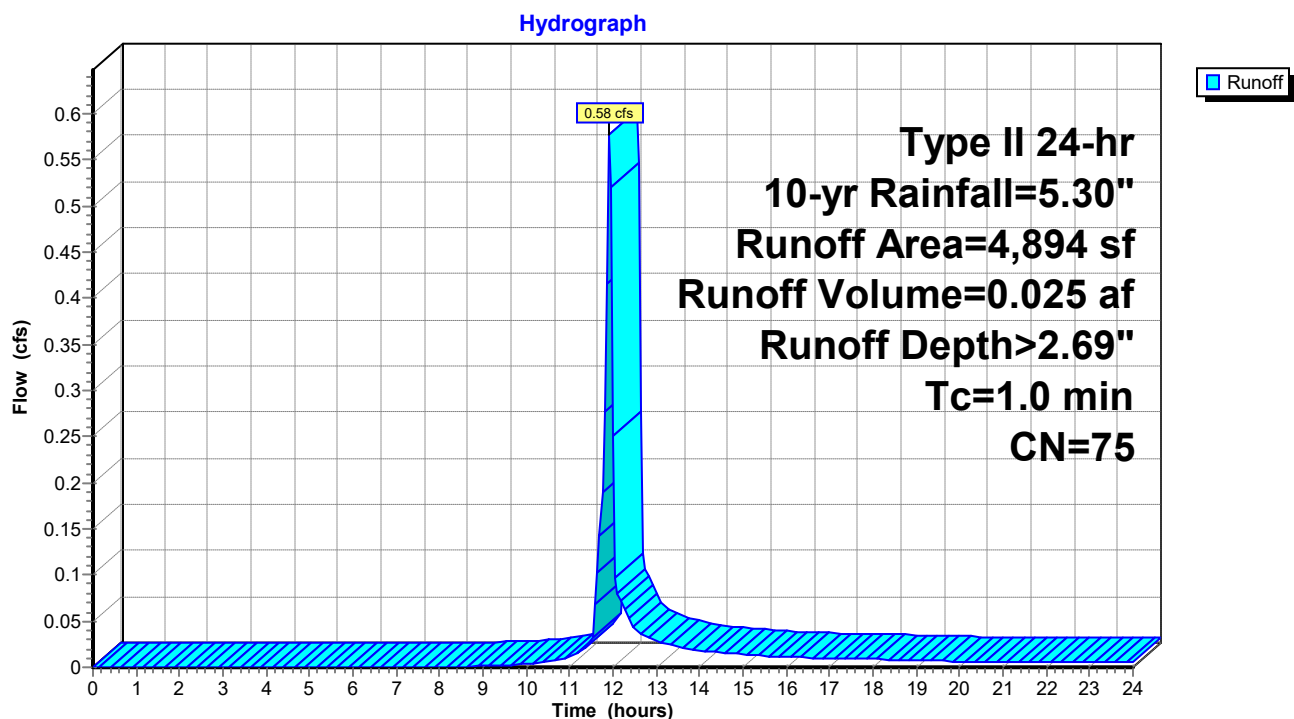
Runoff = 0.58 cfs @ 11.91 hrs, Volume= 0.025 af, Depth> 2.69"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 75

Summary for Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building

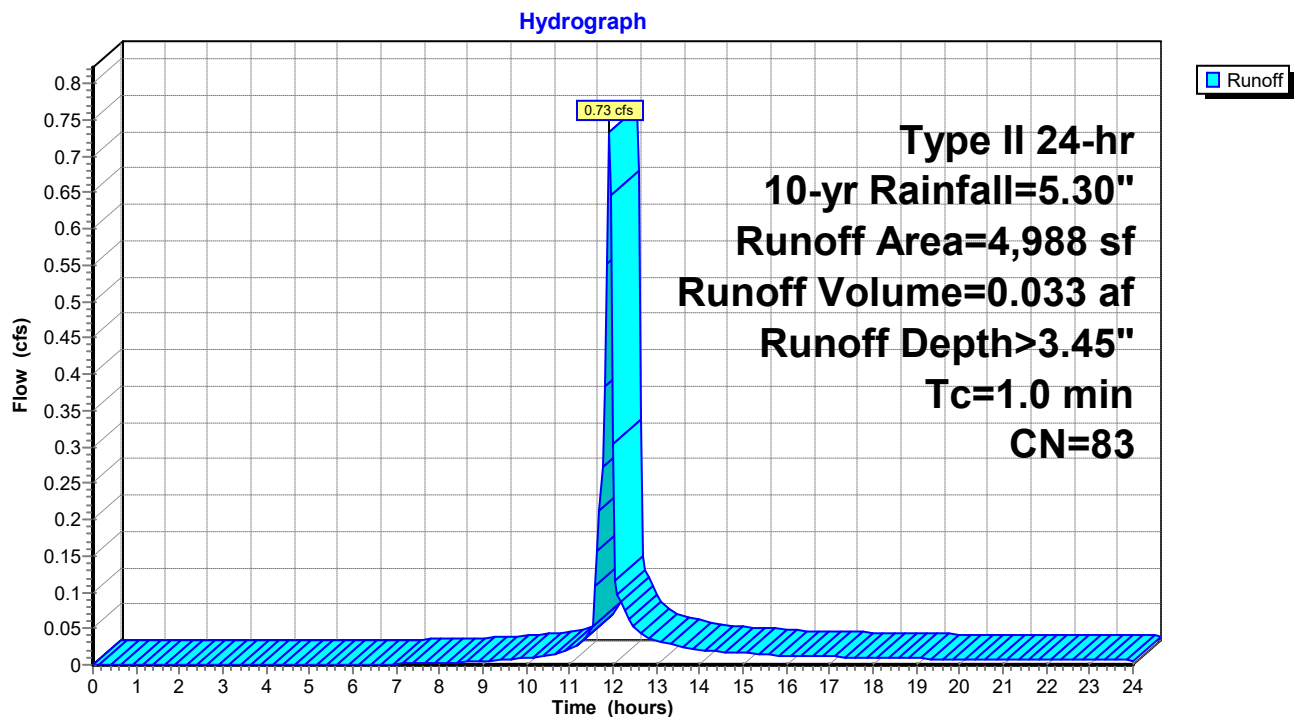
Runoff = 0.73 cfs @ 11.91 hrs, Volume= 0.033 af, Depth> 3.45"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 76

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 ' 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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

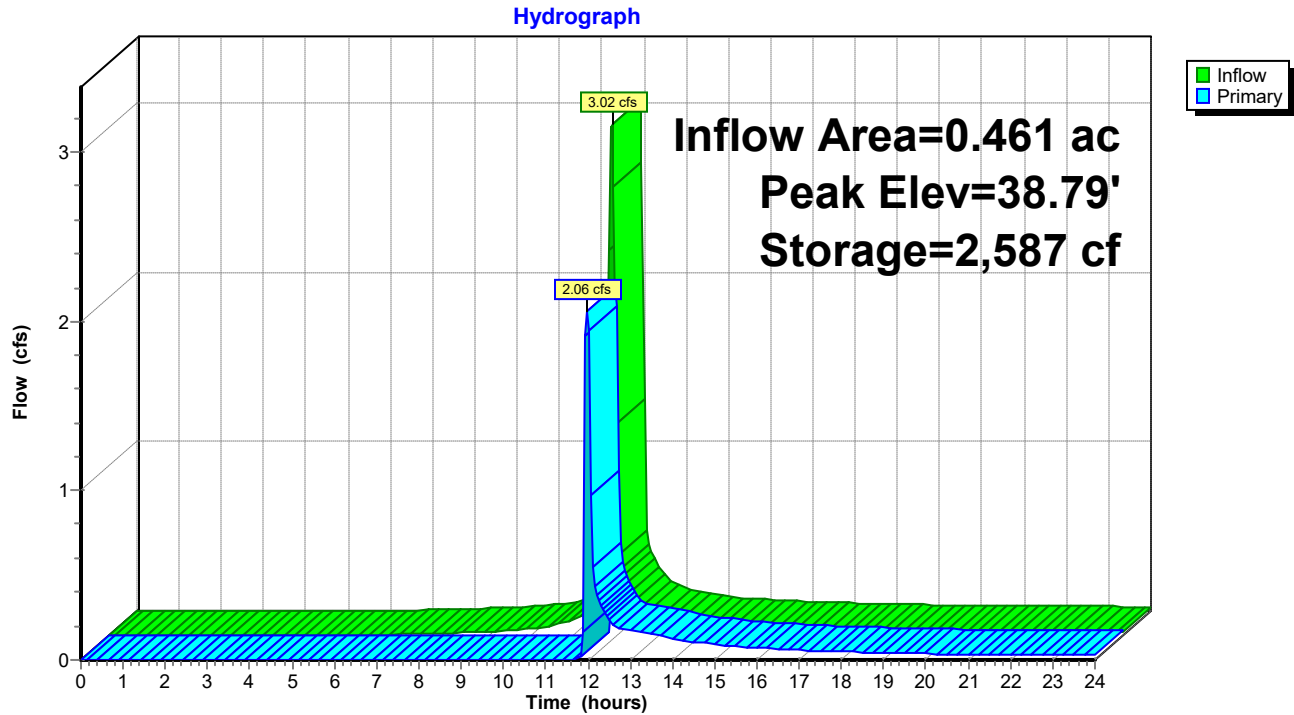
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 77

Pond 3P: MicroBioretention #5



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 78

Stage-Area-Storage for Pond 3P: MicroBioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.14	650	0	37.69	1,020	974
35.19	650	13	37.74	1,059	1,026
35.24	650	26	37.79	1,098	1,080
35.29	650	39	37.84	1,138	1,135
35.34	650	52	37.89	1,178	1,193
35.39	650	65	37.94	1,220	1,253
35.44	650	78	37.99	1,262	1,315
35.49	650	91	38.04	1,304	1,379
35.54	650	104	38.09	1,348	1,446
35.59	650	117	38.14	1,392	1,514
35.64	650	130	38.19	1,431	1,585
35.69	650	143	38.24	1,469	1,657
35.74	650	156	38.29	1,508	1,732
35.79	650	169	38.34	1,547	1,808
35.84	650	182	38.39	1,587	1,887
35.89	650	195	38.44	1,627	1,967
35.94	650	208	38.49	1,668	2,049
35.99	650	221	38.54	1,709	2,134
36.04	650	234	38.59	1,751	2,220
36.09	650	247	38.64	1,793	2,309
36.14	650	260	38.69	1,836	2,399
36.19	650	273	38.74	1,879	2,492
36.24	650	286	38.79	1,922	2,587
36.29	650	299	38.84	1,967	2,685
36.34	650	312	38.89	2,011	2,784
36.39	650	325	38.94	2,057	2,886
36.44	650	338	38.99	2,102	2,990
36.49	650	351	39.04	2,149	3,096
36.54	650	364	39.09	2,195	3,205
36.59	650	377	39.14	2,242	3,316
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 79

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

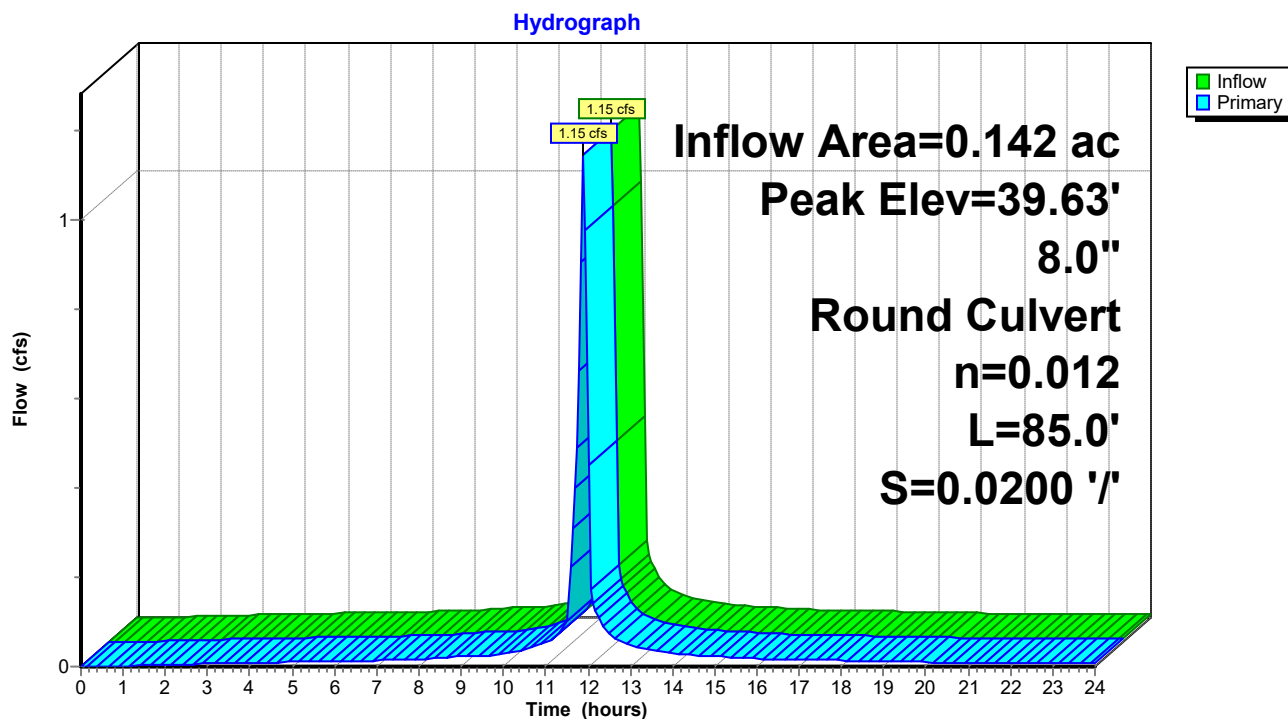
Peak Elev= 39.63' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 80

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 81

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

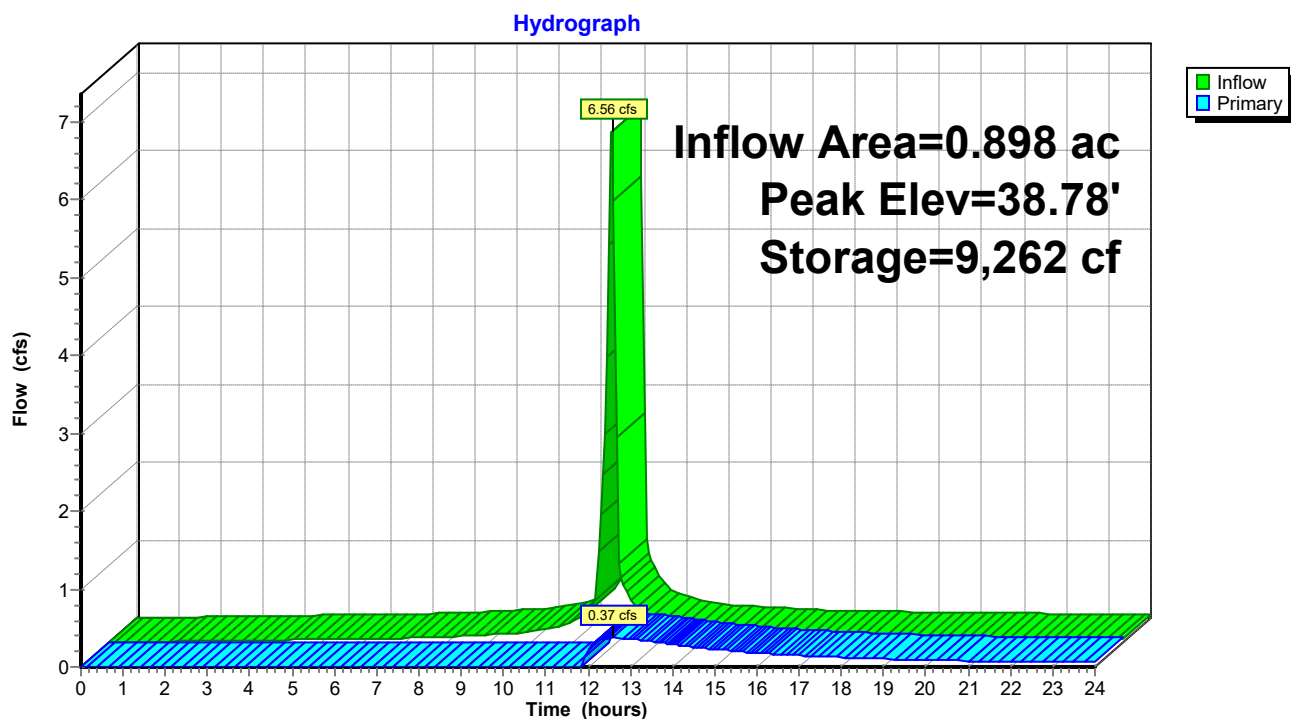
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 82

Pond 6P: MicroBioRetention #1 & #2



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 83

Stage-Area-Storage for Pond 6P: MicroBioRetention #1 & #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
32.99	2,323	0	38.09	3,270	6,778
33.09	2,323	93	38.19	3,356	7,109
33.19	2,323	186	38.29	3,443	7,449
33.29	2,323	279	38.39	3,531	7,798
33.39	2,323	372	38.49	3,620	8,155
33.49	2,323	465	38.59	3,710	8,522
33.59	2,323	558	38.69	3,801	8,897
33.69	2,323	650	38.79	3,894	9,282
33.79	2,323	743	38.89	3,987	9,676
33.89	2,323	836	38.99	4,082	10,080
33.99	2,323	929	39.09	4,178	10,493
34.09	2,323	1,022	39.19	4,275	10,915
34.19	2,323	1,115	39.29	4,373	11,348
34.29	2,323	1,208	39.39	4,472	11,790
34.39	2,323	1,301	39.49	4,572	12,242
34.49	2,323	1,394	39.59	4,673	12,704
34.59	2,323	1,487	39.69	4,775	13,177
34.69	2,323	1,580	39.79	4,879	13,659
34.79	2,323	1,673	39.89	4,984	14,152
34.89	2,323	1,765	39.99	5,089	14,656
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 84

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 ' 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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

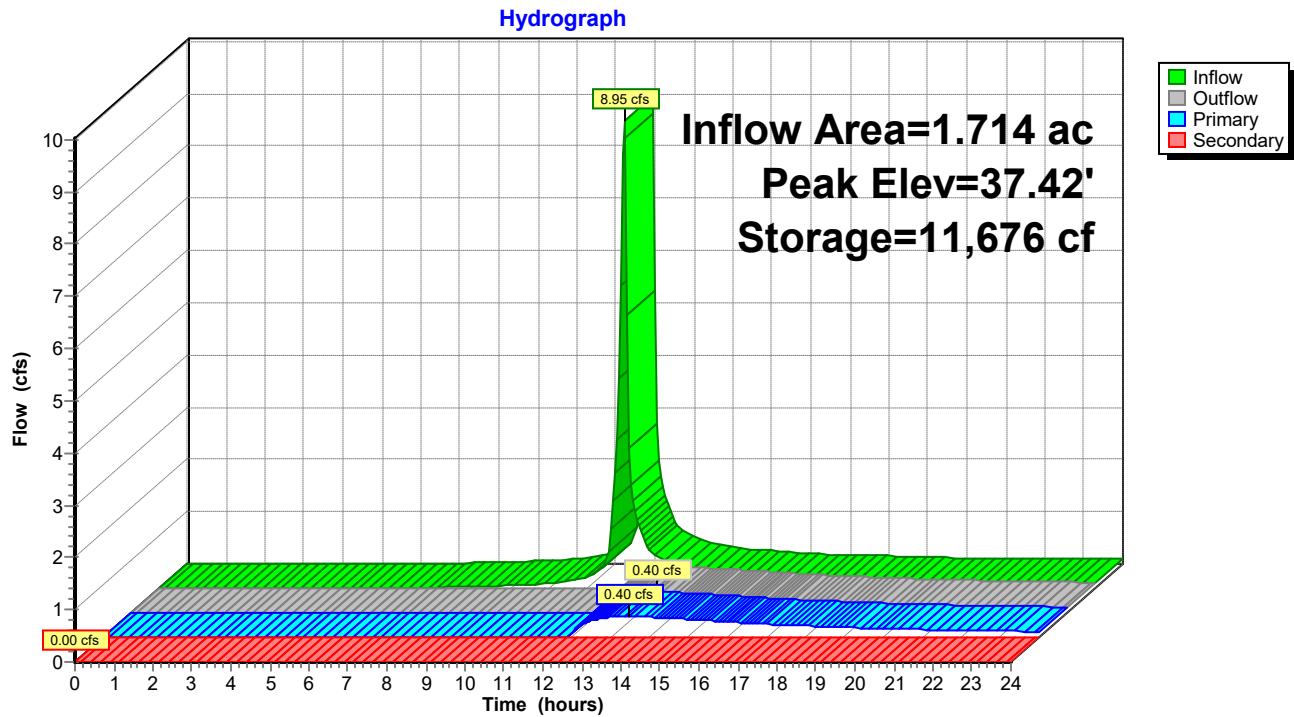
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 85

Pond 8P: MicroBioRetention #3 & #4



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 86

Stage-Area-Storage for Pond 8P: MicroBioRetention #3 & #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.59	2,680	0	36.69	4,276	8,072
31.69	2,680	107	36.79	4,441	8,508
31.79	2,680	214	36.89	4,609	8,960
31.89	2,680	322	36.99	4,780	9,430
31.99	2,680	429	37.09	4,954	9,916
32.09	2,680	536	37.19	5,132	10,421
32.19	2,680	643	37.29	5,312	10,943
32.29	2,680	750	37.39	5,496	11,483
32.39	2,680	858	37.49	5,683	12,042
32.49	2,680	965	37.59	5,873	12,620
32.59	2,680	1,072	37.69	6,030	13,215
32.69	2,680	1,179	37.79	6,186	13,826
32.79	2,680	1,286	37.89	6,344	14,452
32.89	2,680	1,394	37.99	6,504	15,095
32.99	2,680	1,501	38.09	6,665	15,753
33.09	2,680	1,608	38.19	6,829	16,428
33.19	2,680	1,715	38.29	6,995	17,119
33.29	2,680	1,822	38.39	7,162	17,827
33.39	2,680	1,930	38.49	7,332	18,552
33.49	2,680	2,037	38.59	7,504	19,293
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 87

