Town of Mashpee

Planning Board
16 Great Neck Road North
Mashpee, Massachusetts 02649

Meeting of the Mashpee Planning Board
Wednesday, July 17, 2019
Waquoit Meeting Room, 7:00 PM

Call Meeting to Order

7:00PM – Waquoit Meeting Room – Mashpee Town Hall

- Pledge of Allegiance

Approval of Minutes

- Review and approval of meeting minutes from July 3 , 2019

Public Hearings

7:10 PM - Cape and Island's Engineering

Cape and Island's Engineering has submitted an application for consideration of a Definitive Subdivision pursuant to M.G.L. Chapter 41 Section 81T on behalf of Mark and Donna Lopez, subject property owners. The subject property is currently addressed as 103 Meetinghouse Road and identified on Assessor's Map and Block 45-50-0. The parcel consists of 284,184+/-sq.ft. area, located on the west side of Meetinghouse Road and to the east of Mashpee River.

7:15 PM – Cape and Island's Engineering

Cape and Island's Engineering has submitted an application for consideration of a Special Permit for a Cluster Subdivision to create three (3) building lots and two (2) open space parcels pursuant to Massachusetts General Laws Chapter 40A Section 9 and the Mashpee Zoning Bylaw §174-25(I)(4) on behalf of Mark and Donna Lopez, property owners of the subject parcel. The parcel consists of 284,184+/-sq.ft. area, located on the west side of Meetinghouse Road and to the east of Mashpee River.

7:30 PM – Modi, LLC

Modi, LLC has filed an Application for Special Permit to construct a coffee shop with facilities for processing and packaging coffee along with a future industrial tenant at 10 Evergreen Circle, Lot B (Map 19 Block 10) as required by Section 174-25 (I)(16) and Section 174-45.6 of the Mashpee Zoning Bylaw. The property is located in the C-3 Zoning District and is within the Light Industrial Overlay District.

Approval Not Required

- Jonathan Pelloni, Esq. for Duco Associates, Inc. (property owner) 28 Blue Castle Drive, Assessors Map and Block 104-11-0
- Jonathan Pelloni, Esq. for Ellen Brady (property owner) 20 Blue Castle Drive. Assessors Map and Block 104-10A-0

New Business

- Vote to set public hearing date for special permit application made by Kevin Andrade
- Articles submitted to the Board of Selectmen for the October Town Meeting Warrant
- Mashpee Commons Intent to Apply for Development Agreement

Town of Mashpee

16 Great Neck Road North
Mashpee, Massachusetts 02649

Old Business

Chairman's Report

- July 15th Meeting of Town Regulatory Boards
- Mashpee EDIC Efforts to Develop Town-owned Land

Board Member Committee Reports

- Cape Cod Commission, Community Preservation Committee, Design Review, Plan Review, Environmental Oversight Committee, Greenways/Quashnet Footbridge, Historic District Commission, MMR Military Civilian Community Council.

Updates from Town Planner

Additional Topics (not reasonably anticipated by Chair)

Adjournment

Mashpee Planning Board
Minutes of Meeting
July 3, 2019 at 7:00 p.m.
Mashpee Town Hall-Waquoit Meeting Room
16 Great Neck Road North
Approved 7/17/19

Present: Chairman Mary Waygan, Vice Chairman Joe Cummings, Dennis Balzarini, John (Jack) Phelan, Joseph Callahan, Robert (Rob) Hansen (Alt.)
Also: Evan Lehrer-Town Planner, Charles Rowley-Consultant Engineer

CALL TO ORDER
The Town of Mashpee Planning Board meeting was opened with a quorum in the Waquoit Meeting Room at Mashpee Town Hall by Chairman Waygan, at 7:00 p.m. on Wednesday, July 3, 2019. The Chair welcomed attendees and stated that the meeting was being videographed and recorded and noted that, without a publicly advertised public hearing on the agenda, public comment could not be accepted at this meeting. The Pledge of Allegiance was recited.

APPROVAL OF MINUTES—April 17, 2019 and June 19, 2019

MOTION: Mr. Balzarini made a motion to accept the minutes of April 17th as presented. Mr. Cummings seconded the motion. 4 yes, 2 abstain

MOTION: Mr. Balzarini made a motion to approve the minutes of June 19th as presented. Mr. Phelan seconded the motion. All voted unanimously.

NEW BUSINESS

Sign Certificate of Action for Blue Sky Towers II, LLC-The certificate, accepting the withdrawal without prejudice of the application, was signed by Planning Board members. Mr. Balzarini inquired about materials submitted previously by the applicant, but Mr. Lehrer noted that, when the applicant refiled, information from the previous proceedings would be rolled in to streamline the contents of their application. The Chair stated that the applicant could be required to re-submit everything, in order to ensure that there was no confusion regarding submitted materials. Mr. Lehrer stated that his office would maintain a list of exhibits.

Signatory Page for Barnstable County Registry of Deeds-Members of the Board signed the signatory page.

Vote to Select Public Hearing Date for Mendes Way-There were no other hearings currently scheduled for August 7.

MOTION: Mr. Balzarini made a motion to set the Public Hearing to August 7 at 7:10 p.m. Mr. Phelan seconded the motion. All voted unanimously.

Consideration of Draft Accessory Apartment Warrant Article for Submission to Board of Selectmen-Mr. Lehrer discussed changes to Mashpee's existing Accessory Apartment, which he recommended as four separate Articles.

Mr. Lehrer recommended the following fundamental changes to Section 174-45.4, beginning with allowing Accessory Apartments by right, with a Building Permit, in place of a Special Permit.

A. Special Permit replaced by Building Permit
B. Change "with" to "to"
C. Allowing the addition of a newly constructed or previously constructed detached apartment
E. Accessory apartments shall be consistent with the predominant design character and contribute to the lot coverage maximum
H. *Old H* replaced with *old J*
I. *Old I* replaced with requiring that rentals not be offered on a weekly or daily basis and must be rented for a minimum of one month
J. *New*, accessory apartment was intended as a long term rental to a tenant and could not be listed for sale

Mr. Lehrer suggested updating the Accessory Apartment Bylaw Chart Section 174-25 (A)(8) by striking "SP" as it would become a by right use.

Amending Section 174-31 Land Space Requirements Table would propose that a detached accessory apartment be exempt from rear and side setbacks of 15 feet, and allow construction with a 5 foot setback from the property line. Should this not be approved, the 15 foot setback would remain.