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

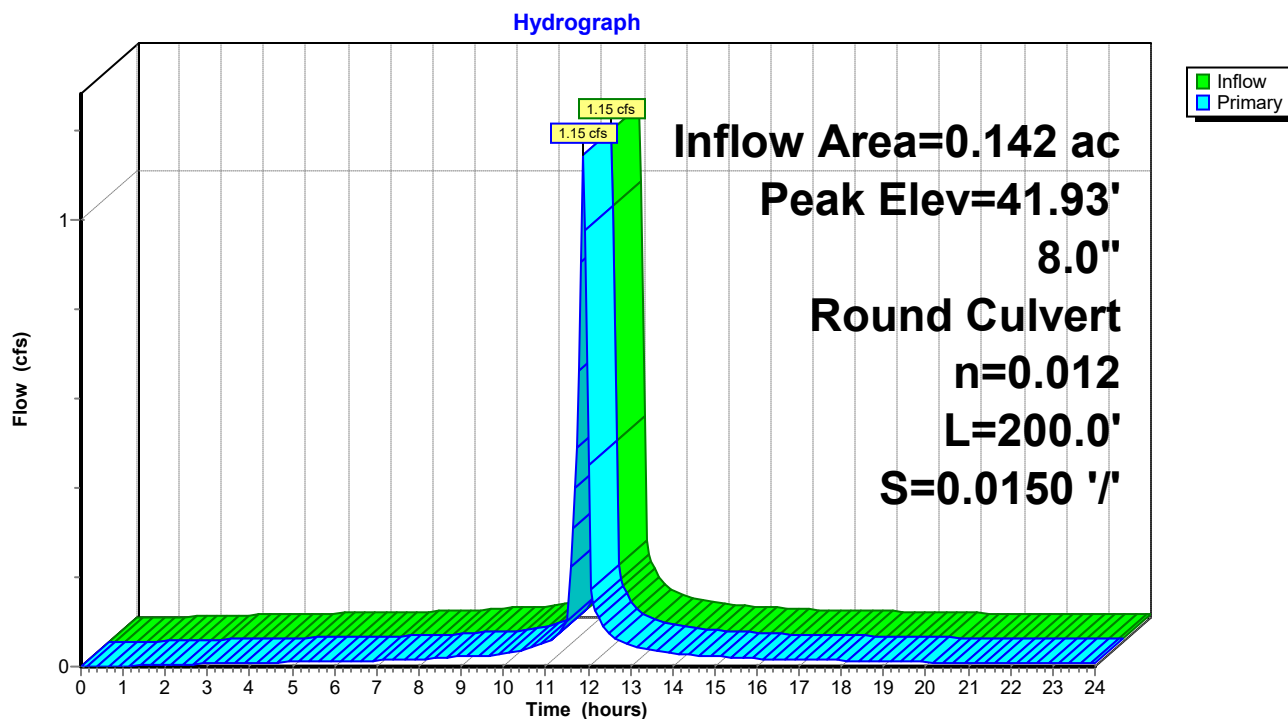
Peak Elev= 41.93' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 88

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 89

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

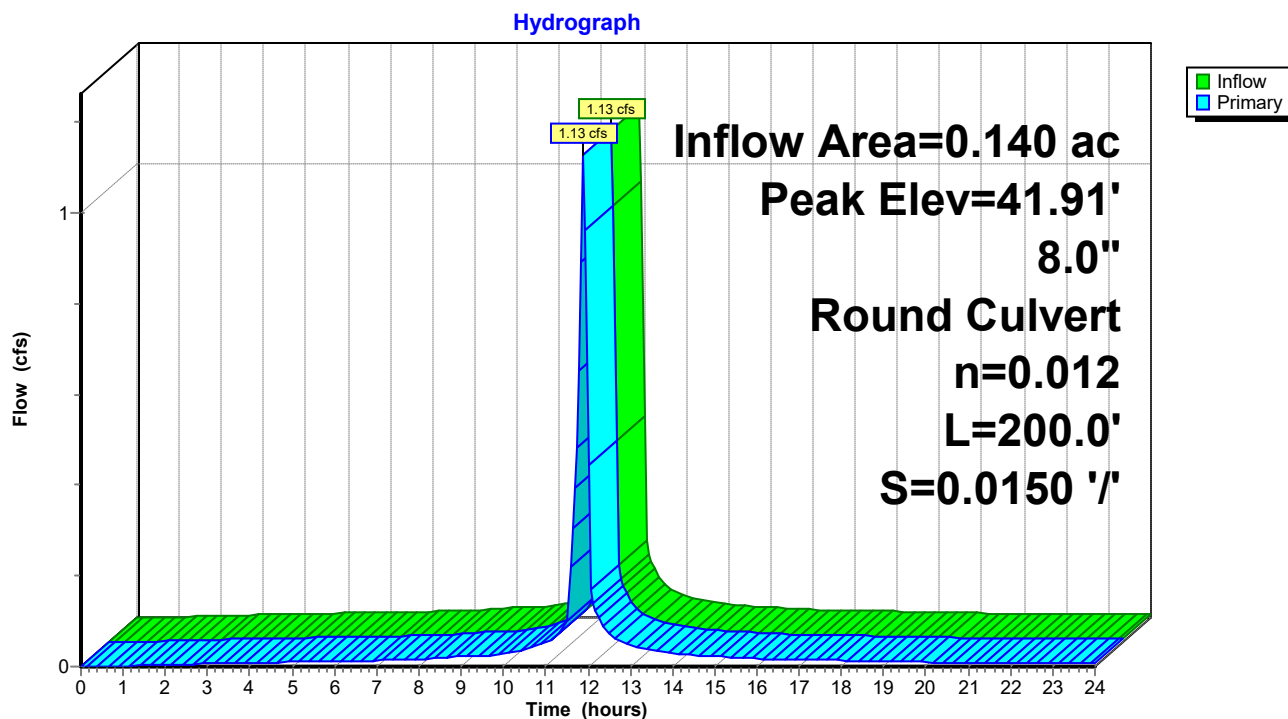
Peak Elev= 41.91' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 90

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 91

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

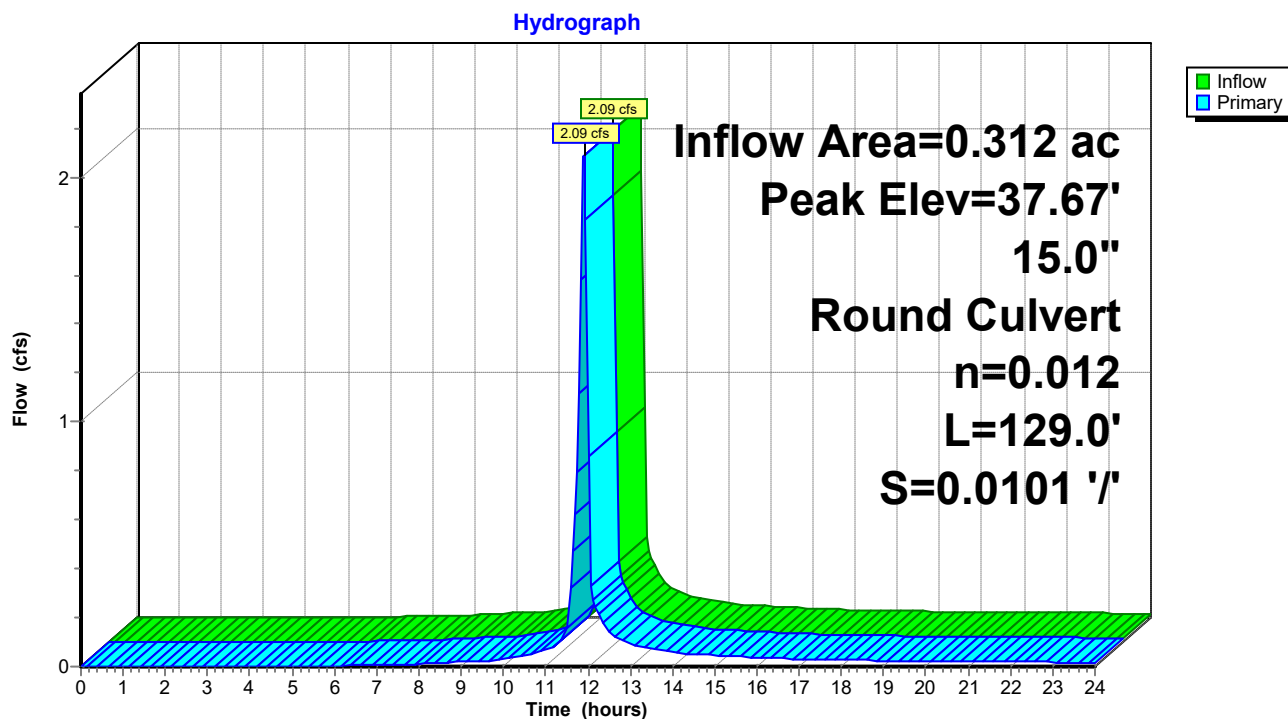
Peak Elev= 37.67' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 92

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 93

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

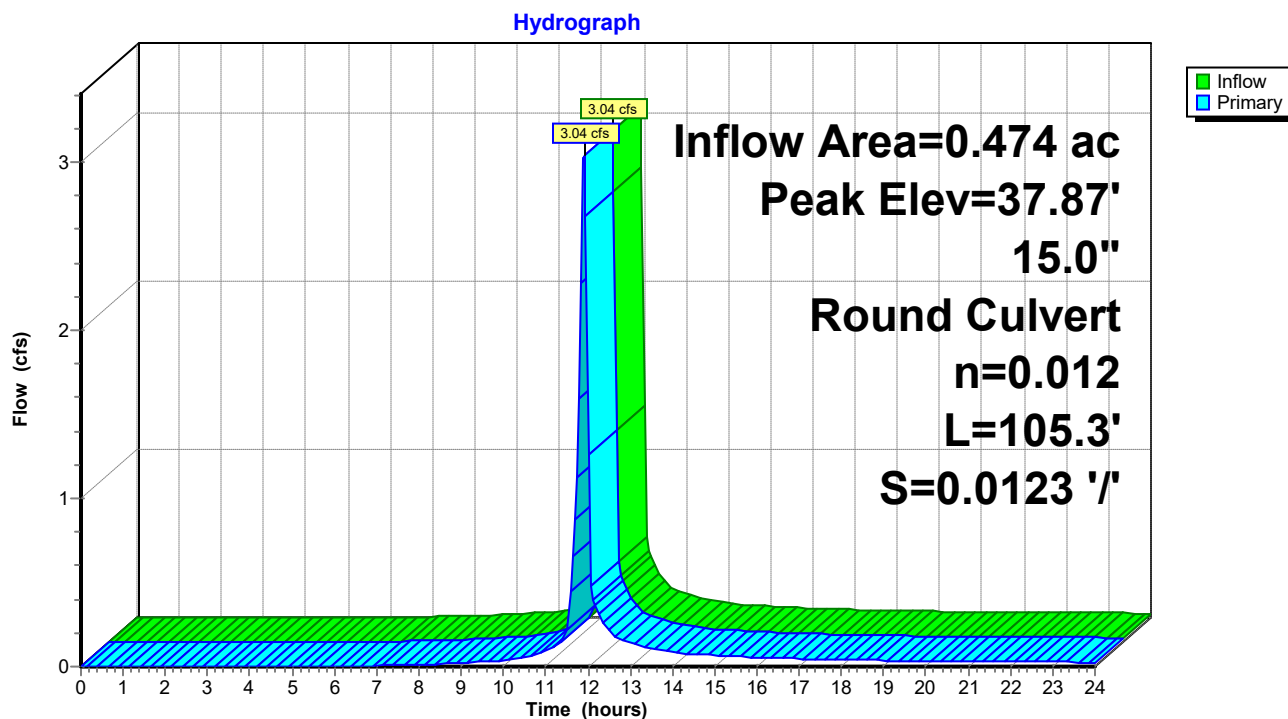
Peak Elev= 37.87' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 94

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 95

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

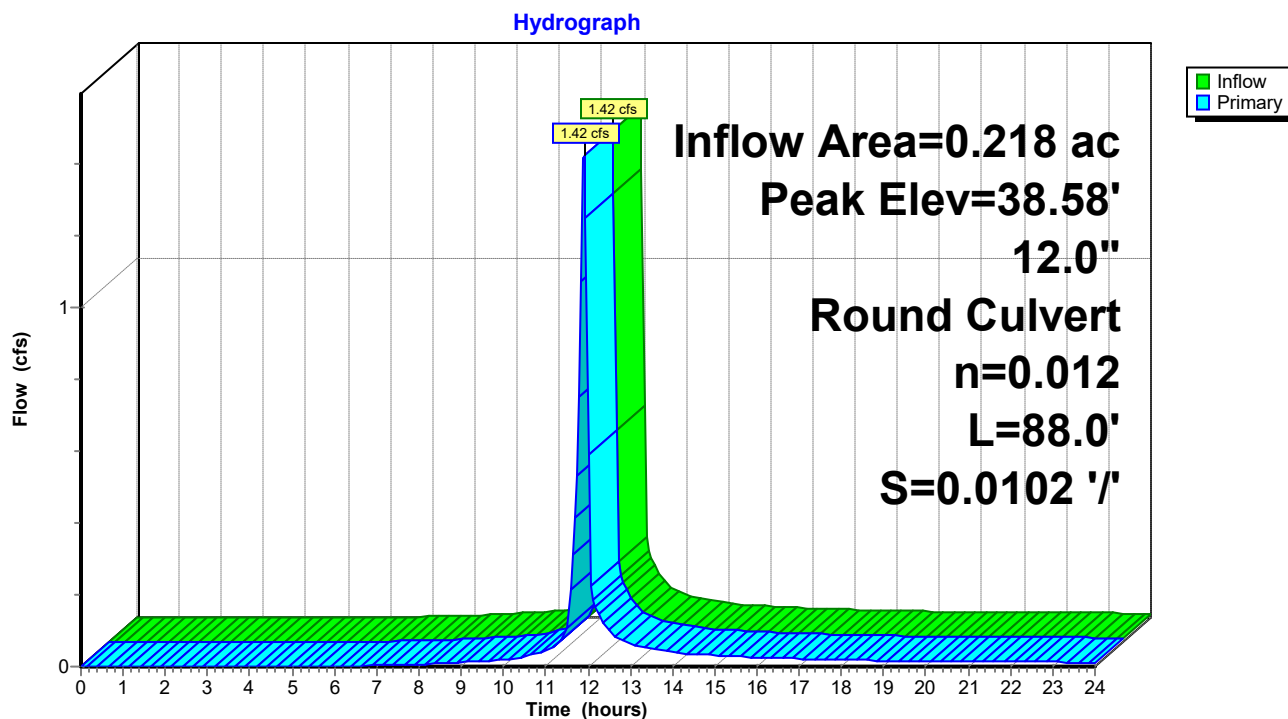
Peak Elev= 38.58' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 96

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 97

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

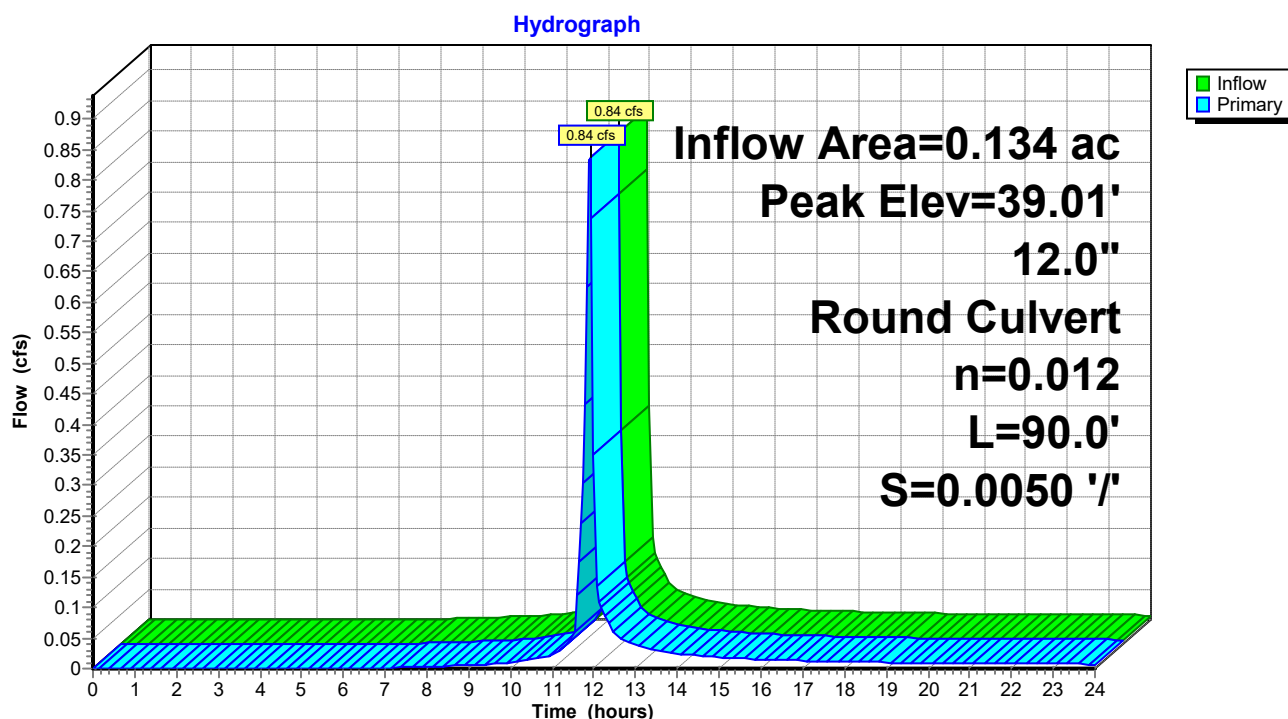
Peak Elev= 39.01' @ 11.92 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 98

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 99

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

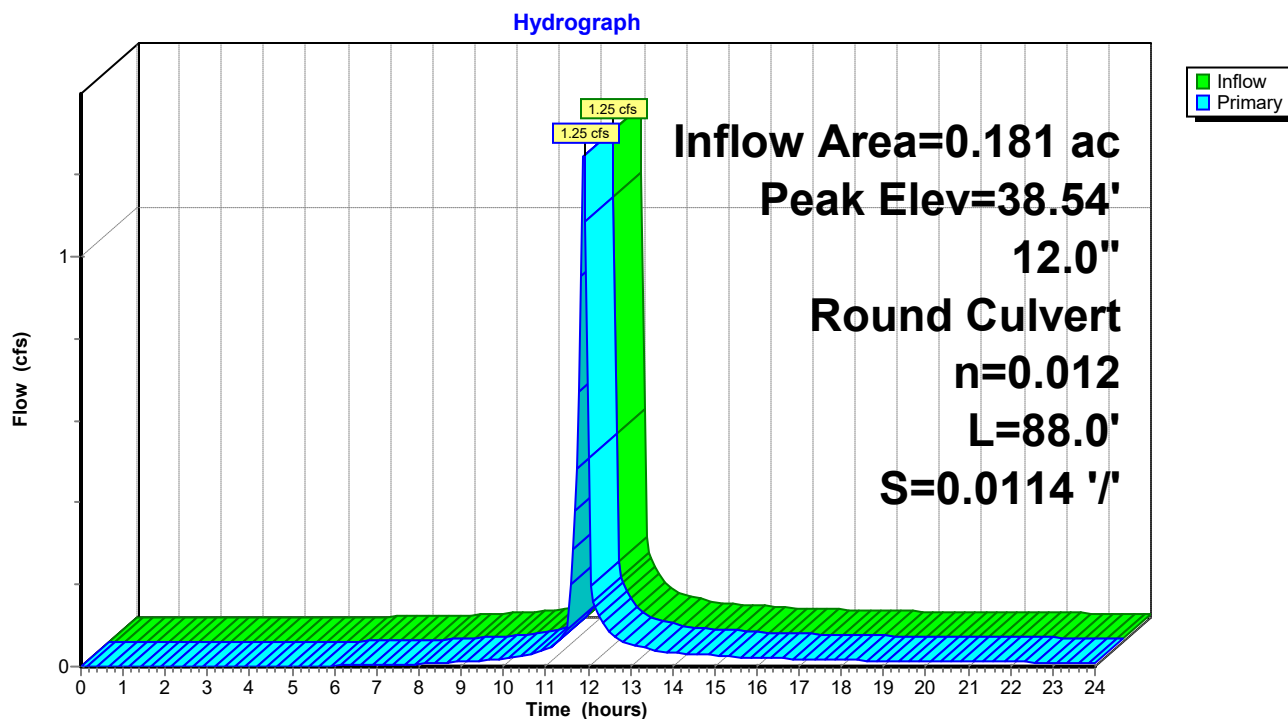
Peak Elev= 38.54' @ 11.92 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 100