Amendments to Section 174-3 Terms would clarify definitions and the OSID should be consistent, allowing for two bedrooms in place of one bedroom.

Mr. Balzarini expressed concern about the 5 foot setback, particularly as a homeowner could build a structure up to 35 feet high. Mr. Lehrer stated that smaller lots could not create non-conformity and if a home already met 25%, would not be allowed to build a detached structure. Mr. Lehrer confirmed that only one accessory apartment could be created for each lot. Mr. Balzarini inquired whether the Building Commissioner supported these changes and the added responsibilities but Mr. Lehrer responded that he was unsure. Mr. Balzarini liked the concept of accessory apartments but did not support a 5 foot setback, preferring to maintain the 15 foot setback. Mr. Lehrer stated that it was a best practice nationwide to offer reduced setbacks to allow for accessory apartments. Mr. Callahan inquired further about nationwide practices regarding setbacks and whether it was typically 5 feet. Mr. Lehrer responded that housing advocates supported reduced setbacks but that not all communities adopted the recommendations.

Mr. Phelan stated that many Cape communities had passed similar accessory apartment bylaws. Mr. Lehrer stated that the Cape Cod Commission did not propose the reduced setback in the model. Mr. Phelan stated that there was building code regarding the 5 foot setback suggesting that it could be problematic since there could be no doors or windows on that side, and the setback may need to remain at 15 feet.

Mr. Balzarini expressed concern about the size of lots and septic systems and Mr. Lehrer confirmed that the Board of Health would be required to sign off on the matter. Mr. Cummings also disagreed with a 5 foot setback.

Mr. Callahan inquired about Section I and the one month rental requirement minimum. Mr. Callahan inquired whether a homeowner could rent their home and move into the apartment. Mr. Lehrer

responded that the homeowner needed to demonstrate occupancy of the principal structure to be issued a building permit. The Chair stated that, as long as the home was the principal tax structure, it likely would not prevent the homeowner from doing so. Mr. Phelan stated that Falmouth required a 6 month minimum and Chatham a 7 month minimum, and inquired about significant evidence to be shown. There was discussion about whether or not to require 6 months, but it was noted that challenges could be created for J-1 visa holders. There was consensus to try the 1 month minimum and see whether changes would need to be made, as well as reevaluate the 15 foot setback.

Mr. Balzarini inquired whether the Board of Health would be monitoring the rental taxes on the accessory apartments and Mr. Lehrer stated that it could not be used as a vacation rental. Mr. Lehrer noted that there were a number of illegal apartments in Mashpee and that it would be good to have an enforcement mechanism in place.

Mr. Hansen inquired about the increase of bedrooms and Mr. Lehrer confirmed that the Board of Health would ensure adequate capacity in the septic system for the addition of an accessory apartment. Regarding the minimum one month stay, Mr. Hansen reiterated that the homeowner could rent out their home weekly while living in the accessory apartment. The Chair stated that the Bylaw did not require that the homeowner live in their principal residence for 12 months but that the homeowner needed to show the Town that the house was their principal residence. Mr. Hansen stated that the homeowner could live in the accessory apartment during the 3 months of summer, while renting out the house, returning to the home during the off season. The Chair stated that a minimum of 2 or 3 months would be required for the accessory apartment, to avoid that scenario. In reference to Mr. Hansen's scenario, Mr. Lehrer suggested that the principal structure would then need to be registered with the Board of Health, and taxes paid on the rental.

The Chair inquired whether the requests would be considered by Design Review and Mr. Lehrer confirmed that it would not. The Chair stated that she had developed a cover memo to share the bylaw changes with Design Review, which would include the Building Commissioner, and the ZBA, so that they could provide comment to the Planning Board.

There was consensus to try it out as written, and follow up with the Building Commissioner regarding how the Bylaw was working, and the 15 foot setback would remain in place.

Mr. Lehrer inquired about properties owned by LLCs and Trusts, and how best to accommodate them. The Chair suggested following up with Town Counsel, regarding principal dwelling.

MOTION: Mr. Balzarini made a motion that the first two pages be submitted to the Board of Selectmen, as presented, to be placed on the October 2019 Warrant. Mr. Callahan seconded the motion.

Mr. Rowley inquired whether the applicant could upgrade the septic system to apply for an accessory apartment and Mr. Lehrer confirmed that the Board of Health would need to certify the system in order for an applicant to receive the Building Permit. The system would need to accommodate the extra living spaces.

All voted unanimously.

MOTION: Mr. Balzarini made a motion to send the use table to the Board of Selectmen, to be placed on the October 2019 Town Meeting Warrant. Mr. Callahan seconded the motion. All voted unanimously.

MOTION: Mr. Balzarini made a motion that there would be no action reducing the side setback to 5 feet and redress the matter one year from passage at Town Meeting. Mr. Phelan seconded the motion. All voted unanimously.

MOTION: Mr. Balzarini made a motion to submit the Definitions for inclusion on the October 2019 Town Meeting Warrant. Mr. Cummings seconded the motion. All voted unanimously.

Chairman Waygan stated that the information would be forwarded to the Board of Selectmen on Monday. The Chair further noted that a regulatory meeting would be held on July 15 at 6:30 p.m. Should the items be added to the Town Warrant by the Board of Selectmen, the Planning Board would hold a Public Hearing and accept public comment on the matter at that time. The Chair asked Mr. Lehrer to ensure that ZBA Chair John Furbush and Design Review members be in receipt of the information.

Charles Rowley June Invoice-An invoice in the amount of $490 was received for regular services in the month of June. It was confirmed that Mr. Rowley would be reviewing the plans of Meetinghouse Road and Cape Cod Coffee.

MOTION: Mr. Balzarini made a motion to approve the expenditure. Mr. Cummings seconded the motion. All voted unanimously.

Mr. Rowley confirmed there was no further information available on Ockway since his last inspection, prior to the last Planning Board meeting. Mr. Phelan noted that the drop off had been built up and Mr. Rowley responded that he had asked Mr. Morin to do so at the end of Blue Castle as well as loam and seed near Mr. Virgilio's home.

OLD BUSINESS

One Cape Registration-Mr. Lehrer asked that any additional members contact him to confirm their attendance.

CHAIRMAN'S REPORT

The Chair stated that correspondence had been received regarding a joint meeting between the Board of Selectmen and regulatory boards on Monday, July 15 at 6:30 p.m. to discuss Articles received by the Board of Selectmen to be included on the Town Meeting Warrant. The Chair indicated that she would be out of town, but had asked whether the meeting could be moved to July 22.

Additionally, the Chair attended the Public Hearing for the Bylaw Review Committee, who would be proposing 31 Articles to the Board of Selectmen. The Chair requested a copy of the Articles from the Committee and the Town Manager, to review at tonight's meeting, but the information was not provided. Mr. Balzarini inquired whether the Planning Board would need to hold public hearings for the bylaws but the Chair believed they were not all zoning articles. The Chair indicated that the Bylaw Review Committee's April 30 minutes indicated a listing of the Articles, noting that it appeared Zoning Articles had been placed on hold. Section 2-1 appeared to change the October Town Meeting deadline to submit Articles from the second Monday in July to the second Monday in August, but the

Chair expressed concern that it would not allow for sufficient time to properly review proposed Zoning Articles, similar to what happened last year.

MOTION: Mr. Balzarini made a motion to maintain the second Monday of July as the deadline for proposed Articles amending the Zoning Bylaw. Mr. Cummings seconded the motion. All voted unanimously.

The Chair will draft a memo. Mr. Balzarini suggested requesting a policy, with the Board of Selectmen, that Zoning Articles be received by the Planning Board one month prior to the July deadline, for Planning Board review.

MOTION: Mr. Balzarini made a motion that proposed zoning amendments by other staff and Boards be received one month in advance. Mr. Cummings seconded the motion.

Mr. Lehrer stated that the timelines for Zoning submissions were mandated by the statutory Zoning Act and the motion would request greater notice than was needed by State law. The Chair stated that Warrant Articles submitted to the Board of Selectmen should be provided to the Planning Board within 14 days of submission to the Board of Selectmen. Mr. Phelan suggested that, rather than making a motion, the Planning Board could discuss their request with the Board of Selectmen, particularly as it could not be changed for this year. The Chair indicated that the Bylaw Review Committee did not request Public Comment, but the Chair inquired and found that the Committee would not commit to informing the Planning Board. The Chair noted that Mashpee should be working together. Mr. Balzarini agreed with discussing the matter with the Board of Selectmen.

Mr. Balzarini rescinded his motion and Mr. Cummings rescinded his second.

Mr. Phelan will speak with the Board of Selectmen regarding the Planning Board's request and Mr. Balzarini and Mr. Cummings would also attend the meeting on July 15. The Chair asked that any changes to the meeting time be shared with the Board.

BOARD MEMBER COMMITTEE UPDATES

Cape Cod Commission-Mr. Callahan reported that the Comprehensive Economic Development Strategy had set their strategy for the next five years. The Chair asked Mr. Lehrer to copy all Board members on Cape Cod Commission emails.

Community Preservation Committee-The Chair reported that the CPC had finalized their memo for the Board of Selectmen regarding the 3% surcharge discussion. The CPC identified that there continued to be a need for affordable housing, historic preservation, open space and recreation in Mashpee. It was determined that the 3% surcharge would continue until it competed with other financial needs of the Town, such as wastewater management. It was noted that, after 2020, a Cape Cod town could opt out of the Land Bank.

Design Review Committee-No meeting

Plan Review-No meeting

Environmental Oversight Committee- No meeting

Greenway Project & Quashnet Footbridge-No update

Historic District Commission- No meeting

MMR Military Civilian Community Council-MMR Joint Land Use Study-Mr. Phelan was continuing to research the organization further. Mr. Lehrer stated that he would follow up with Joint

Base Cape Cod for more information. It was believed that the name had changed to Community Advisory Council and who met 3-4 times per year.

UPDATES FROM TOWN PLANNER

Mr. Lehrer expressed thanks for the Board's work on the ADU Bylaw.

ADDITIONAL TOPICS

ADJOURNMENT

MOTION: Mr. Balzarini made a motion to adjourn. Mr. Callahan seconded the motion. All voted unanimously. The meeting adjourned at 8:00 p.m.

Respectfully submitted,

Jennifer M. Clifford
Board Secretary
(Audio recording was inaudible, refer to video recording as needed)

LIST OF DOCUMENTS PROVIDED

Additional documentation may be available in the Planning Department

-Certificate of Action, Blue Sky Towers II LLC
-6/17/19 Clayson Nicholson Memo Regarding Mendes Way
-Public Hearing Notice, Mendes Way
-Amend Accessory Apartment Bylaw
-Amend Accessory Apartment Bylaw Chart Section 174-25 (A)(8)
-Amend Section 174-31 Land Space Requirements Table
-Amend Section 174-3 Terms
-ADU Bylaw Review by Chairman Waygan
-6/27/19 Charles Rowley Invoice

Town of Mashpee

16 Great Neck Road North
Mashpee, Massachusetts 02649

DEFINITIVE PLAN CHECKLIST

Applicant: Mark and Donna Lopez

Subdivision Name: N/A

Location: 103 Meetinghouse Road, Mashpee, MA

Date: June 6, 2019

- X Application Form C (in triplicate).
- X Submission of Required Planning Board Fees (see fee schedule):
  - Filing fee: $20 per lot, minimum $200
  - Review fee: $300 + 15 per lot
  - Inspection fee: $250 + $.50 / linear feet of roadway
  - Re-Inspection fee: $100 per inspection
- X Copies of a) most recent recorded deed and b) tax bill or Assessor's certification.
- X Submission of Covenant form/documentation.
- X Form N: Notice of Filing of Plan to Town Clerk.
- X Original drawing of Definitive Plan plus 6 copies, dark line on white background with perimeter dimensions of 24"x36."
- X Road profiles (3 copies drawn on plan/profile paper with perimeter dimensions of 24"x36").
- N/A Water Quality Report (3 copies) for subdivisions of 6 lots or more.
- X List of all abutters within 300 feet from Mashpee Assessors, including 2 sets of mailing labels (check the abutters list to ensure all correctly identified parcels have been selected).
- X Written proof of submittal to Board of Health.
- X Minimum frontage.
- X Minimum lot area.
- X Name of owner, applicant (if different from owner), and engineer or surveyor.
- X Signature and seal of Registered Civil Engineer or Registered Land Surveyor.
- X North point, date, scale, legend.
- X Zoning district(s) in which the subject property lies.
- X Assessors reference, Map and Block numbers.
- X Names and addresses of all abutters as determined from the most recent tax list.
- X Existing and proposed lines of streets, ways, lots, easements, and public or common areas within the subdivision. (Lines must be indicated by bearings referred to the Massachusetts Coordinate System where control points on that system are available within 1000 feet of locus.)
- X Proposed names of new streets, names of existing streets labeled public or private.
- X Lot numbers, dimensions, and area, (registered land must use a numbering system approved by the Land Court).
- X Proposed street (postal) numbers for each lot in accordance with the street number plans of the Town of Mashpee.
- X Length and direction of streets, the length and radii, tangents, and angles of all curves, together with the width of streets and ways.
- X Location of all permanent monuments properly identified as to whether existing or proposed.