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 101

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

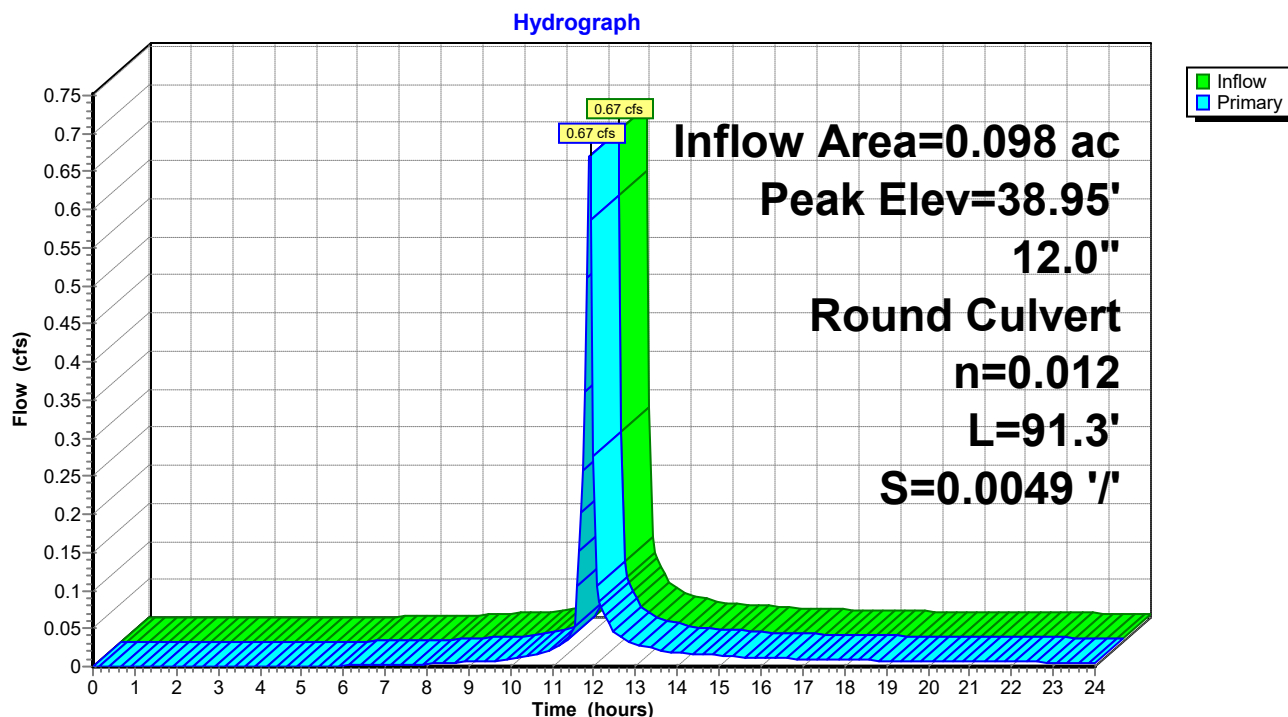
Peak Elev= 38.95' @ 11.92 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 102

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 103

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

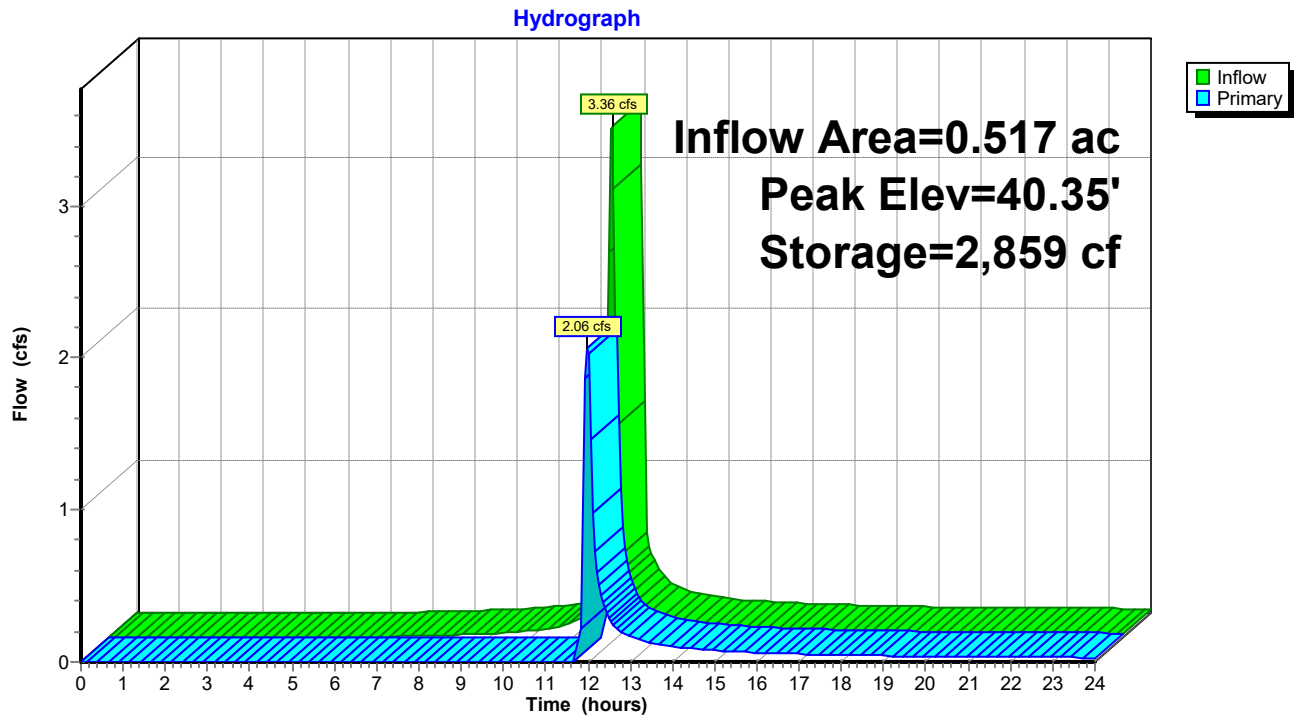
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 104

Pond BSW: BioSwale (M-8)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

Page 105

Stage-Area-Storage for Pond BSW: BioSwale (M-8)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.99	631	0	40.09	1,876	2,322
35.09	631	25	40.19	2,024	2,517
35.19	631	50	40.29	2,177	2,727
35.29	631	76	40.39	2,335	2,953
35.39	631	101	40.49	2,499	3,194
35.49	631	126	40.59	2,669	3,453
35.59	631	151	40.69	2,844	3,728
35.69	631	177	40.79	3,025	4,022
35.79	631	202	40.89	3,212	4,334
35.89	631	227	40.99	3,403	4,664
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

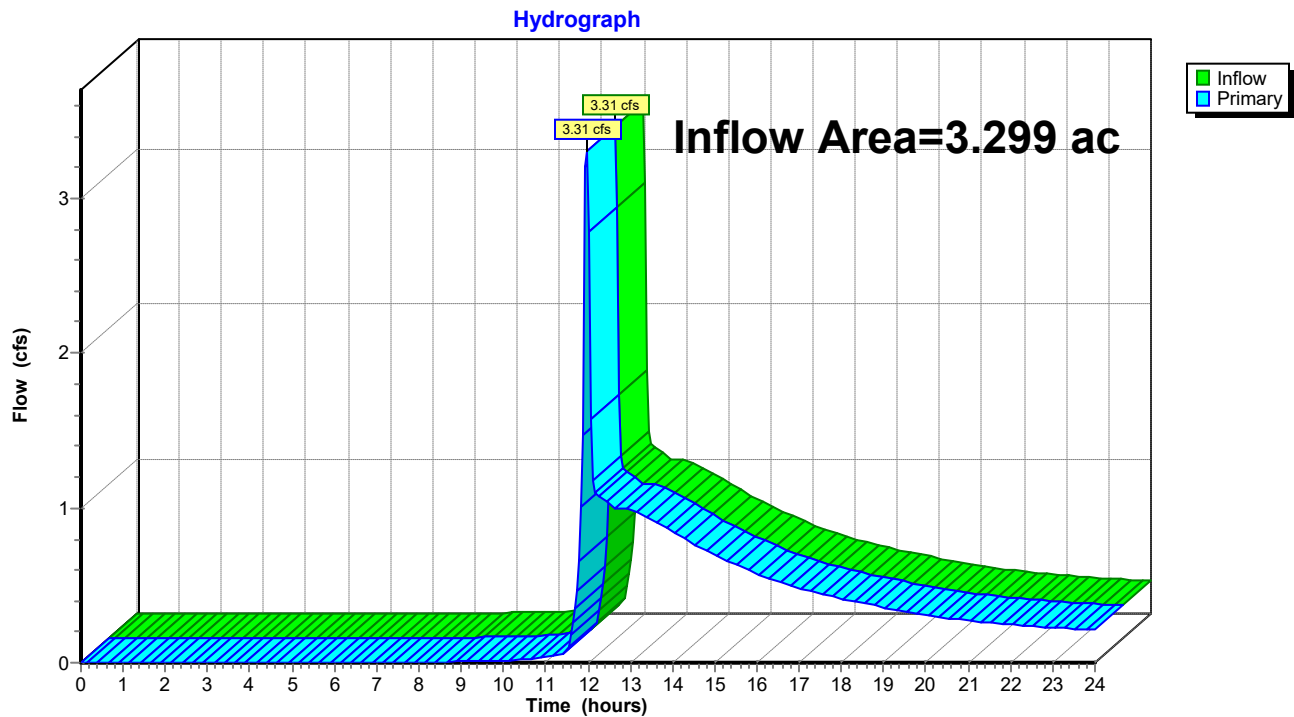
Page 106

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 10-yr Rainfall=5.30"

Printed 10/31/2023

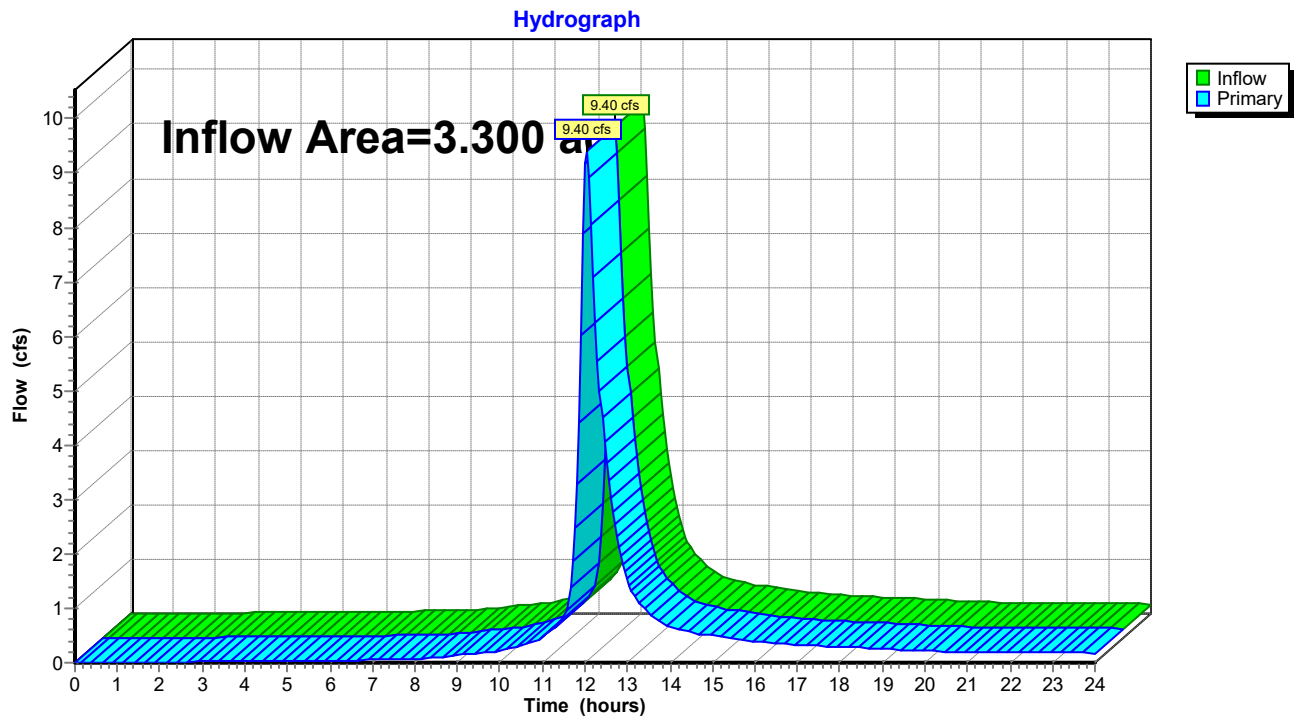
Page 107

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 108

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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

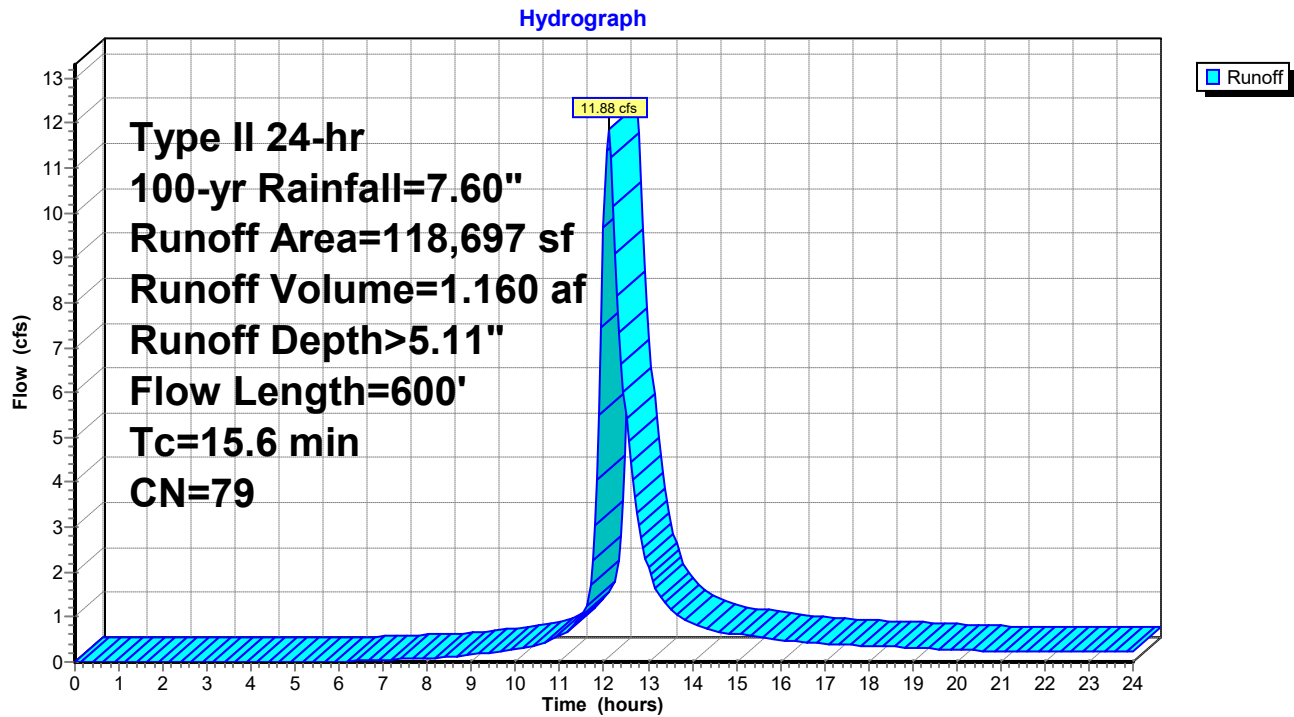
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 109

Subcatchment EX-1: EX (GRAY)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 110

Summary for Subcatchment EX-2: Ex. Easton Ice Parcel

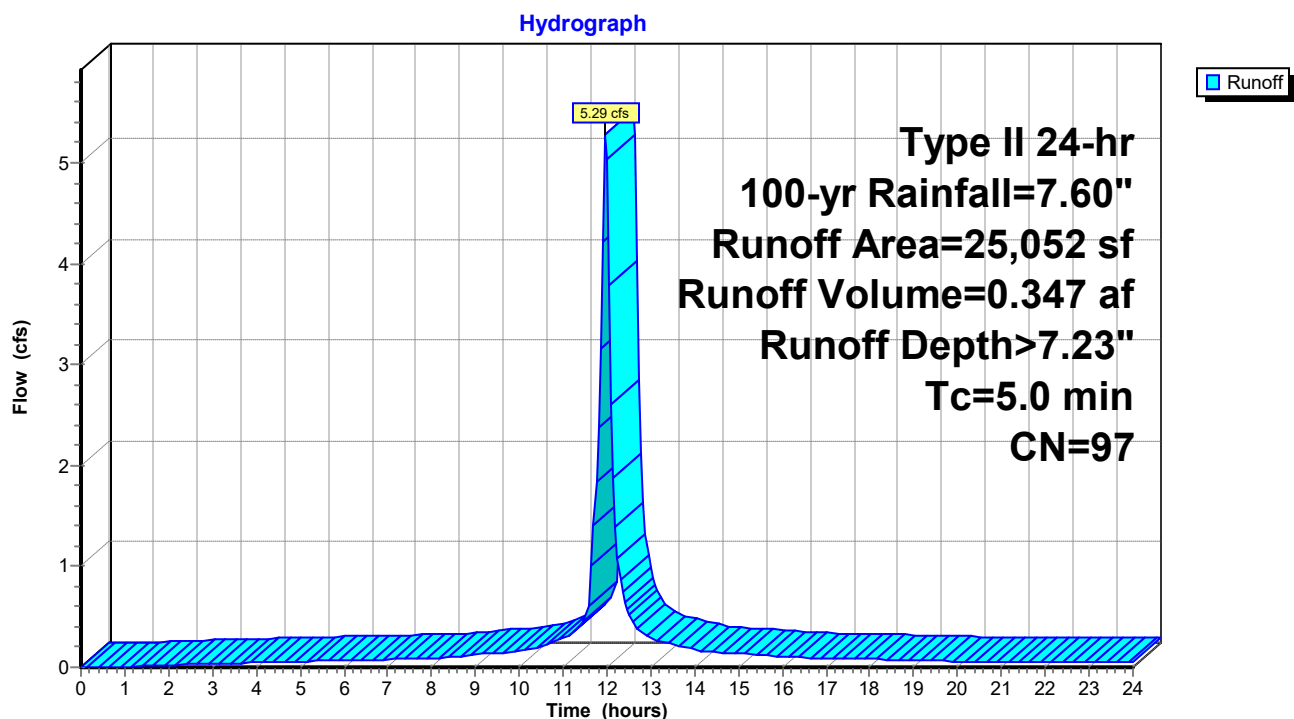
Runoff = 5.29 cfs @ 11.97 hrs, Volume= 0.347 af, Depth> 7.23"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 111

Summary for Subcatchment PR-1A: Parking Lot & SWM Feature (Green)

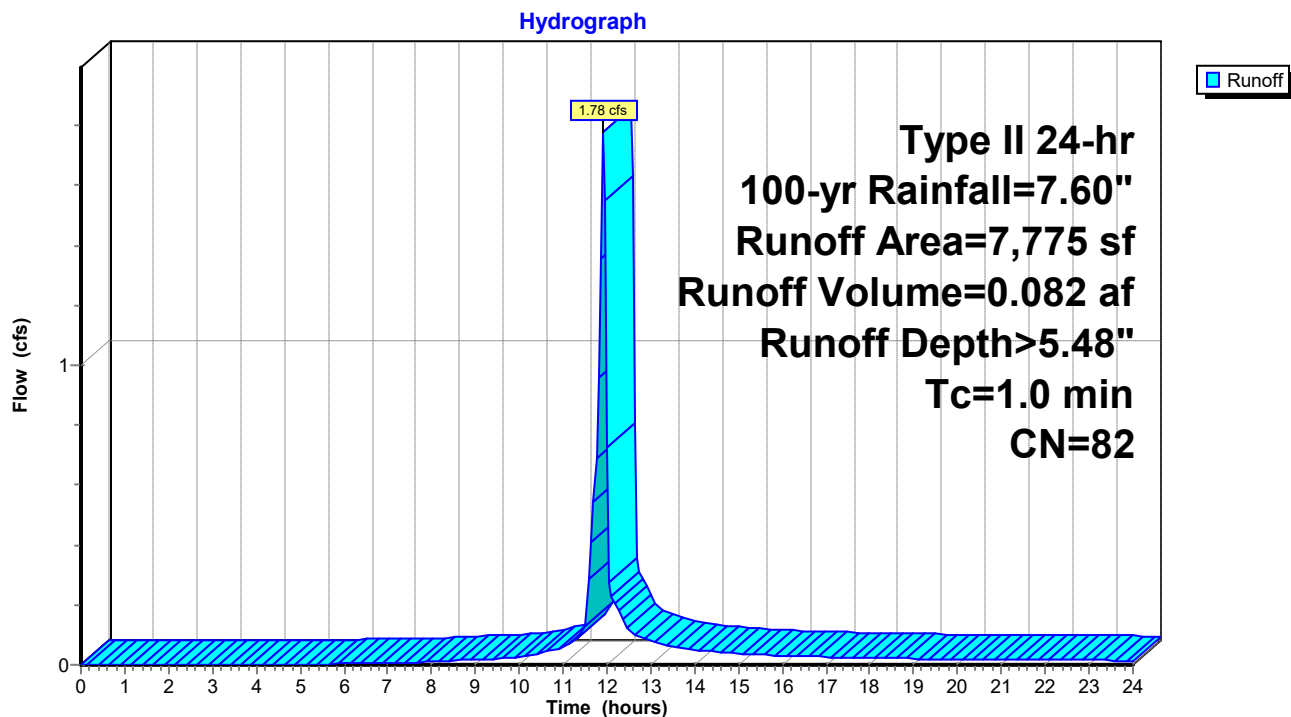
Runoff = 1.78 cfs @ 11.91 hrs, Volume= 0.082 af, Depth> 5.48"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 112

Summary for Subcatchment PR-1B: Green (Roof)