X Proposed layout of storm drainage, water supply, and sewer systems, their appurtenances and all easements thereto.

X Location of all swamp, marsh, low land and other low lying areas, and where the subdivision is adjacent to or affected by tidewater, it shall show 2 foot contours with mean high water in such area.

X Title block in the lower right-hand corner of the drawing with subdivision name and title "Definitive Subdivision Plan."

X ¾ inch border.

X 3 ½ inch square reserved for use by the Registry of Deeds.

X Area reserved for Planning Board's endorsement of approval under the subdivision control law.

X Certification by plan preparer that the rules and regulations of the Registers of Deeds have been conformed to in preparing the plan.

X If applicable, lettering in a location adjacent to the Board's approval as follows:

"This plan subject to covenant dated _____ and attached hereto."

X Certification block for Mashpee Town Clerk for twenty day appeal period following plan approval.

X If the plan is submitted under the cluster development exception of the Mashpee Zoning Bylaws, the formula for determining the total number of lots allowed must be shown as follows:

Total Area:		284,184
Less:	Water bodies and wetlands as defined under MGL C. 131, Section 40	0
	Area of existing and proposed Streets, roadway rights-of-way or easements of 20 feet or more in width	17,157
	Overhead utility rights-of-way or easements 20 feet or more in width	0
	Total area excluded:	17,157
Allowable Area:		267,027
Lot Area Required:		133,513.5
Number of Lots Permissible:		3

X Locus map at a scale of 1 inch = 2000 feet.

X Existing and proposed contours at 2 foot intervals.

X Digital submission of plans on diskette(s) or CD.

COMMENTS

Town of Mashpee

Planning Board

16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM C

APPLICATION FOR APPROVAL OF DEFINITIVE PLAN

Date June 6, 2019

To the Planning Board: The undersigned herewith submits the accompanying Definitive Plan of property located in Mashpee, Massachusetts, for approval as a subdivision as allowed under the requirements of the Subdivision Control Law and the Rules and Regulations Governing the Subdivision of Land of the Planning Board in the Town of Mashpee.

Name of Subdivider Mark and Donna Lopez Phone 508-477-7272

Address 103 Meetinghouse Road, Mashpee, MA 02649

Owner, if different Same and Mashpee Conservation Commission Phone 508-477-7272

Address SAME and 16 Great Neck Road North, Mashpee, MA 02649

Attach copies of (a) most recent recorded deed and (b) tax bill or Assessors' certification.

Engineer or Surveyor Cape & Islands Engineering, Inc. Phone 508-477-7272

Address 800 Falmouth Road, Suite 301C, Mashpee, MA 02649

Deed of property recorded in Barnstable County Registry Book 3183 Page 272

or Land Court Certificate of Title No. _____

Location and description of property 103 Meetinghouse Road, Mashpee, MA consisting of 284,184 +/- sq.ft. area. Located on the west side of Meetinghouse Road and to the east of Mashpee River. R-5 Zoned. Cluster subdivision under Town of Mashpee Zoning Bylaw ARTICLE IX, §174-47 to create three (3) buildable lots and two (2) open space parcels

Mashpee Assessors Map(s) and Block(s) 45-50-0

Signature of Owner or Authorized Representative Raul Lizardi Ramirez

Attach written authorization signed by owner.

A list of names and addresses of the abutters of this subdivision, as appearing on the most recent tax list, is attached.

CAPE & ISLANDS ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING - ENVIRONMENTAL PERMITTING
INCORPORATED

STORMWATER MANAGEMENT REPORT AND DESIGN CALCULATIONS

Project:

ANCIENT WAY ROAD IMPROVEMENTS

Location:

103 Meetinghouse Road
Mashpee, MA

Applicant:

Mark & Donna Lopez
103 Meetinghouse Road
Mashpee, MA

May 20, 2019

800 Falmouth Road, Suite 301C
Mashpee, MA 02649
(508) 477-7272

TABLE OF CONTENTS

1.0 OVERVIEW

1.1 Introduction

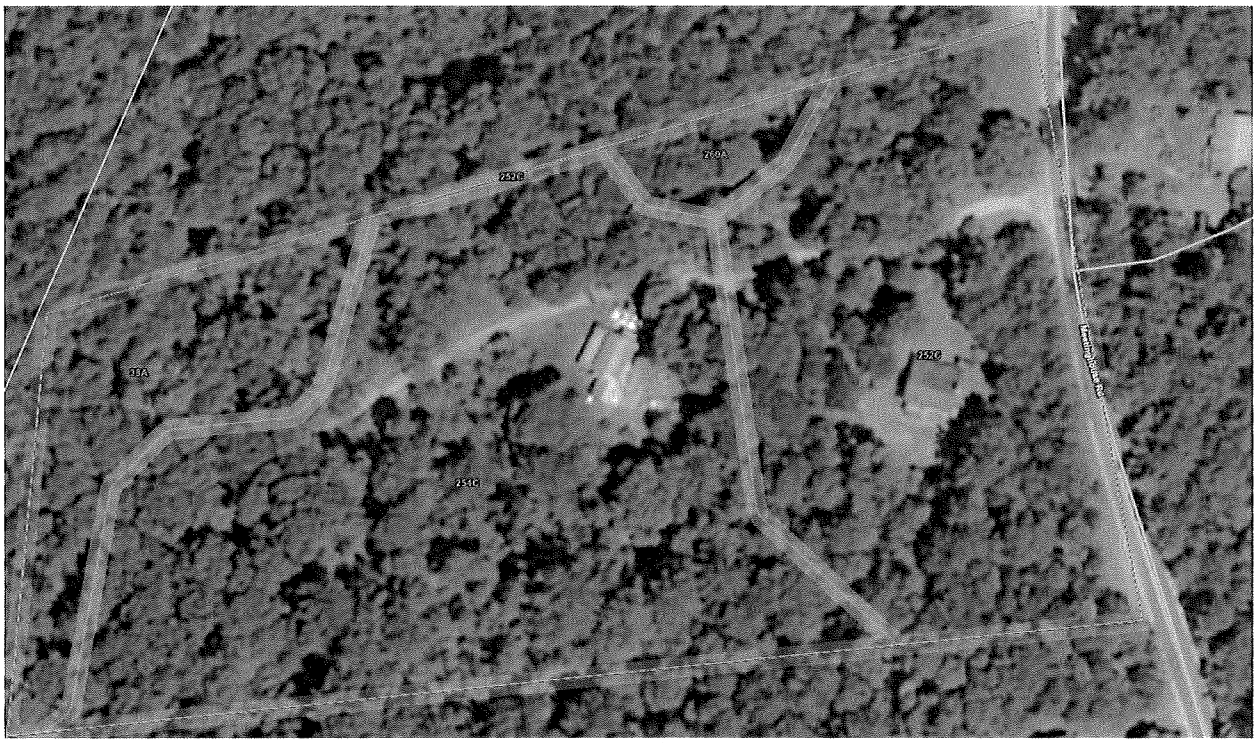
Cape & Islands Engineering, Inc. submits this stormwater report and analysis on behalf of the applicant and property owners, Mark and Donne Lopez who propose to improve the existing gravel ancient way at 103 Meetinghouse Road in Mashpee, MA. The project consists of constructing a 20' wide gravel road surface to access the proposed subdivision lots. The property contains approximately 6.5 acres in area. The land will be subdivided into three (3) buildable parcels, two (2) Open Space parcels and 740 feet of roadway improvement. The work for the roadway is required to provide adequate access to several parcels. The roadway improvements include a stormwater management system to manage storm runoff produced within the development.

This report describes the hydrologic and hydraulic analysis associated with stormwater runoff for the proposed development and the operation and maintenance requirements for the proposed stormwater treatment. This report accompanies a set of drawings (Plan) that represent the proposed site development improvements and stormwater treatment system, and a set of calculations (enclosed) identifying the stormwater runoff volume and capacity analysis of the receiving facilities. Also included are drainage system recommended Inspections, Operation and Management tasks and procedures.

2.0 BACKGROUND

2.1 Existing Conditions

The site is currently an ancient 10' wide gravel way serving several residences. The majority of the land in the vicinity of the roadway is considered woodland. Residential developments exist along the southern side of the roadway (see aerial image below). The existing vegetated nature of the property produces insignificant contribution of storm runoff flow or volume to offsite areas. Some existing depressions also retain surface runoff within the property.



USDA Web Soil Survey Aerial Image – image depicting land soil classifications

2.2 Site Characteristics

The general location of the property lies within a geologic formation known as a glacial outwash plain where the subsoils are commonly found to be sand texture material. The Soil Survey of Barnstable County, Massachusetts issued by the United States Department of Agriculture in March 1993 classifies the soils as Merrimac fine sandy loam and Carver coarse sand for the improvement area of the ancient way. The soil parent material for these soils is sand texture. There are no wetlands within 100 feet of the proposed roadway improvements.

The geology of the site has been classified with hydrologic soil group A and drainage class of somewhat excessively to excessively drain soils. Within the substratum sand texture soil, the Soil Survey of Barnstable County indicates infiltration rates as high as 99.9 inches per hour (Refer to enclosed Web Soil Survey Recap). Infiltration rate is the measurement of water flowing through a saturated soil medium. Soil tests performed at the property found medium sand texture soils at a depth of 36-inches with an assigned percolation rate of less than 2-minutes per inch (30 inches per hour). The topography surrounding the existing ancient way directs surface runoff in a northerly pattern. Adjacent areas south of the existing ancient way (including the majority of the two developed residential parcels) flow in a westerly pattern reaching an existing land depression. As is typical for developments in this area the type of existing soils are used to manage storm runoff volume, as these soils are more than adequate to dispose of stormwater runoff volumes with subsurface leaching systems.

3.0 PROPOSED STORMWATER MANAGEMENT SYSTEM

3.1 Scope of Work

The project pertaining to this stormwater report consists of improving the existing 10' wide ancient way by providing 20' width of gravel surface for approximately 740 feet. The proposed improvement is essentially duplicating the width of the existing gravel roadway. Along the entire northern edge of the improved roadway a proposed drainage swale intercept and manages surface runoff. Existing topography and final grading is proposed to generally remain the same with no changes to surface runoff patterns other than the interception of roadway surface runoff by the proposed drain swales. Intercepted surface runoff will be allowed to infiltrate through the surface soils of the drain swales.

Surface runoff patterns affected by the proposed improvements consist of two (2) primary contributing sub-areas (east 'A' and west 'B' - refer to enclosed contributing drainage area graphic). Within these drainage areas site grading is designed to direct the flow into drainage swales shaped along the shoulder of the roadway. These systems will collect surface runoff and provide groundwater recharge through soil infiltration. Whenever the storm runoff volume exceeds the control levels the drainage swales will allow a discharge through overflow stone lined weirs. The volume discharged through these outflows are kept below pre-development condition runoff volumes.

The proposed stormwater system provides total suspended solids (TSS) removal and groundwater recharge within the development (refer to calculations below). The system shall be maintained and inspected in accordance to the Operation and Management Plan (O&M) provided in this report for the proper operation of the stormwater system.

3.2 Proposed Drainage Systems

The proposed stormwater management system design consist of shaping the roadway shoulder for a shallow 12 to 18 inches drainage swales built 5.5' wide. The roadway improvements do not generate a significant increase in storm surface runoff discharge rate or storm runoff volume. The capacity of the swales is adequate to manage site storm runoff (refer to enclosed calculations) maintaining adequate offsite storm runoff rates and runoff volume. Ultimately soil infiltration is the final discharge means for the majority of storm events through the proposed design.

4.0 STORMWATER DESIGN CALCULATIONS

4.1 Design Calculations

The proposed drainage system is designed to manage the storm runoff volume in accordance to professional engineering practices and acceptable standards.