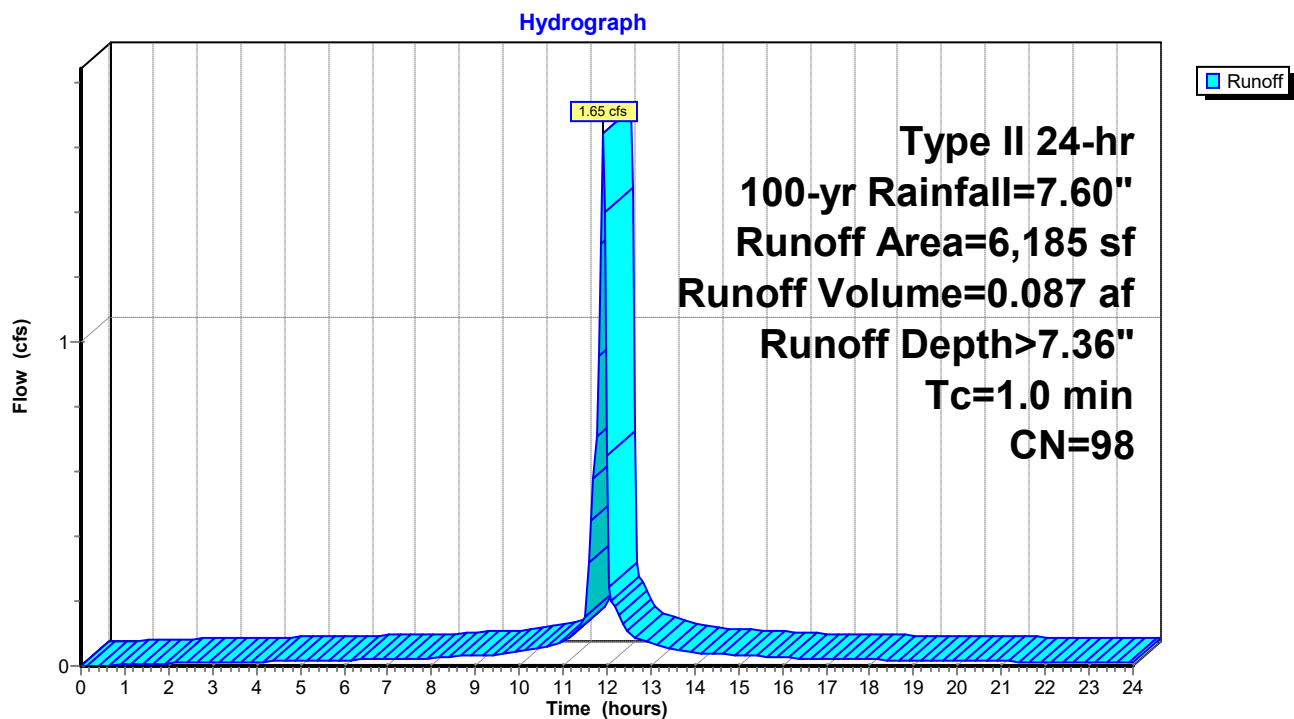
Runoff = 1.65 cfs @ 11.90 hrs, Volume= 0.087 af, Depth> 7.36"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 113

Summary for Subcatchment PR-1C: Green (Roof)

Runoff = 1.65 cfs @ 11.90 hrs, Volume= 0.087 af, Depth> 7.36"

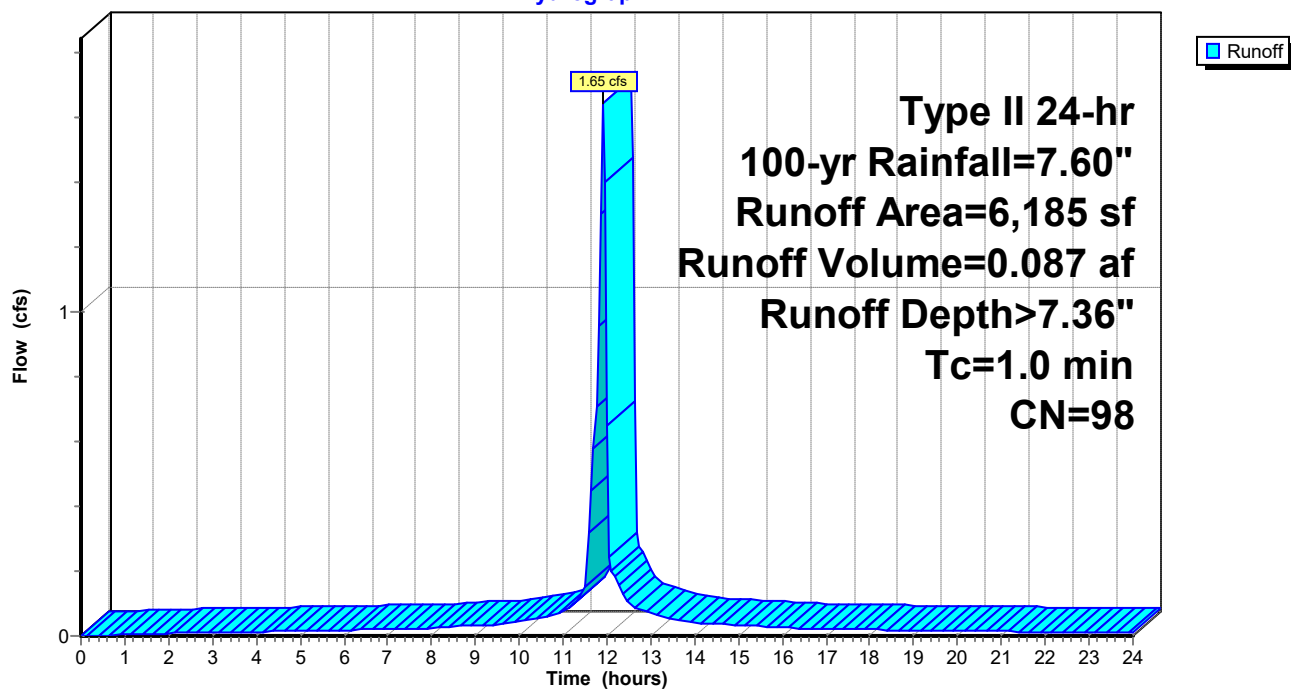
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 114

Summary for Subcatchment PR-2A: Parking Lot & SWM Feature (Purple)

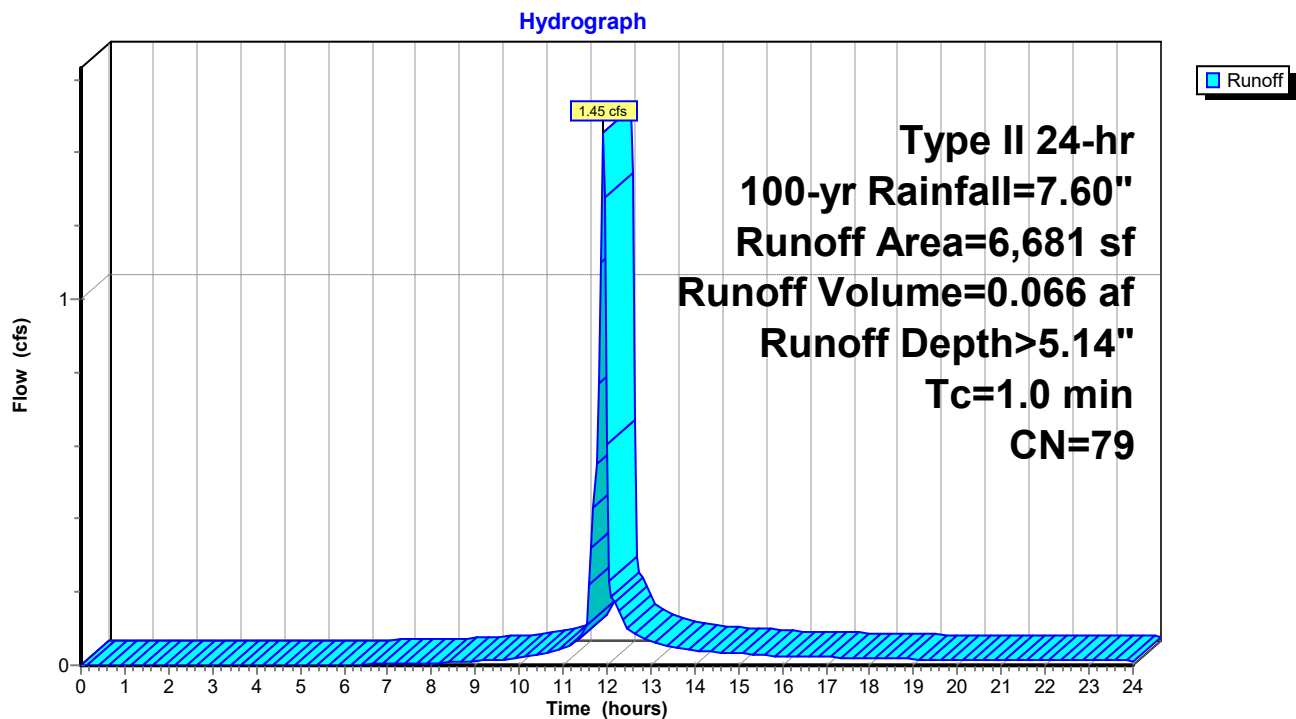
Runoff = 1.45 cfs @ 11.91 hrs, Volume= 0.066 af, Depth> 5.14"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 115

Summary for Subcatchment PR-2B: Purple (Roof)

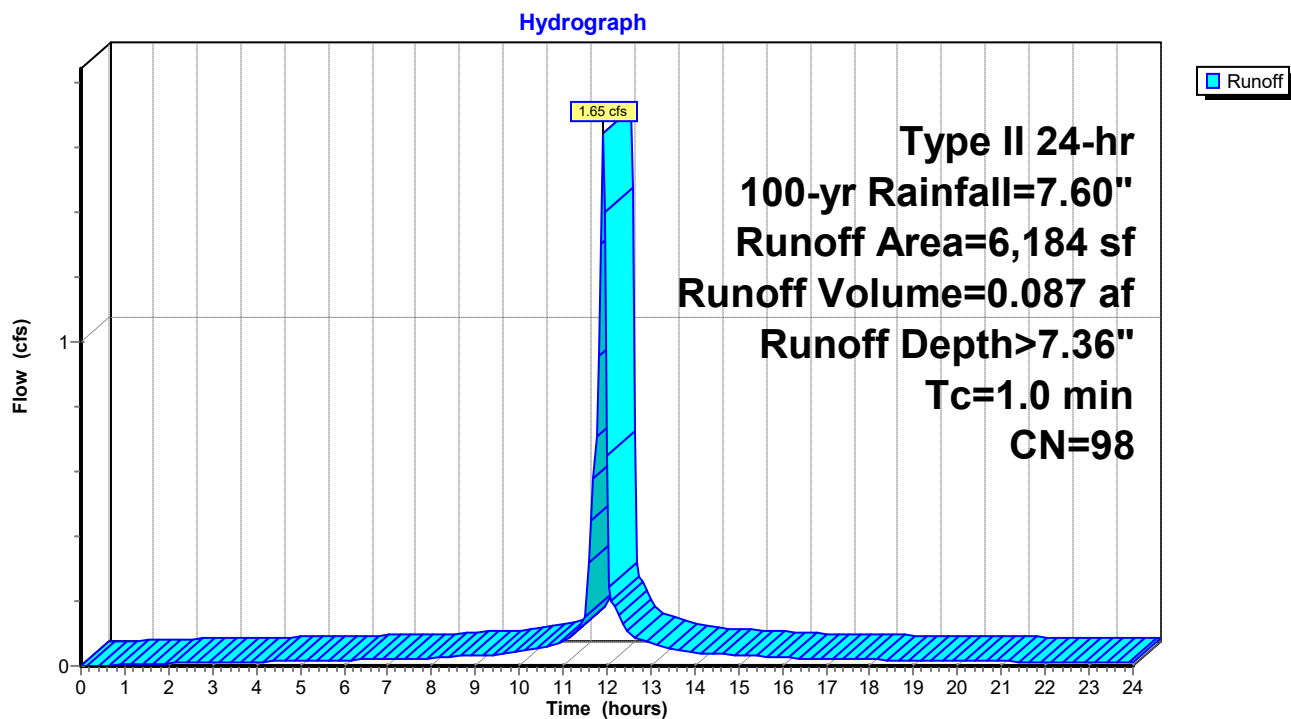
Runoff = 1.65 cfs @ 11.90 hrs, Volume= 0.087 af, Depth> 7.36"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 116

Summary for Subcatchment PR-2C: Purple (Roof)

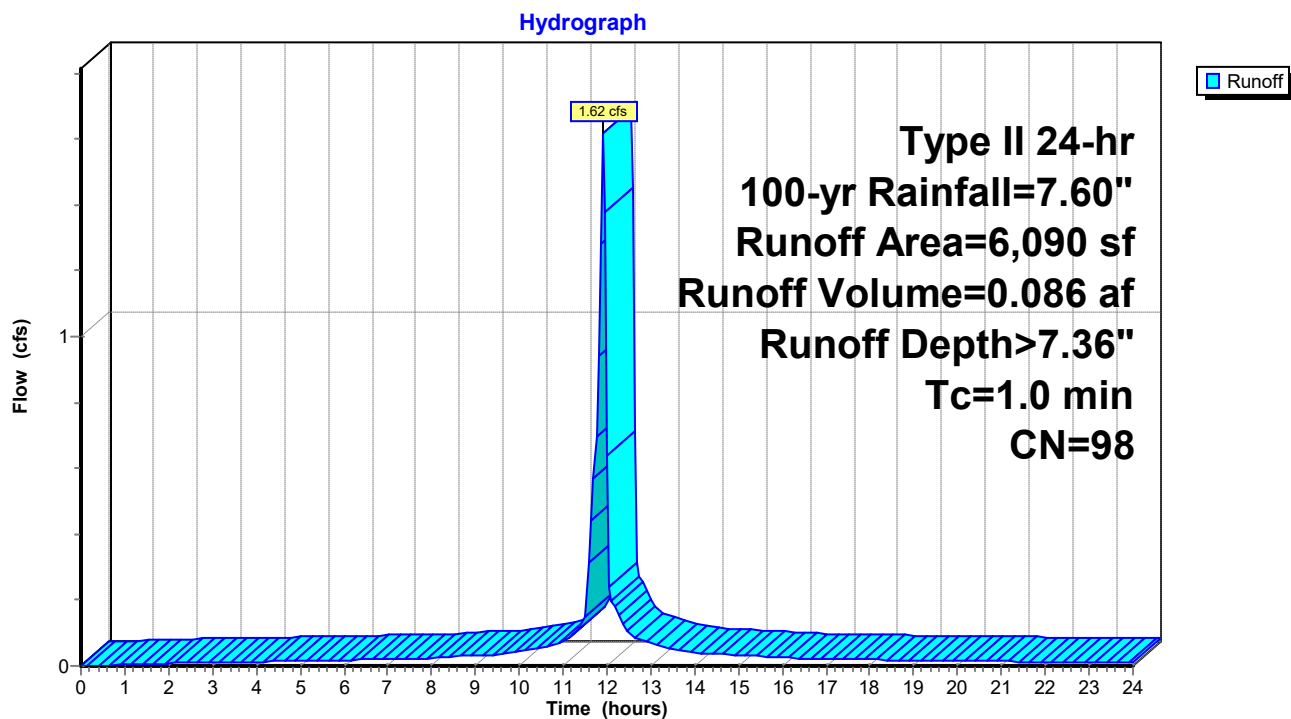
Runoff = 1.62 cfs @ 11.90 hrs, Volume= 0.086 af, Depth> 7.36"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 117

Summary for Subcatchment PR-3A: Parking & Sidewalk (Blue A)

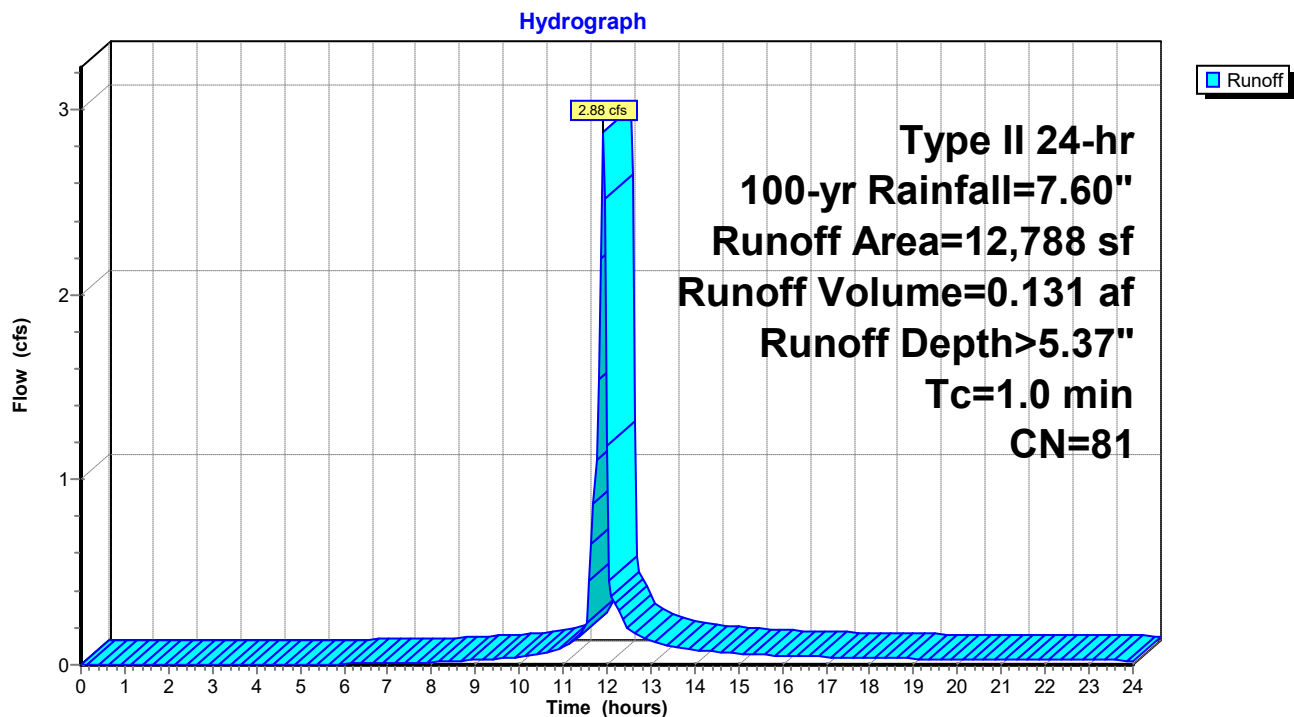
Runoff = 2.88 cfs @ 11.91 hrs, Volume= 0.131 af, Depth> 5.37"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 118

Summary for Subcatchment PR-3B: Parking & Sidewalk (Blue B)

Runoff = 0.88 cfs @ 11.91 hrs, Volume= 0.042 af, Depth> 6.06"

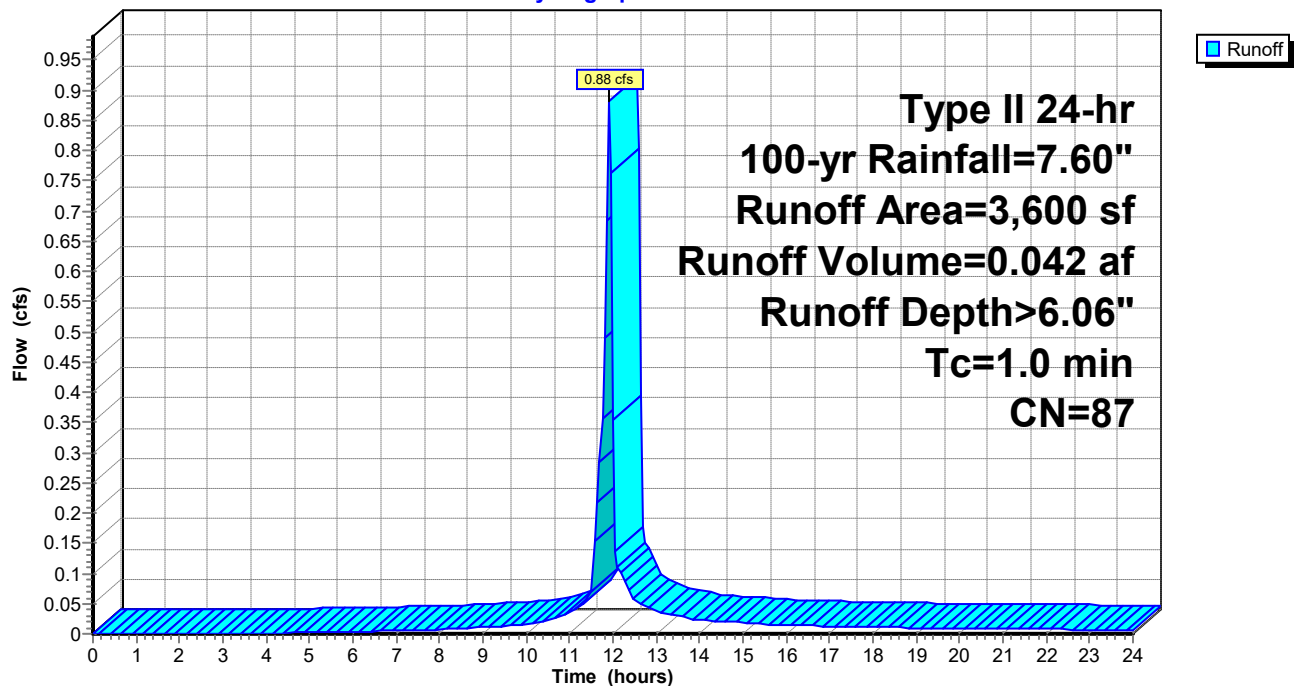
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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)

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 119

Summary for Subcatchment PR-3C: Parking & Sidewalk (Blue C)