The calculations enclosed are based as analyzed with the computer program HydroCAD:

1. 2-year 24-hour and 10-year 24-hour for full storm runoff volume containment (no discharge)
2. 25-year 24-hour and 100-year 24-hour for prevention of offsite volume flooding impacts
3. Drain swale system analyzed with an assigned infiltration rate of 2.41 inches per hour

Refer to Enclosed HydroCAD Calculations

4.2 Stormwater Quality and Quantity

The stormwater treatment systems, as described above, will intercept stormwater runoff for the proposed development. Although the gravel roadway is not entirely impervious surface, for the purpose of a quality volume analysis this are the areas used to analyze the quality volume storage provided with the drain swales. The equivalent quality and quantity storm volume calculated for this analysis is one (1) inch over the proposed main gravel roadway areas as follows:

Gravel driveway area for contributing drainage area A = 500 feet x 20 feet = 10,000 square feet
Quality and Quantity Volume = 10,000 square feet x 1 inch x (1 feet/12 inches) = 833 cubic feet
Swale Holding Capacity at a depth of eight (8) inches = 834 cubic feet

Gravel driveway area for contributing drainage area B = 280 feet x 20 feet = 5,600 square feet
Quality and Quantity Volume = 5,600 square feet x 1 inch x (1 feet/12 inches) = 467 cubic feet
Swale Holding Capacity at a depth of nine (9) inches = 503 cubic feet

The water quality volume calculated as one inch (1") over the gravel area noted above is contained within the holding capacity of the proposed swale system at depths below nine (9) inches.

Although infiltration capacity is not considered in the calculation above, the drainage swales have enough surface area and provide a soil texture that allows infiltration of the quality volume contained in less than 72-hours. The volume drawdown time is calculated by allowing the swale bottom area to infiltrate the water at an assigned infiltration rate. Based on the anticipated soils, the assigned saturated hydraulic conductivity (Ks) of 2.41 in/hr from the recommendations published in Rawls table for loamy sand texture soils is used. The table below illustrates the time for the quality volume to completely dissipate from the swale confirming a drawdown time less than the maximum recommendation of 72-hours:

Drawdown time = (quality volume / leaching area) / (infiltration rate) x (units conversion factors)

	Drainage Area 'A'	Drainage Area 'B'
Total Bottom Swale Area	= 920 square feet	500 square feet
Quality and Quantity Volume	= 833 cubic feet	467 cubic feet
Drawdown time	= 4.5 hours	4.7 hours

4.3 Total Suspended Solid Analysis

The proposed drainage system will improve runoff water quality by removing approximately 80% of the Total Suspended Solids (TSS). TSS removal is accomplished by way of vegetated swale providing filtration to the stormwater runoff allowing for suspended soils removal along with subsurface leaching systems to further reduce total suspended solids.

Starting TSS load at first BMP for any system set at 1.00

1. Surface Swale (SS) = 80% assigned removal rate

BMP	Removal rate	Starting TSS	Removed TSS	Remaining TSS
SS	80	1.00	0.80	0.20
Total Suspended Solids (TSS) REMOVAL =				**80%**

5.0 RECOMMENDED O&M

5.1 Construction period controls

Proper control measures during the construction stages of this project are needed to prevent erosion and sedimentation problems. Open excavation and piled material and equipment shall be properly managed to avoid conditions that may result detrimental to the project. Refer to the Plan details for the proposed erosion and sedimentation measures during the construction period.

The Erosion and Sedimentation Control Plan includes the following:

1. The Installer shall examine the work area and site conditions under which this work is to be performed prior to installation of sedimentation and erosion control.
2. The contractor shall establish the limit of work (construction or silt fence) as indicated in the Construction Drawings and maintain the limit of work in good conditions throughout the duration of the work.
3. All excavated areas rendering a slope greater than 3 horizontal to 1 vertical (3:1) shall be stabilized with the installation of erosion control blankets.
4. All unsuitable and excess material not intended for reuse or re-purpose within the site shall be stripped from areas impacted by construction and disposed off-site.
5. Excavated material or imported material shall not be piled in areas where sediments may damage stormwater system on the site.
6. The Contractor shall remove all construction debris for disposal from the site and properly transport to an approved disposal location.
7. After every rainstorm the Contractor shall examine the conditions of all the erosion and sedimentation controls and perform any required repairs or replacements.
8. The Contractor shall maintain on site 200 linear feet of *extra* silt fence in the event erosion occurs and immediate action is necessary. If erosion occurs during construction the Contractor shall take immediate steps to contain material on site an prevent future erosion.
9. Stabilization for construction of the driveway shall be achieved by installing the gravel base immediately after the rough grading and sub-base compaction is complete.
10. The Contractor shall avoid smearing the bottom levels of the excavation and the exposed excavation face walls for subsurface leaching systems. The contractor shall scarified any areas where smearing occurs to provide adequate filtration through the soils.
11. All protective measures (silt sacs, silt fences, and hay bale) installed on site or in the catch basins within the site shall be removed once the site work is complete and the disturbed areas are stabilized.

5.2 Operation and Maintenance Plan

A properly operating drainage system is the basis for long life of the roads and for the protection of adjacent properties against stormwater impacts. If the drainage system fails to work, frequent pooling of stormwater would be expected to occur within the site leading to saturation of the gravel base and shortening the life expectancy of the site improvements. The owner or designated representative will be responsible for maintenance and operation of drainage system. A copy of the Site Plan suffice as means of illustration of the location of the stormwater system, or other drawings depicting the site with all components of the drainage system.

To provide for adequate maintenance of the drainage system, the following inspections and procedures will be required:

1. Inspect system after major storm events (typically a storm of one inch (1") of rainfall) and at least four times a year.
2. All debris shall be removed and properly disposed clearing the entire surface of the swales.
3. If standing water is observed above the outlet pipes 24 hours past a storm event inspect the system for the presence of clogging or obstruction. If clogging or an obstacle exists arrange for the system to be cleaned.
4. The swale is considered in failure when pooling occurs three days after a rain event and an investigation has determined that no apparent clogging or obstructions within the drainpipe are present. To repair this situation, a contractor shall be hired to rebuild the same size system within the same location by removing the surface three or four inches of soil and crushed stone and replacing new material in-kind.