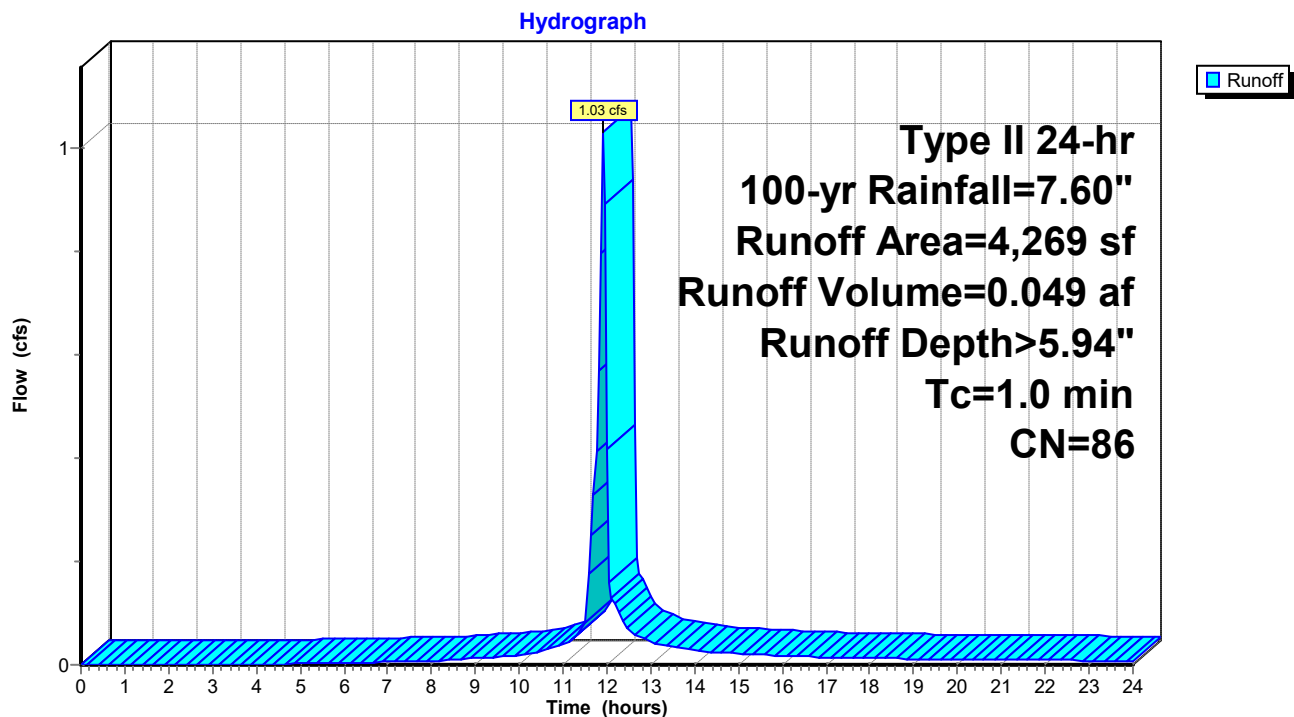
Runoff = 1.03 cfs @ 11.91 hrs, Volume= 0.049 af, Depth> 5.94"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 120

Summary for Subcatchment PR-4A: Roof & SWM Feature (Turquoise)

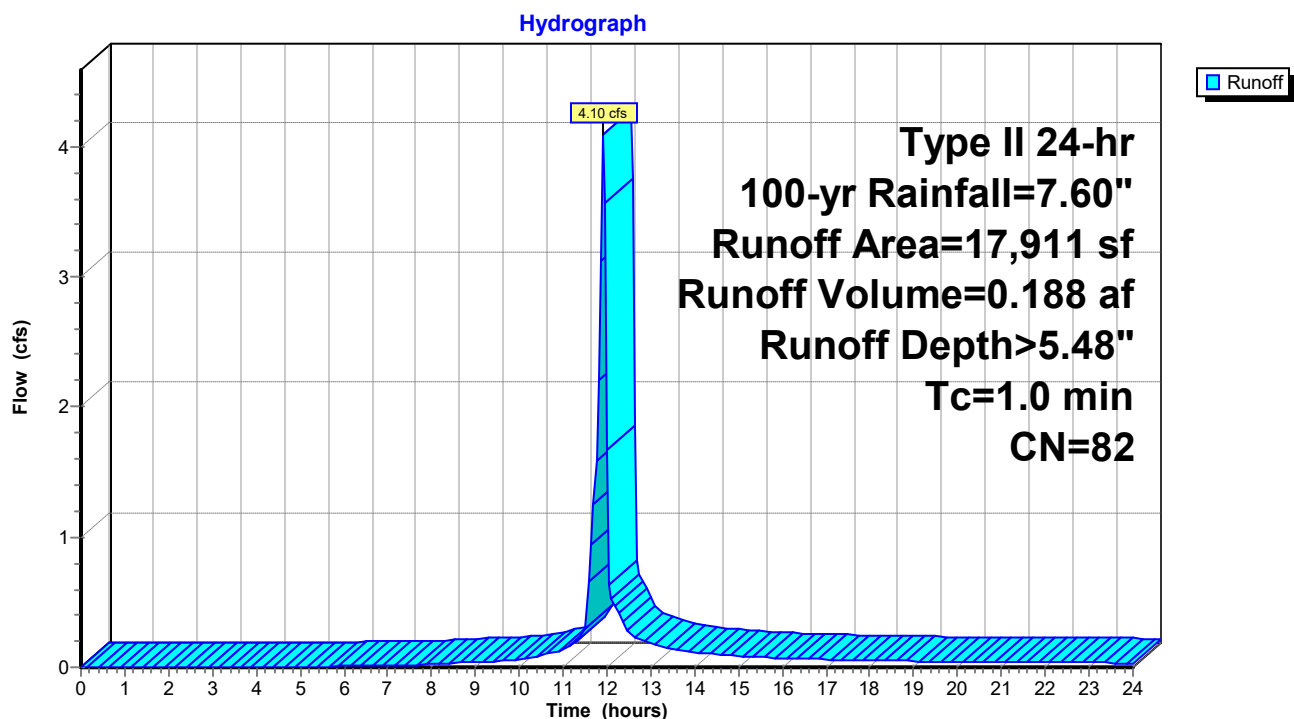
Runoff = 4.10 cfs @ 11.91 hrs, Volume= 0.188 af, Depth> 5.48"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 121

Summary for Subcatchment PR-4B: Parking & Sidewalk (Turquoise 1)

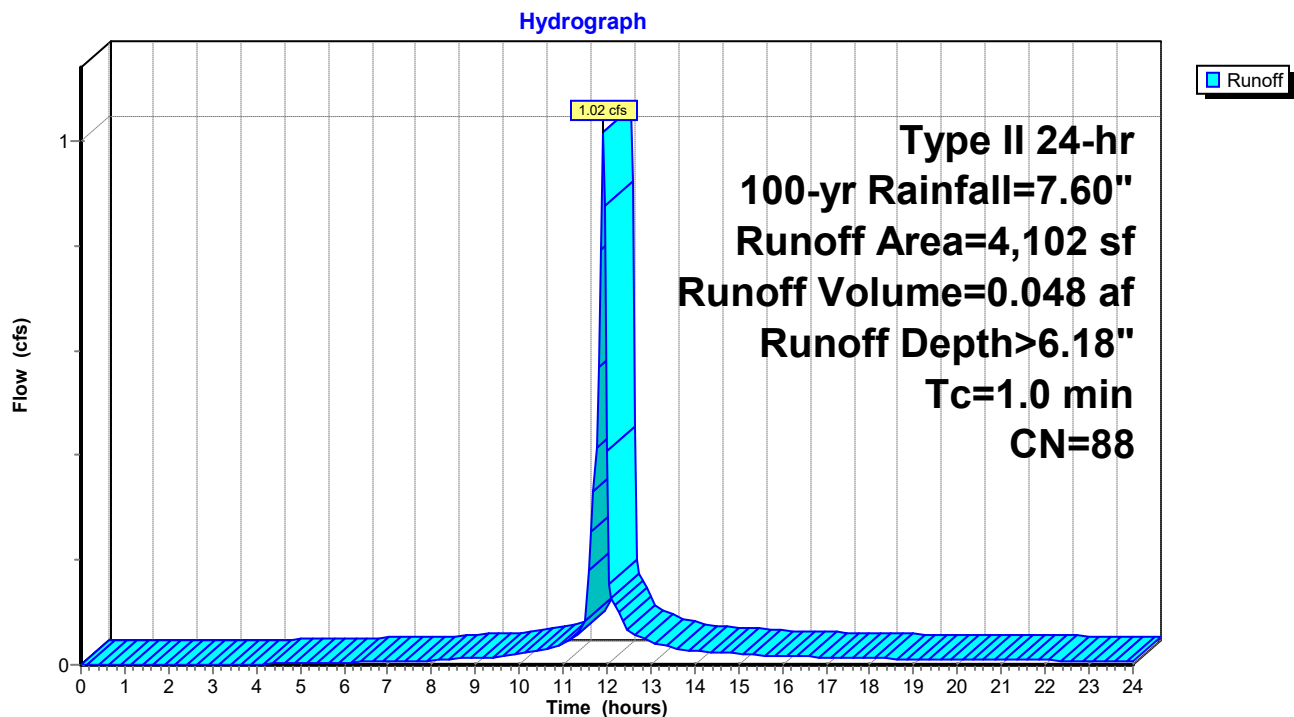
Runoff = 1.02 cfs @ 11.91 hrs, Volume= 0.048 af, Depth> 6.18"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 122

Summary for Subcatchment PR-4C: Parking & Sidewalk (Turquoise 2)

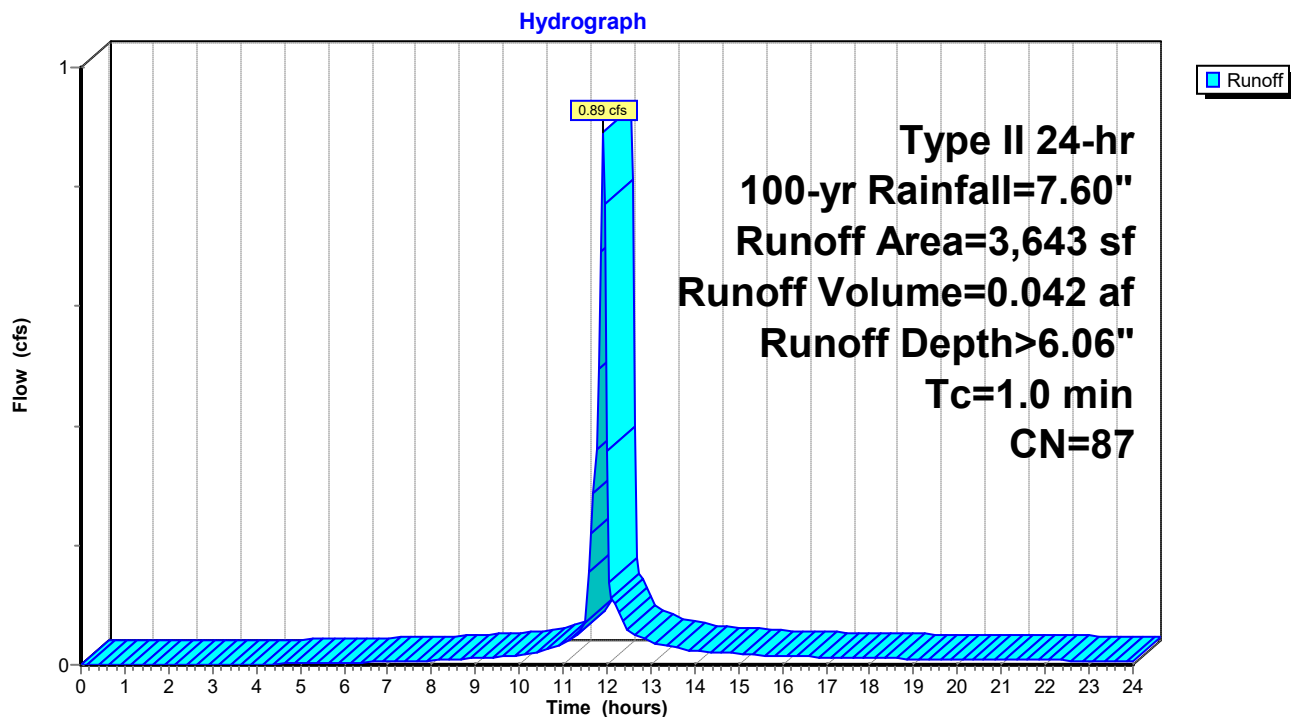
Runoff = 0.89 cfs @ 11.91 hrs, Volume= 0.042 af, Depth> 6.06"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 123

Summary for Subcatchment PR-4D: Parking & Sidewalk (Turquoise 3)

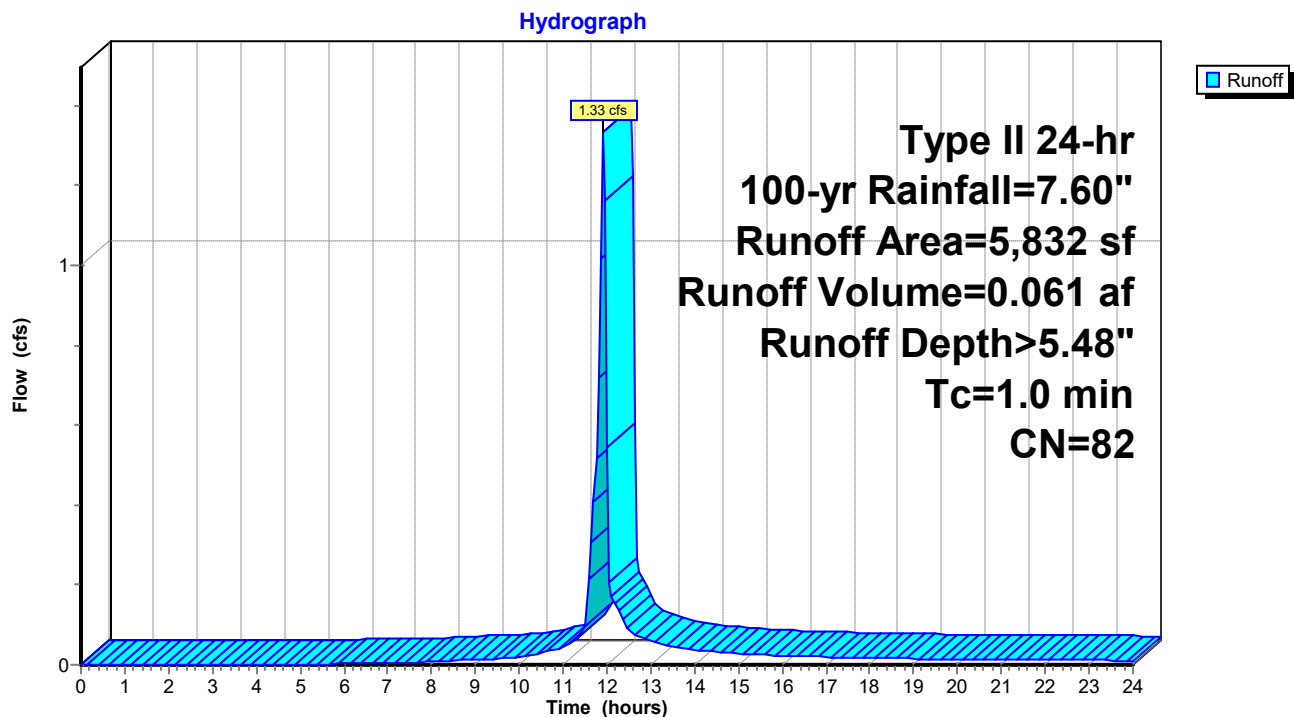
Runoff = 1.33 cfs @ 11.91 hrs, Volume= 0.061 af, Depth> 5.48"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 124

Summary for Subcatchment PR-5: Amenity Building & Parking (Red)

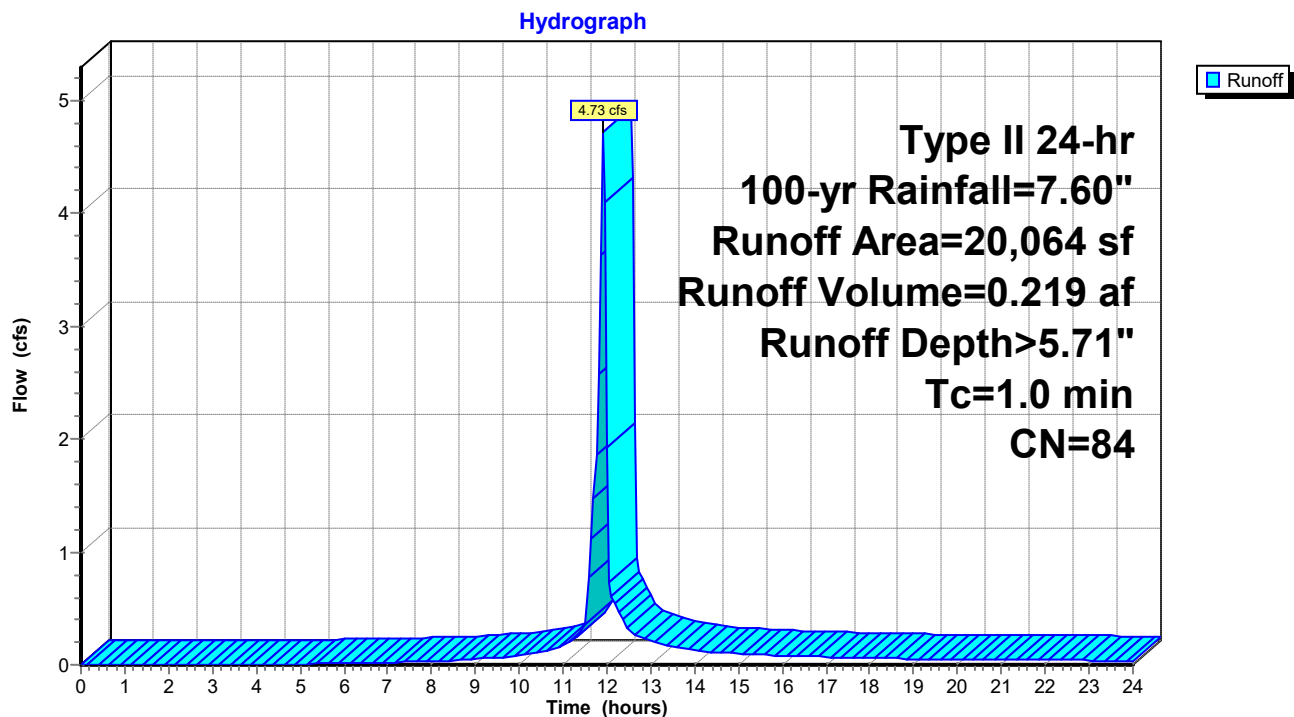
Runoff = 4.73 cfs @ 11.91 hrs, Volume= 0.219 af, Depth> 5.71"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 125

Summary for Subcatchment PR-6: Orange

Runoff = 2.96 cfs @ 11.91 hrs, Volume= 0.139 af, Depth> 5.94"

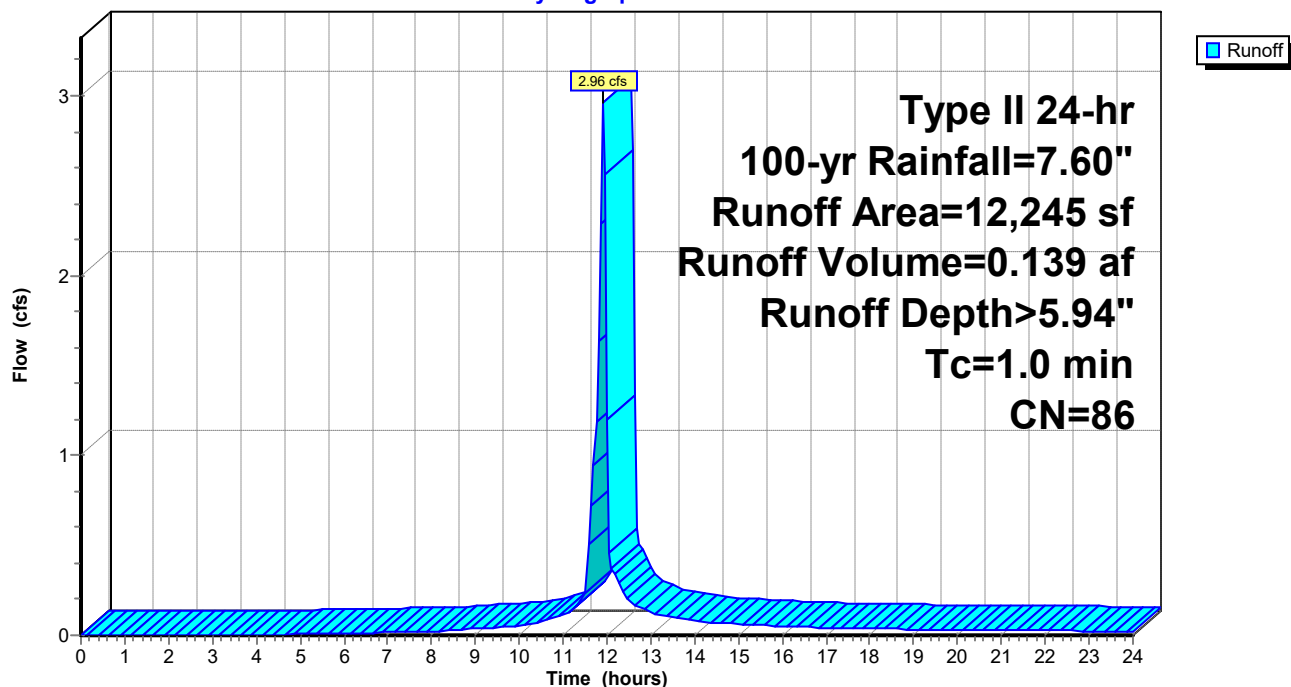
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 126

Summary for Subcatchment PR-7: Yellow

Runoff = 2.31 cfs @ 11.91 hrs, Volume= 0.105 af, Depth> 5.37"