6.0 SUMMARY

6.1 Conclusion

The stormwater management system proposed provides protection for the development once constructed. Information as described in this report and within the construction documents submitted is comprehensive and informative enough for a qualified and experienced contractor to properly implement on the ground. Proper maintenance tasks and inspections procedures are recommended and indicated for the contractor to implement during the construction stages. Similarly, recommendations are provided for operation and maintenance of the stormwater management system for longevity and protection of the system as proposed. The design and sizing of the stormwater management system is adequate to manage stormwater runoff on the subject property

Please contact us at 508.477.7272 for copies of project information.

The Applicant's representative:

Raúl Lizardi-Rivera, P.E.
Director of Engineering
Cape & Islands Engineering, Inc.
800 Falmouth Road, Suite 301C, Mashpee, MA 02649
508.477.7272 (tel.) 508.477.9072 (fax)
raul@capeeng.com

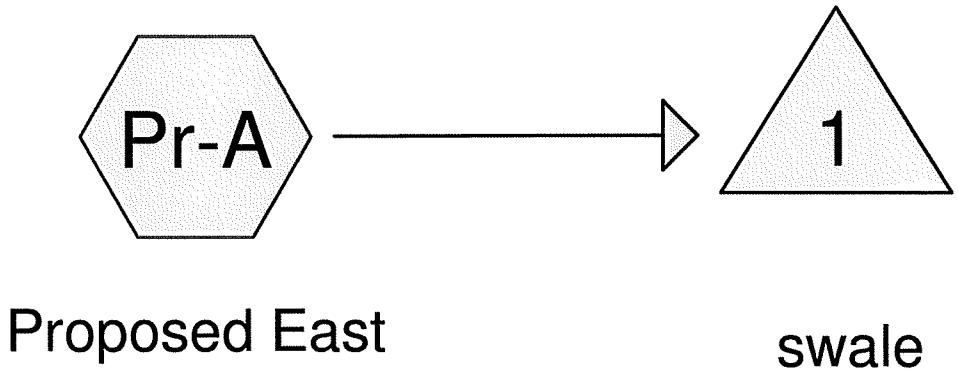
7.0 APPENDIXES

7.1 Appendix A – Development Drainage Basin Areas

Refer to sheet C-121 of the proposed development Site Plan

7.2 Appendix B – Web Soil Survey Recap (enclosed)

7.3 Appendix C – Stormwater Calculations (HydroCAD)



Subcat Reach Pond Link

Drainage Diagram for 103 Meeting Area A
Prepared by Cape & Islands Engineering, Inc.

Subcatchment Ex-A: Existing East

Runoff = 0.22 cfs @ 12.42 hrs, Volume= 1,900 cf, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-Year Rainfall=5.75"

Area (sf)	CN	Description
30,175	32	Woods/grass comb., Good, HSG A
5,300	72	Dirt roads, HSG A
3,350	98	Residential impervious
38,825	43	Weighted Average
35,475		Pervious Area
3,350		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	85	0.1000	0.09		**Sheet Flow, Top flat** Woods: Dense underbrush n= 0.800 P2= 3.50"
1.7	100	0.0200	0.99		**Shallow Concentrated Flow, flat land** Short Grass Pasture Kv= 7.0 fps
0.4	55	0.1000	2.21		**Shallow Concentrated Flow, yard** Short Grass Pasture Kv= 7.0 fps
0.2	24	0.0200	2.28		**Shallow Concentrated Flow, ancient way area** Unpaved Kv= 16.1 fps
18.8	264	Total			

Subcatchment Pr-A: Proposed East

Runoff = 0.61 cfs @ 12.29 hrs, Volume= 3,529 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Type III 24-hr 25-Year Rainfall=5.75"

Area (sf)	CN	Description
22,750	32	Woods/grass comb., Good, HSG A
12,725	72	Gravel road + swale
3,350	98	Residential impervious
38,825	51	Weighted Average
35,475		Pervious Area
3,350		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	85	0.1000	0.09		**Sheet Flow, Top flat** Woods: Dense underbrush n= 0.800 P2= 3.50"
1.7	100	0.0200	0.99		**Shallow Concentrated Flow, flat land** Short Grass Pasture Kv= 7.0 fps
0.4	55	0.1000	2.21		**Shallow Concentrated Flow, yard** Short Grass Pasture Kv= 7.0 fps
0.2	24	0.0200	2.28		**Shallow Concentrated Flow, ancient way area** Unpaved Kv= 16.1 fps
18.8	264	Total			

Pond 1: swale

Inflow Area = 38,825 sf, Inflow Depth = 1.09" for 25-Year event
Inflow = 0.61 cfs @ 12.29 hrs, Volume= 3,529 cf
Outflow = 0.25 cfs @ 12.79 hrs, Volume= 3,529 cf, Atten= 59%, Lag= 29.6 min
Discarded = 0.09 cfs @ 12.79 hrs, Volume= 3,047 cf
Primary = 0.16 cfs @ 12.79 hrs, Volume= 482 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 56.74' @ 12.79 hrs Surf.Area= 1,589 sf Storage= 922 cf

Plug-Flow detention time= 99.7 min calculated for 3,518 cf (100% of inflow)
Center-of-Mass det. time= 99.4 min (1,002.9 - 903.5)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	1,373 cf	**swale (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
56.00	920	924.0	0	0	920
56.50	1,380	927.0	571	571	1,560
57.00	1,840	930.0	802	1,373	2,202

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.410 in/hr Exfiltration (assigned Rawl's rate - loamy sand) over Surface area**
#2	Primary	56.67'	**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

Discarded OutFlow Max=0.09 cfs @ 12.79 hrs HW=56.74' (Free Discharge)
↑—**1=Exfiltration (assigned Rawl's rate - loamy sand)** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.16 cfs @ 12.79 hrs HW=56.74' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.61 fps)

Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-A: Existing East Runoff Area=38,825 sf Runoff Depth=0.06"
Flow Length=264' Tc=18.8 min CN=43 Runoff=0.01 cfs 185 cf

Subcatchment Pr-A: Proposed East Runoff Area=38,825 sf Runoff Depth=0.24"
Flow Length=264' Tc=18.8 min CN=51 Runoff=0.06 cfs 764 cf

Pond 1: swale with trenches Peak Elev=56.02' Storage=17 cf Inflow=0.06 cfs 764 cf
Discarded=0.05 cfs 764 cf Primary=0.00 cfs 0 cf Outflow=0.05 cfs 764 cf