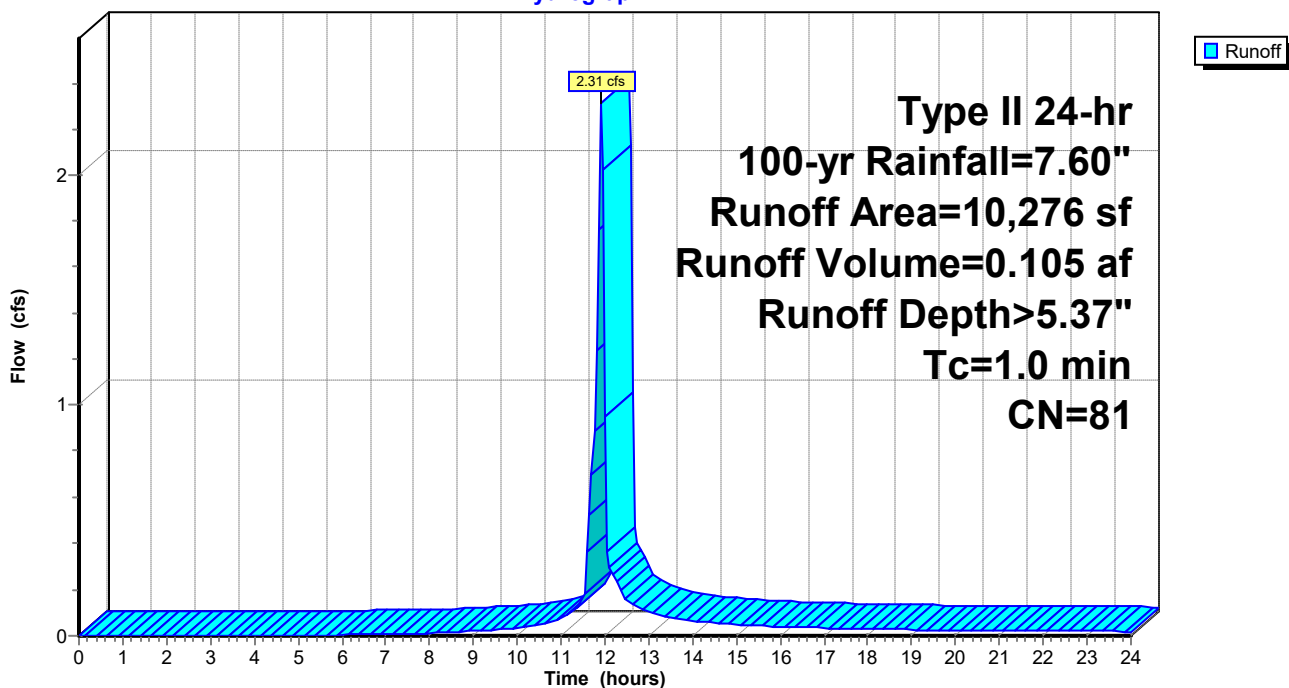
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

	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: Yellow

Hydrograph



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 127

Summary for Subcatchment RD-8: Residue of Property (Adj. North Street)

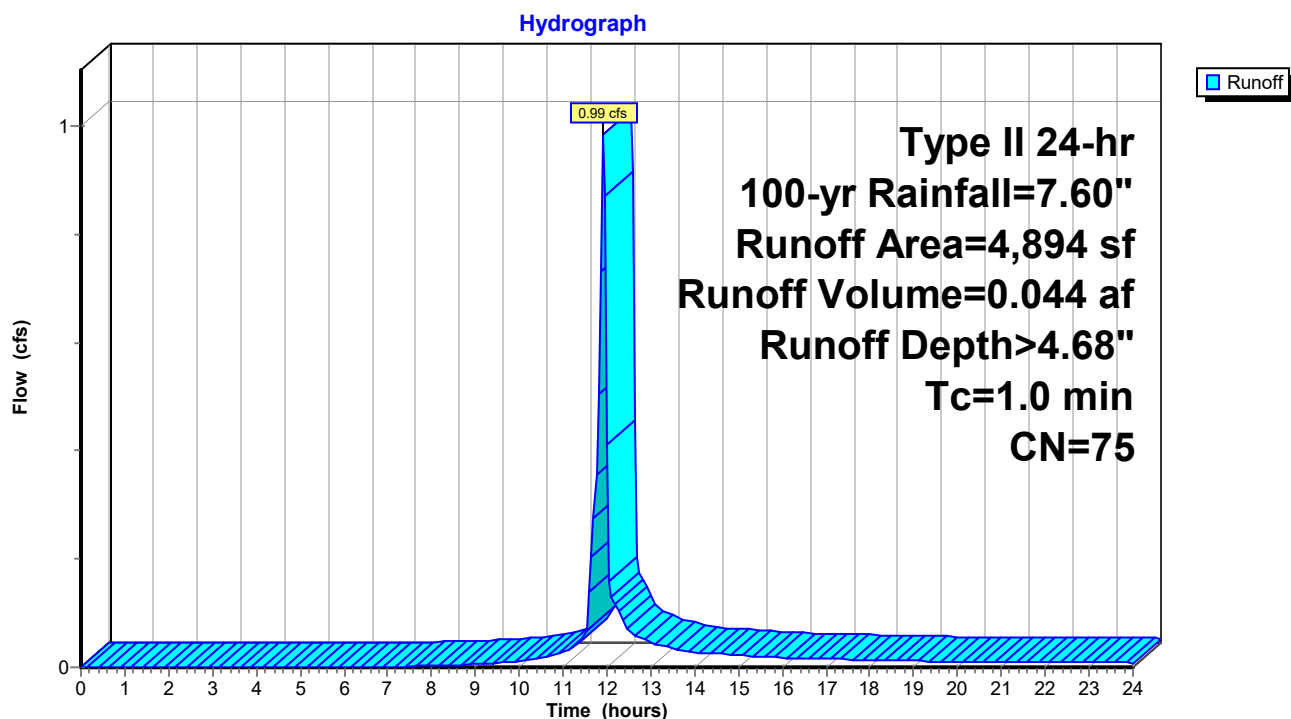
Runoff = 0.99 cfs @ 11.91 hrs, Volume= 0.044 af, Depth> 4.68"

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)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 128

Summary for Subcatchment RD-9: Leadwalks & Sidewalks by Amenity Building

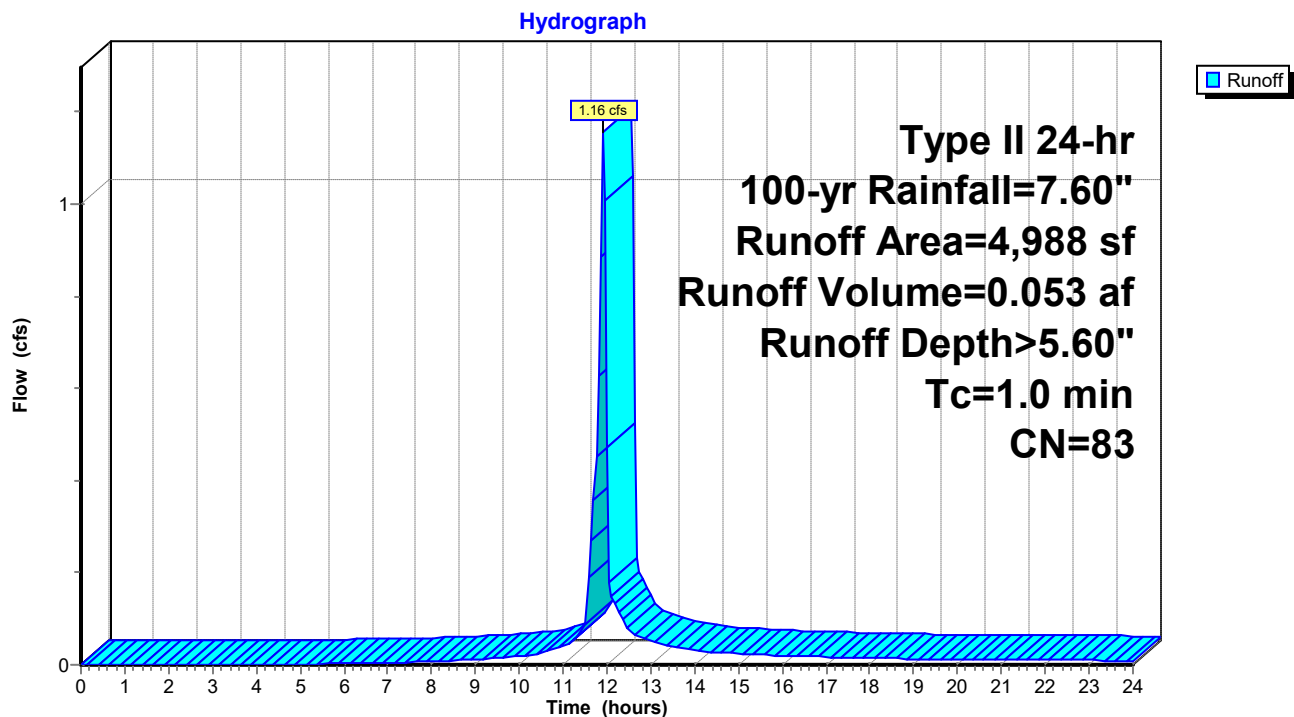
Runoff = 1.16 cfs @ 11.91 hrs, Volume= 0.053 af, Depth> 5.60"

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 129

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 ' 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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

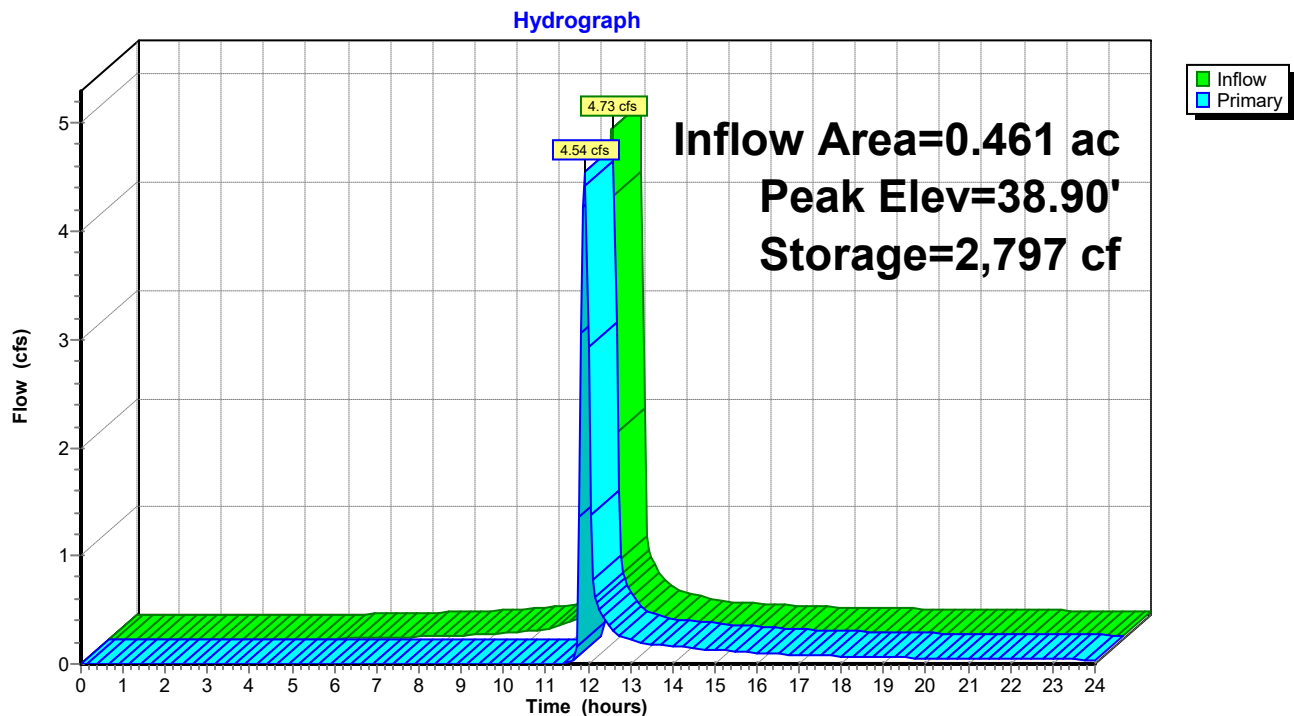
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 130

Pond 3P: MicroBioretention #5



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 131

Stage-Area-Storage for Pond 3P: MicroBioretention #5

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
35.14	650	0	37.69	1,020	974
35.19	650	13	37.74	1,059	1,026
35.24	650	26	37.79	1,098	1,080
35.29	650	39	37.84	1,138	1,135
35.34	650	52	37.89	1,178	1,193
35.39	650	65	37.94	1,220	1,253
35.44	650	78	37.99	1,262	1,315
35.49	650	91	38.04	1,304	1,379
35.54	650	104	38.09	1,348	1,446
35.59	650	117	38.14	1,392	1,514
35.64	650	130	38.19	1,431	1,585
35.69	650	143	38.24	1,469	1,657
35.74	650	156	38.29	1,508	1,732
35.79	650	169	38.34	1,547	1,808
35.84	650	182	38.39	1,587	1,887
35.89	650	195	38.44	1,627	1,967
35.94	650	208	38.49	1,668	2,049
35.99	650	221	38.54	1,709	2,134
36.04	650	234	38.59	1,751	2,220
36.09	650	247	38.64	1,793	2,309
36.14	650	260	38.69	1,836	2,399
36.19	650	273	38.74	1,879	2,492
36.24	650	286	38.79	1,922	2,587
36.29	650	299	38.84	1,967	2,685
36.34	650	312	38.89	2,011	2,784
36.39	650	325	38.94	2,057	2,886
36.44	650	338	38.99	2,102	2,990
36.49	650	351	39.04	2,149	3,096
36.54	650	364	39.09	2,195	3,205
36.59	650	377	39.14	2,242	3,316
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 132

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

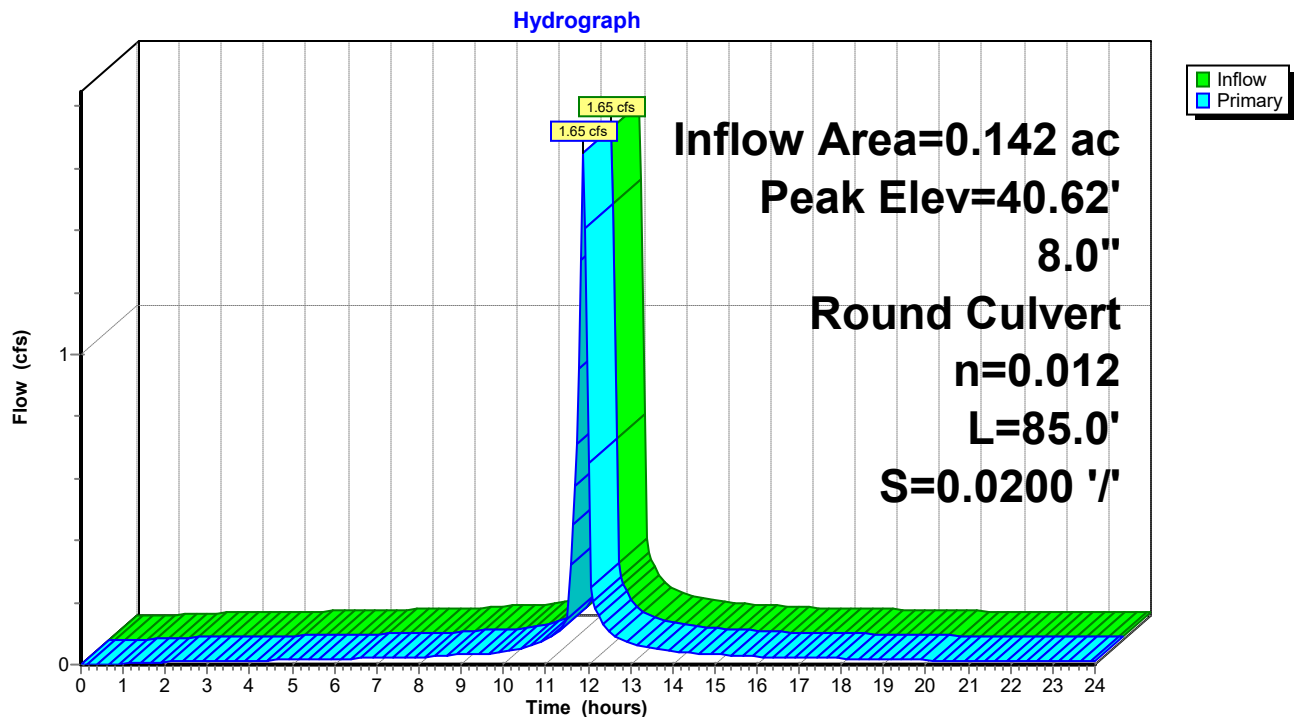
Peak Elev= 40.62' @ 11.92 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 133

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 134

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

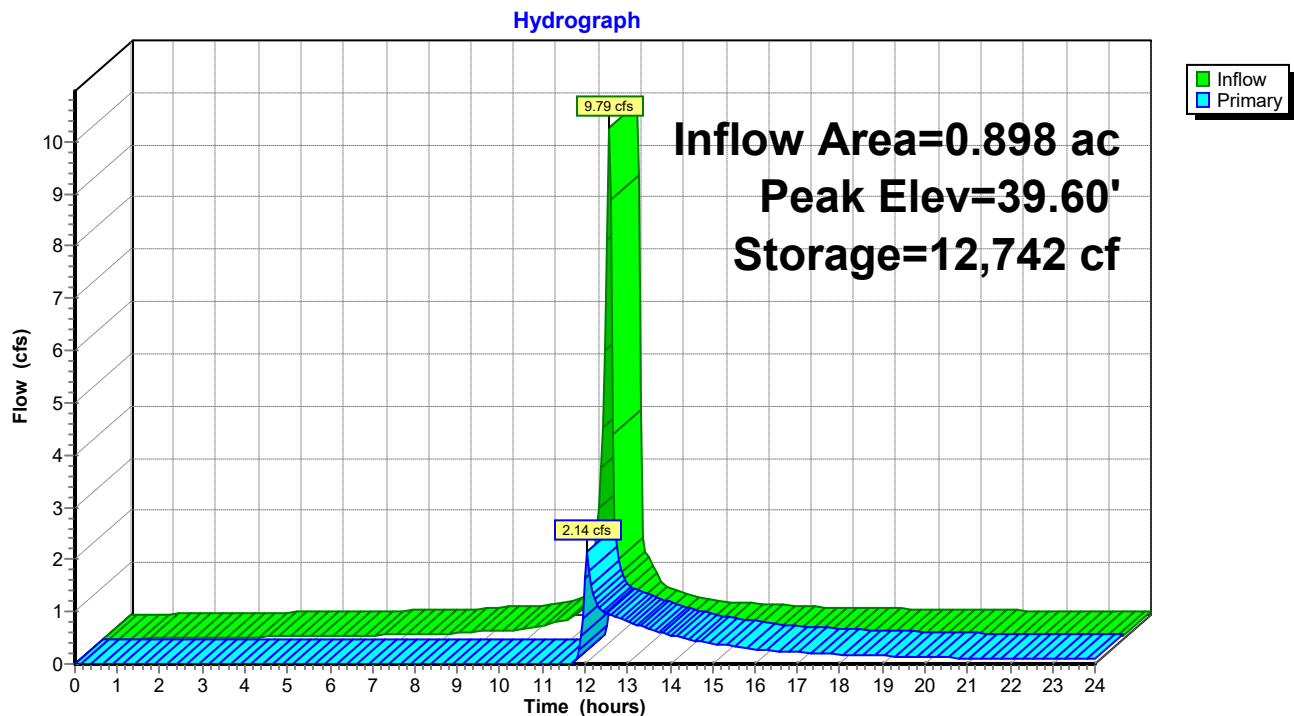
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 135

Pond 6P: MicroBioRetention #1 & #2



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 136

Stage-Area-Storage for Pond 6P: MicroBioRetention #1 & #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
32.99	2,323	0	38.09	3,270	6,778
33.09	2,323	93	38.19	3,356	7,109
33.19	2,323	186	38.29	3,443	7,449
33.29	2,323	279	38.39	3,531	7,798
33.39	2,323	372	38.49	3,620	8,155
33.49	2,323	465	38.59	3,710	8,522
33.59	2,323	558	38.69	3,801	8,897
33.69	2,323	650	38.79	3,894	9,282
33.79	2,323	743	38.89	3,987	9,676
33.89	2,323	836	38.99	4,082	10,080
33.99	2,323	929	39.09	4,178	10,493
34.09	2,323	1,022	39.19	4,275	10,915
34.19	2,323	1,115	39.29	4,373	11,348
34.29	2,323	1,208	39.39	4,472	11,790
34.39	2,323	1,301	39.49	4,572	12,242
34.49	2,323	1,394	39.59	4,673	12,704
34.59	2,323	1,487	39.69	4,775	13,177
34.69	2,323	1,580	39.79	4,879	13,659
34.79	2,323	1,673	39.89	4,984	14,152
34.89	2,323	1,765	39.99	5,089	14,656
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 137

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 ' 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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

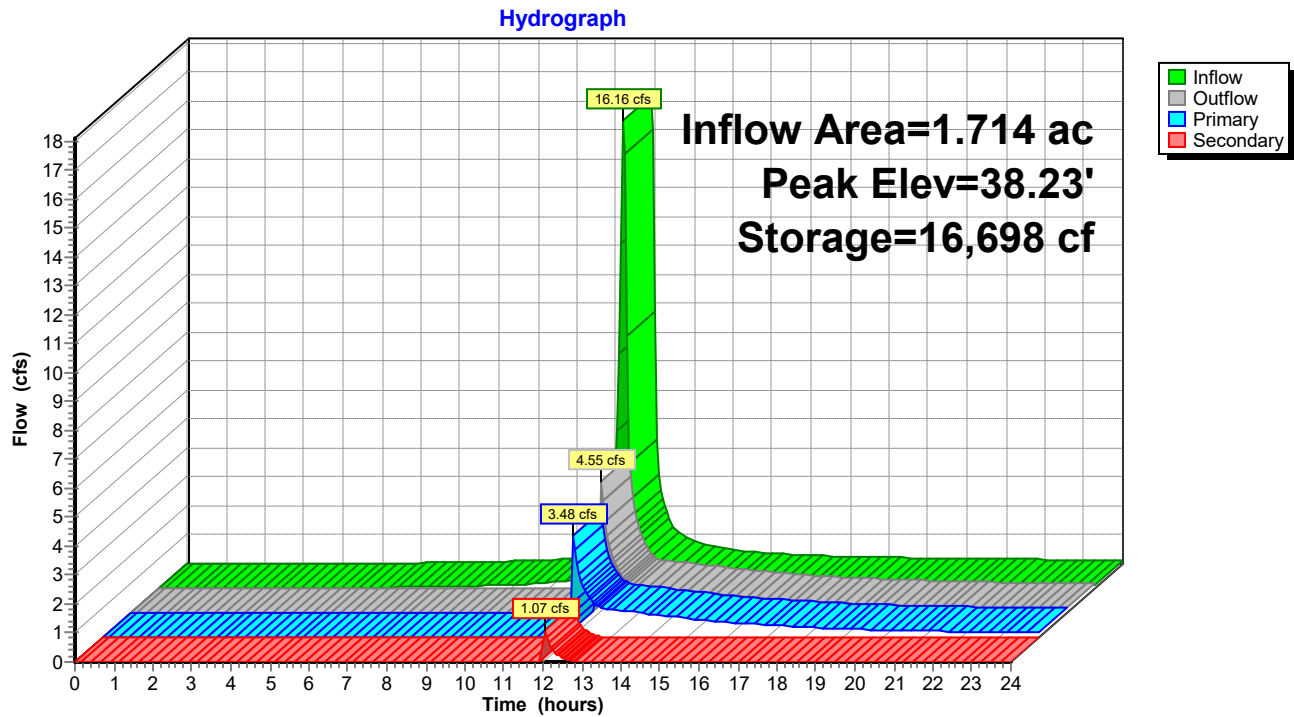
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 138

Pond 8P: MicroBioRetention #3 & #4



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 139

Stage-Area-Storage for Pond 8P: MicroBioRetention #3 & #4

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.59	2,680	0	36.69	4,276	8,072
31.69	2,680	107	36.79	4,441	8,508
31.79	2,680	214	36.89	4,609	8,960
31.89	2,680	322	36.99	4,780	9,430
31.99	2,680	429	37.09	4,954	9,916
32.09	2,680	536	37.19	5,132	10,421
32.19	2,680	643	37.29	5,312	10,943
32.29	2,680	750	37.39	5,496	11,483
32.39	2,680	858	37.49	5,683	12,042
32.49	2,680	965	37.59	5,873	12,620
32.59	2,680	1,072	37.69	6,030	13,215
32.69	2,680	1,179	37.79	6,186	13,826
32.79	2,680	1,286	37.89	6,344	14,452
32.89	2,680	1,394	37.99	6,504	15,095
32.99	2,680	1,501	38.09	6,665	15,753
33.09	2,680	1,608	38.19	6,829	16,428
33.19	2,680	1,715	38.29	6,995	17,119
33.29	2,680	1,822	38.39	7,162	17,827
33.39	2,680	1,930	38.49	7,332	18,552
33.49	2,680	2,037	38.59	7,504	19,293
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 140

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

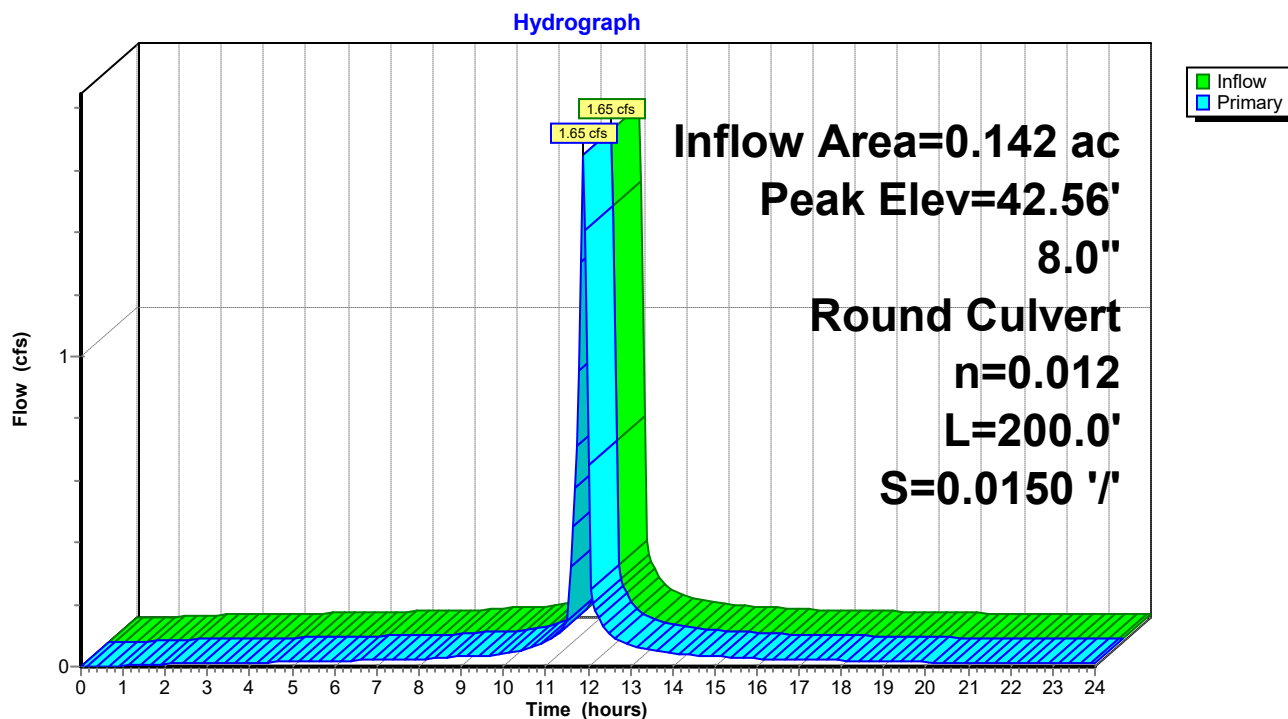
Peak Elev= 42.56' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 141

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 142

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

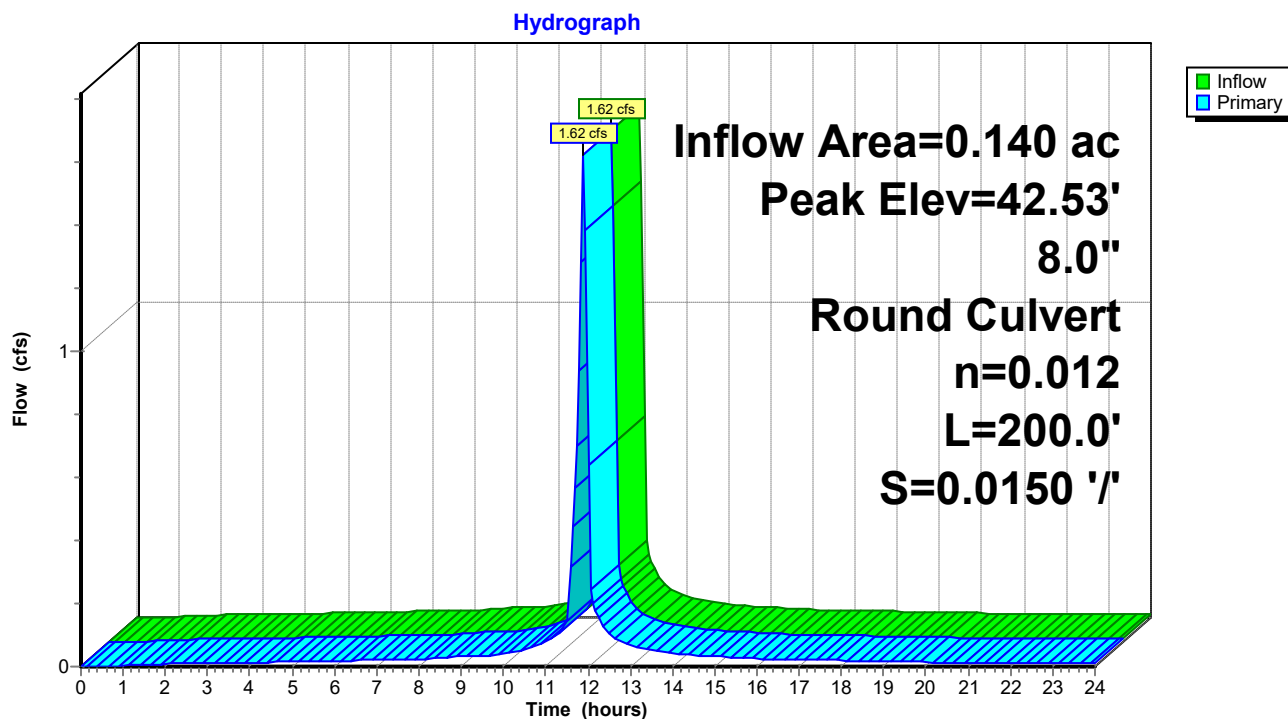
Peak Elev= 42.53' @ 11.90 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 143

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 144

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

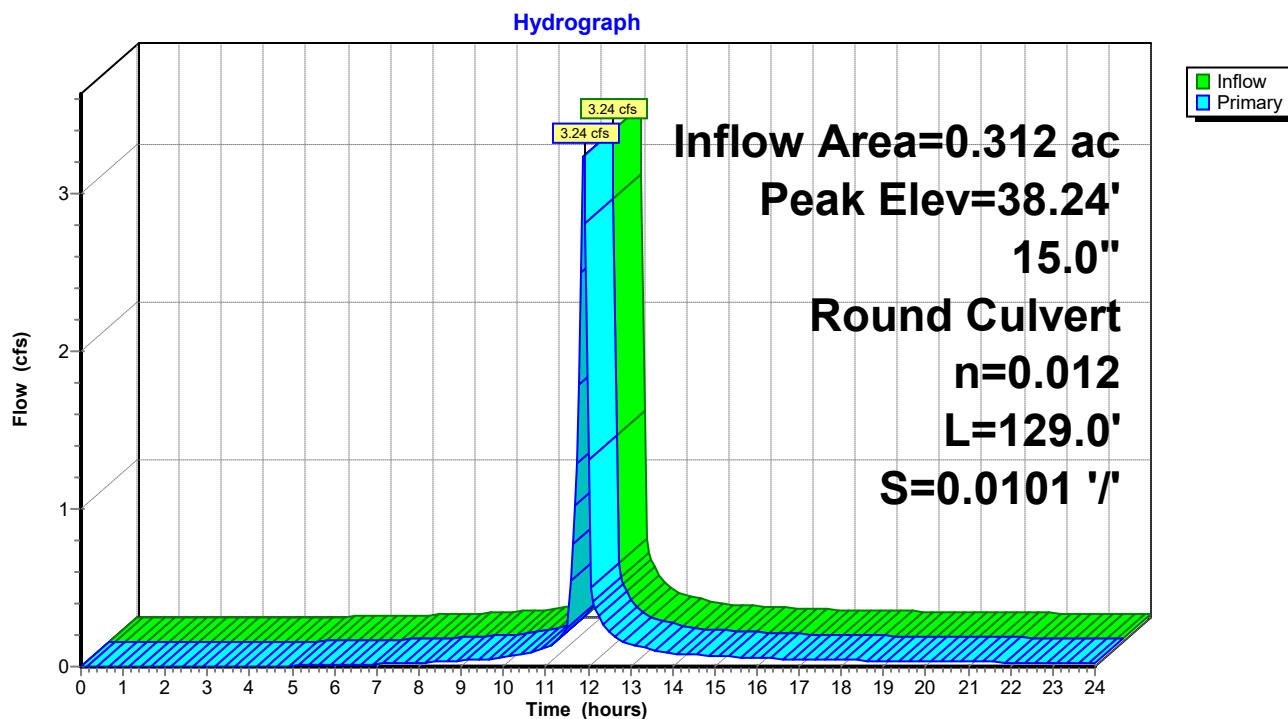
Peak Elev= 38.24' @ 12.12 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 145

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 146

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

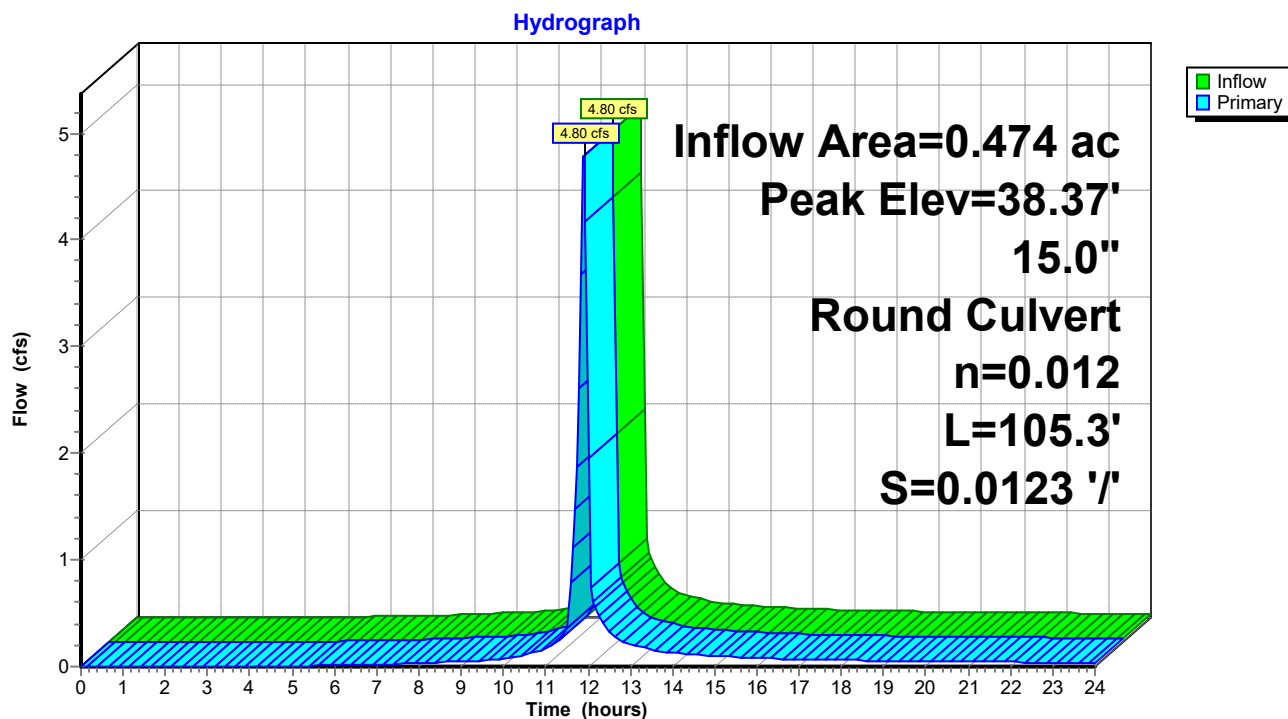
Peak Elev= 38.37' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 147

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 148

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

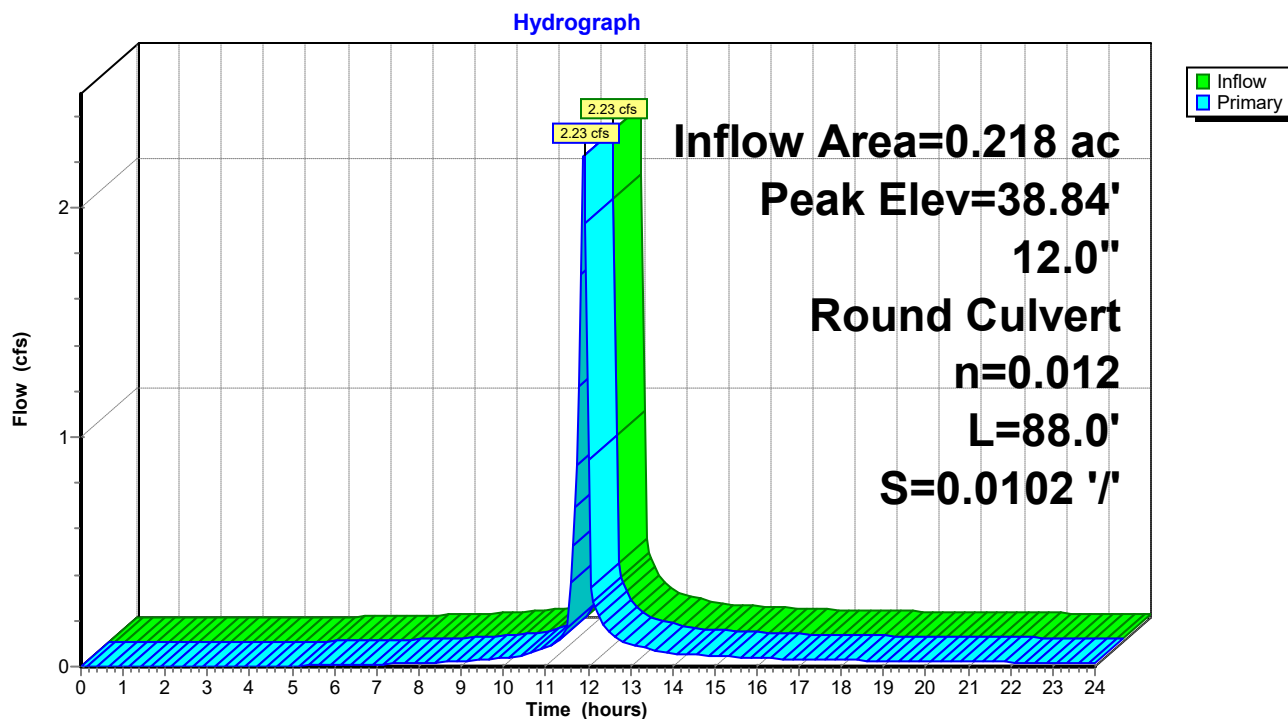
Peak Elev= 38.84' @ 11.91 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 149

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 150

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

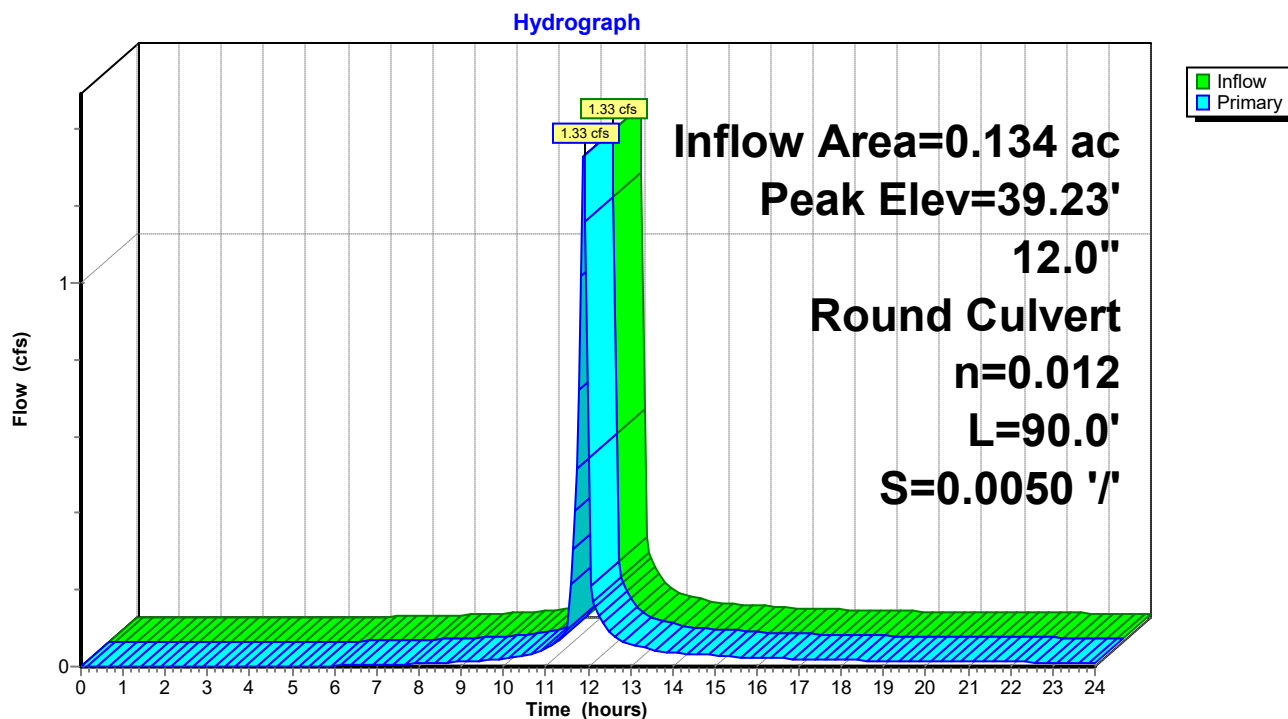
Peak Elev= 39.23' @ 11.93 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 151

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 152

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

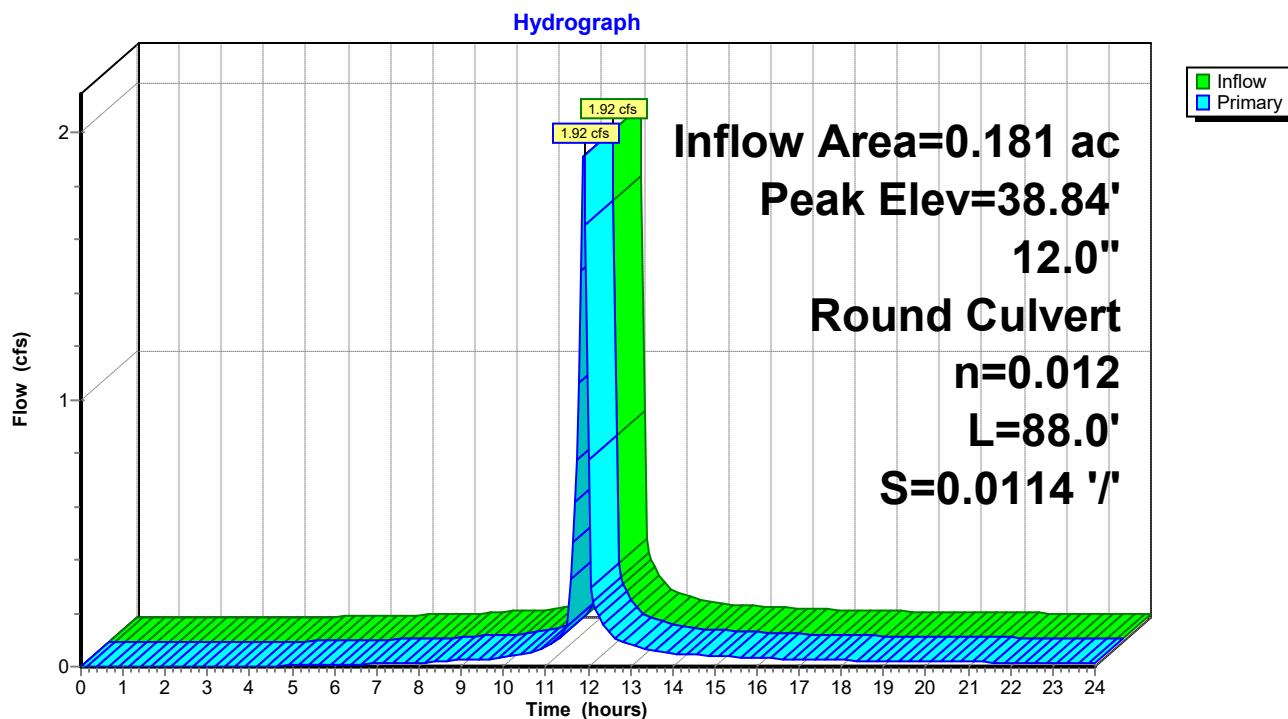
Peak Elev= 38.84' @ 11.93 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 153

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 154

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

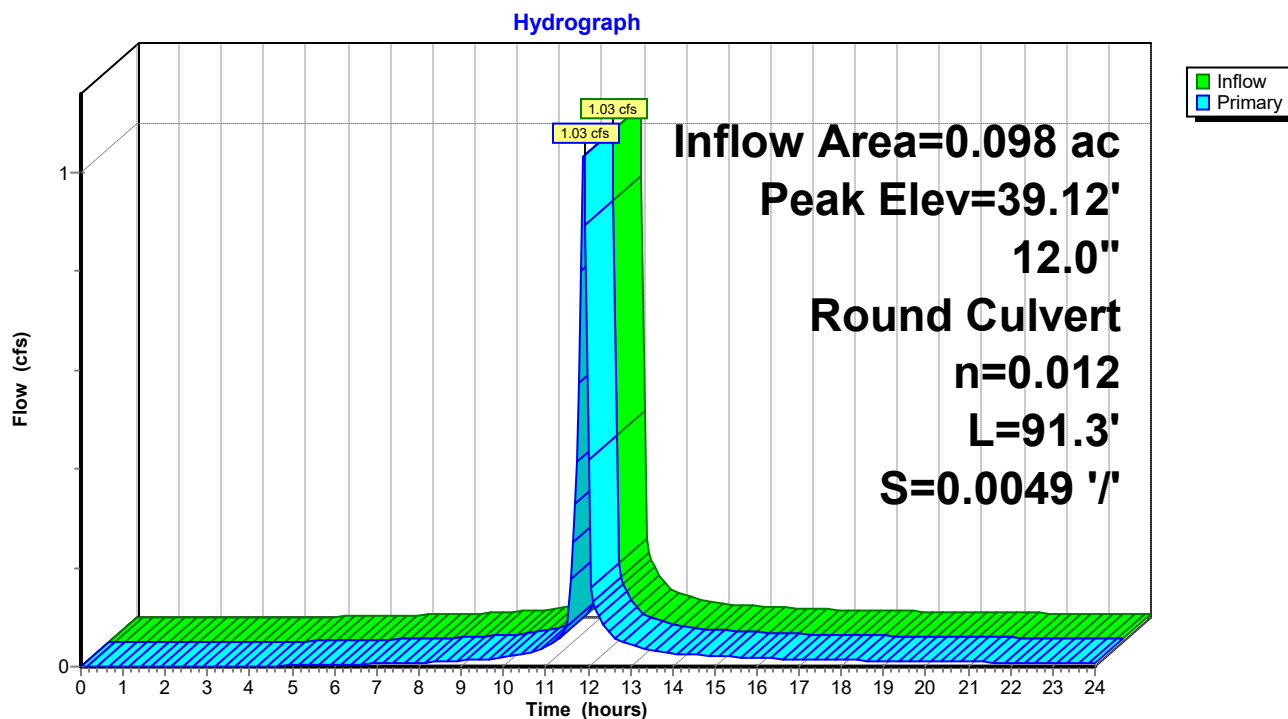
Peak Elev= 39.12' @ 11.93 hrs

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square

Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 155

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		

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 156

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)

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

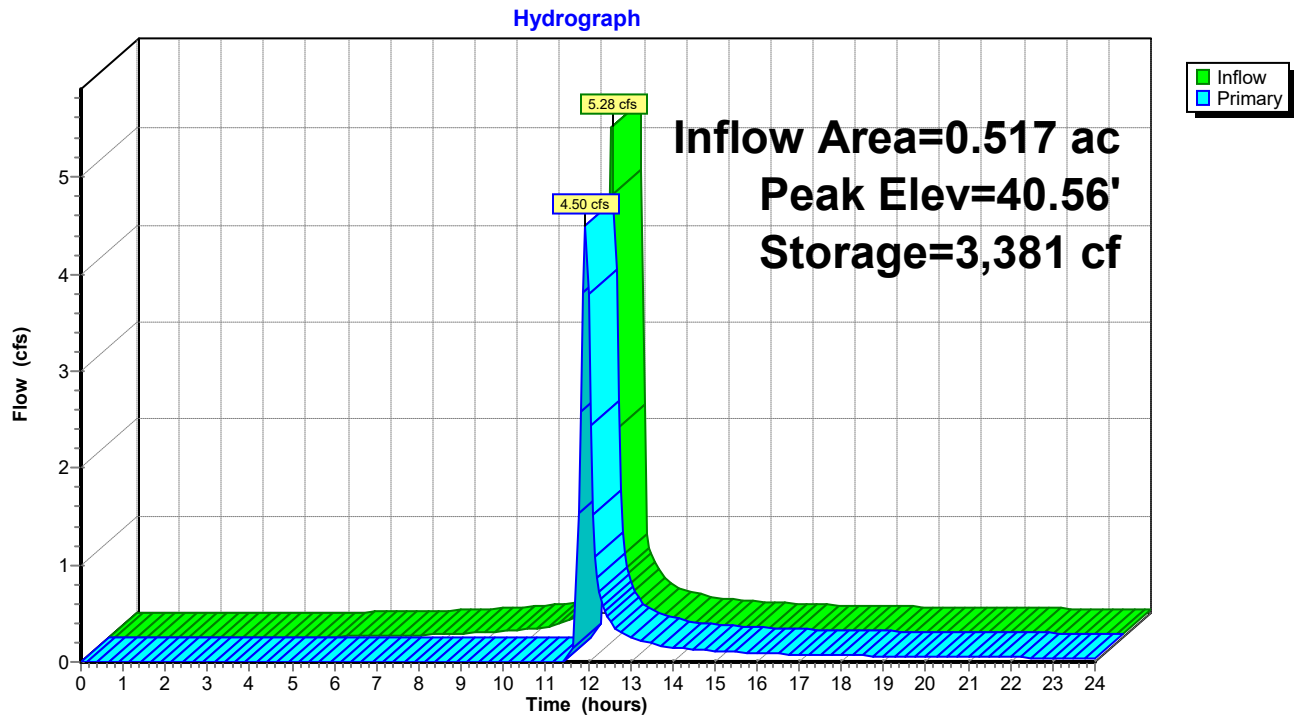
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 157

Pond BSW: BioSwale (M-8)



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

Page 158

Stage-Area-Storage for Pond BSW: BioSwale (M-8)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.99	631	0	40.09	1,876	2,322
35.09	631	25	40.19	2,024	2,517
35.19	631	50	40.29	2,177	2,727
35.29	631	76	40.39	2,335	2,953
35.39	631	101	40.49	2,499	3,194
35.49	631	126	40.59	2,669	3,453
35.59	631	151	40.69	2,844	3,728
35.69	631	177	40.79	3,025	4,022
35.79	631	202	40.89	3,212	4,334
35.89	631	227	40.99	3,403	4,664
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			

230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

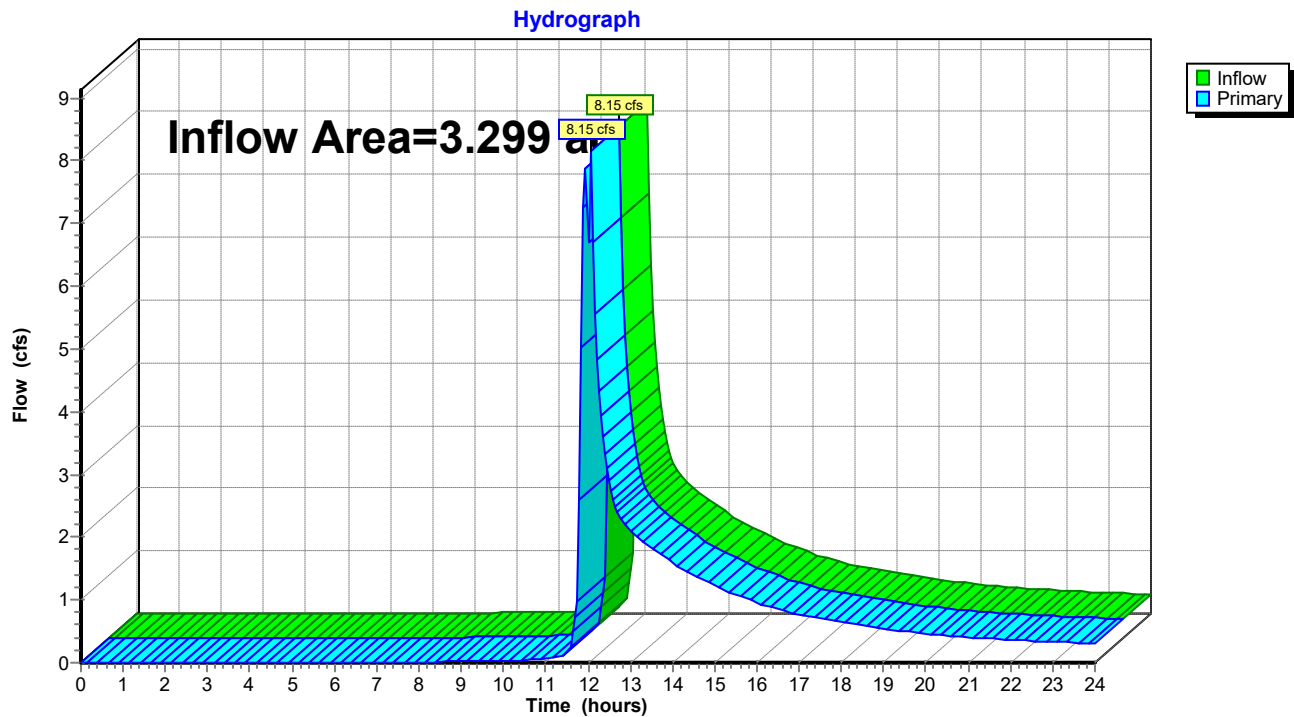
Page 159

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



230228-CannerySquare-Sketch HydroCAD

Prepared by Lane Engineering, LLC

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

230228 - Cannery Square
Type II 24-hr 100-yr Rainfall=7.60"

Printed 10/31/2023

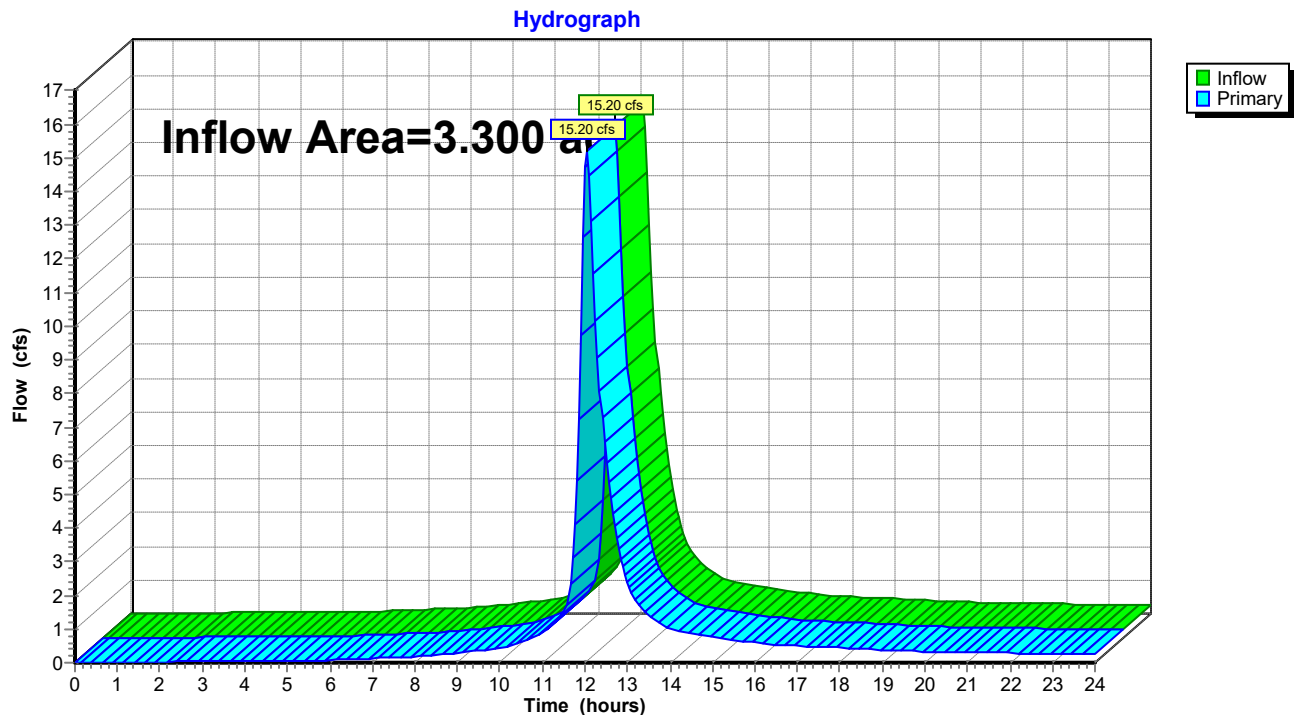
Page 160

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

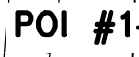
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link POI#1: EX. Stormdrain



APPENDIX C

Drainage Area Maps



EX-1

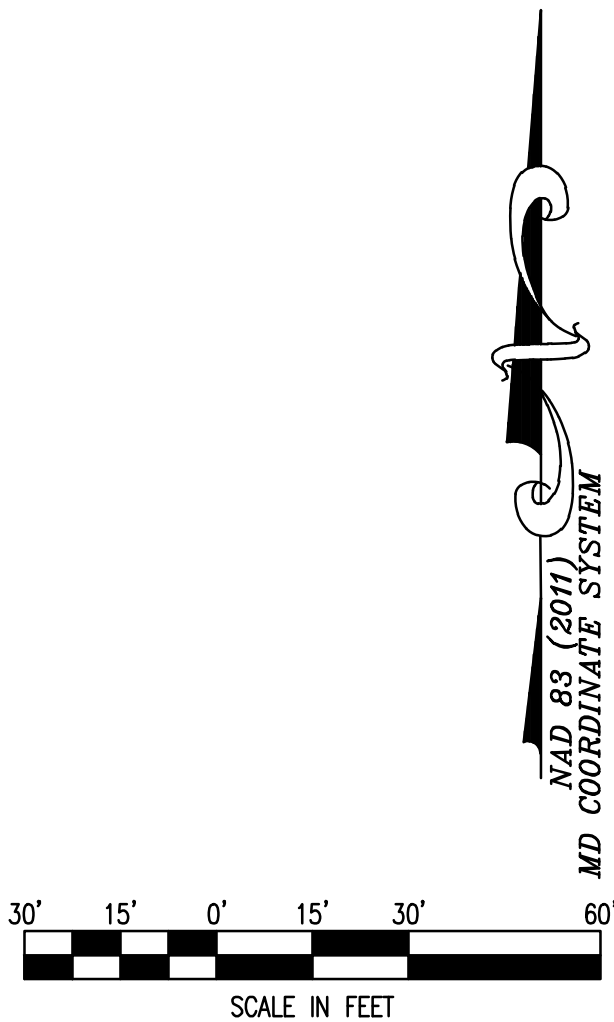
EX-2

SWM PRE DEVELOPMENT DISCHARGES (CFS)			
STUDY POINT	Q ₂	Q ₁₀	Q ₁₀₀
1	4.86	9.40	15.20

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	UDORTHTENS, LOAMY		0.37	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.



NAD 83 (2011)
IN COORDINATE SYSTEM

APPROVED:

PLANS ARE

APPROVED: ISSUED FOR
REVIEW ONLY

TOWN OF EASTON – TOWN ENGINEER	DATE
--------------------------------	------

APPROVED:

PLANS ARE NOT

**APPROVED FOR
CONSTRUCTION**

REVISIONS TO APPROVED PLANS

[illegible]

WARNING!

THE LOCATION 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.



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 _____

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 &

ISSUED/REVISED FOR:
ESDR REVIEW

ESDR REVIEW

DATE: 11/1/23 BY: RCF

11/17/23 BCE

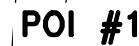
SHEET No. 1 OF 2

SCALE:
AS NOTED

11/1/23

JOB N

FILE No. B246



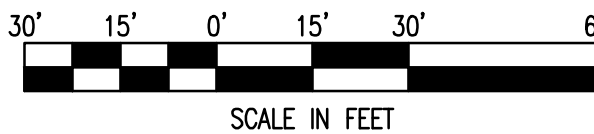
SWM POST DEVELOPMENT DISCHARGES (CFS)			
STUDY POINT	Q ₂	Q ₁₀	Q ₁₀₀
1	0.65	3.31	8.15

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 & WALKING FRONTAGE
RD-9	4988	1.00	41.34	LEAD BUILDING TO COMMUNITY BUILDING

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	UDORTHTENS, LOAMY		0.37	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.



APPROVED:	
PLANS ARE	
TOWN OF EASTON	ENGINEERING & ZONING
ISSUED FOR	
DATE	
APPROVED:	
REVIEW ONLY	
TOWN OF EASTON — TOWN ENGINEER	DATE
APPROVED:	
PLANS ARE NOT	
APPROVED FOR	
DATE	
CONSTRUCTION	

[illegible]

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.



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

POST-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. 2 OF 2 11/1/23

SCALE:	JOB No. 230228
AS NOTED	FILE No. B246

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 Caldwell's 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.

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

11/10/2021

TALBOT COUNTY FINANCE OFFICE

RECORDATION TAX

AMT: \$400.00

DATE: 11/12/2021

INITIALS: SPH

Prop ID: 01-017128

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.

As Witness the hand and seal of said Grantor, the day and year first above written.

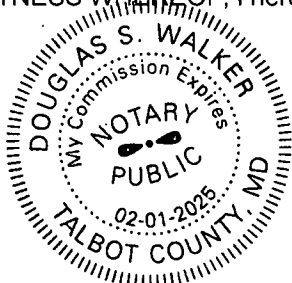
Dan (SEAL) TWO SONS E.I.P., LLC, a Maryland Limited Liability Company

By: *Philip J. Harrington, III* (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.



Dan
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.

Dan (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

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.

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 - 1kd 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)

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.) ☒ Deed ☐ Deed of Trust ☐ Mortgage ☐ Lease ☐ Other _____ ☐ Other _____			
2	Conveyance Type Check Box	☒ Improved Sale Arms-Length // ☐ Unimproved Sale Arms-Length /2/ ☐ Multiple Accounts Arms-Length /3/ ☐ Not an Arms-Length Sale /9/			
3	Tax Exemptions (if applicable)	Recordation State Transfer County Transfer			
Cite or Explain Authority					
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 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 \$	Doc. 1 	Doc. 2 	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 01 Property Tax ID No. (1) 017128 Subdivision Name Lot (3a) Block (3b) Sect/AR (3c)	Grantor Liber/Folio 2368 063 Map 0103 Parcel No. 0753 Plat Ref. SqFt/Acreage (4)	Var. LOG (5) 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) TWO SONS E.I.P., LLC		Doc. 2 – Grantor(s) Name(s)	
8	Transferred To	Doc. 1 – Owner(s) of Record, if Different from Grantor(s) Doc. 1 – Grantee(s) Name(s) SHOREGATE OF CANNERY COMMERCIAL, LLC		Doc. 2 Owner(s) of Record, if Different from Grantor(s) Doc. 2 – Grantee(s) Name(s) 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			
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).			
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
Total			Town Cd.	Ex. St.	Ex. Cd.
REMARKS:					