Total Runoff Area = 77,650 sf Runoff Volume = 948 cf Average Runoff Depth = 0.15"
91.37% Pervious Area = 70,950 sf 8.63% Impervious Area = 6,700 sf

Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-A: Existing East Runoff Area=38,825 sf Runoff Depth=0.31"
Flow Length=264' Tc=18.8 min CN=43 Runoff=0.08 cfs 1,012 cf

Subcatchment Pr-A: Proposed East Runoff Area=38,825 sf Runoff Depth=0.68"
Flow Length=264' Tc=18.8 min CN=51 Runoff=0.33 cfs 2,213 cf

Pond 1: swale with trenches Peak Elev=56.49' Storage=562 cf Inflow=0.33 cfs 2,213 cf
Discarded=0.08 cfs 2,213 cf Primary=0.00 cfs 0 cf Outflow=0.08 cfs 2,213 cf

Total Runoff Area = 77,650 sf Runoff Volume = 3,225 cf Average Runoff Depth = 0.50"
91.37% Pervious Area = 70,950 sf 8.63% Impervious Area = 6,700 sf

Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-A: Existing East Runoff Area=38,825 sf Runoff Depth=0.59"
Flow Length=264' Tc=18.8 min CN=43 Runoff=0.22 cfs 1,900 cf

Subcatchment Pr-A: Proposed East Runoff Area=38,825 sf Runoff Depth=1.09"
Flow Length=264' Tc=18.8 min CN=51 Runoff=0.61 cfs 3,529 cf

Pond 1: swale with trenches Peak Elev=56.74' Storage=922 cf Inflow=0.61 cfs 3,529 cf
Discarded=0.09 cfs 3,047 cf Primary=0.16 cfs 482 cf Outflow=0.25 cfs 3,529 cf

Total Runoff Area = 77,650 sf Runoff Volume = 5,429 cf Average Runoff Depth = 0.84"
91.37% Pervious Area = 70,950 sf 8.63% Impervious Area = 6,700 sf

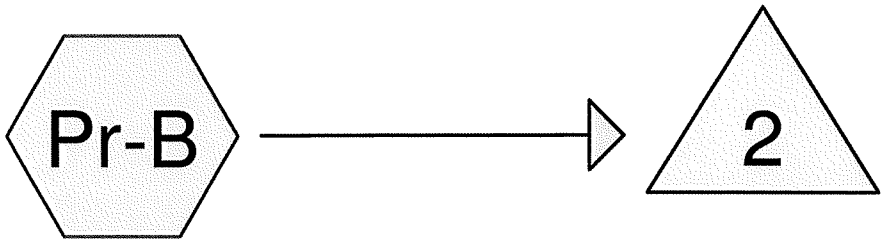
Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-A: Existing East Runoff Area=38,825 sf Runoff Depth=1.16"
Flow Length=264' Tc=18.8 min CN=43 Runoff=0.60 cfs 3,760 cf

Subcatchment Pr-A: Proposed East Runoff Area=38,825 sf Runoff Depth=1.87"
Flow Length=264' Tc=18.8 min CN=51 Runoff=1.19 cfs 6,056 cf

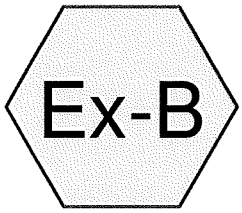
Pond 1: swale with trenches Peak Elev=56.87' Storage=1,137 cf Inflow=1.19 cfs 6,056 cf
Discarded=0.10 cfs 3,707 cf Primary=0.83 cfs 2,348 cf Outflow=0.93 cfs 6,056 cf

Total Runoff Area = 77,650 sf Runoff Volume = 9,816 cf Average Runoff Depth = 1.52"
91.37% Pervious Area = 70,950 sf 8.63% Impervious Area = 6,700 sf

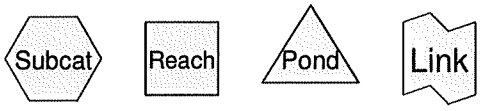


Proposed West

swale 250 l.f.



Existing West



Drainage Diagram for 103 Meeting Area B
Prepared by Cape & Islands Engineering, Inc.

Subcatchment Ex-B: Existing West

Runoff = 0.05 cfs @ 12.45 hrs, Volume= 593 cf, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.75"

Area (sf)	CN	Description
15,783	32	Woods/grass comb., Good, HSG A
3,127	72	Dirt roads, HSG A
18,910	39	Weighted Average
18,910		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	50	0.0800	0.07		**Sheet Flow, woods** Woods: Dense underbrush n= 0.800 P2= 3.50"
0.3	20	0.0200	0.99		**Shallow Concentrated Flow, flat land** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.0200	2.28		**Shallow Concentrated Flow, ancient way area** Unpaved Kv= 16.1 fps
12.4	110	Total			

Subcatchment Pr-B: Proposed West

Runoff = 0.62 cfs @ 12.07 hrs, Volume= 2,169 cf, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.75"

Area (sf)	CN	Description
9,405	32	Woods/grass comb., Good, HSG A
7,505	72	Gravel road + swale
2,000	98	Residential impervious
18,910	55	Weighted Average
16,910		Pervious Area
2,000		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, minimum 5 minutes assigned**

Pond 2: swale 250 l.f.

Inflow Area = 18,910 sf, Inflow Depth = 1.38" for 25-Year event
Inflow = 0.62 cfs @ 12.07 hrs, Volume= 2,169 cf
Outflow = 0.10 cfs @ 12.77 hrs, Volume= 2,169 cf, Atten= 83%, Lag= 42.0 min
Discarded = 0.05 cfs @ 12.77 hrs, Volume= 1,989 cf
Primary = 0.05 cfs @ 12.77 hrs, Volume= 180 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.04 hrs
Peak Elev= 55.53' @ 12.77 hrs Surf.Area= 907 sf Storage= 744 cf

Plug-Flow detention time= 159.0 min calculated for 2,166 cf (100% of inflow)
Center-of-Mass det. time= 158.8 min (1,037.1 - 878.3)

Volume	Invert	Avail.Storage	Storage Description
#1	54.50'	1,380 cf	**swale (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.50	540	544.0	0	0	540
55.25	810	547.0	503	503	1,025
56.00	1,080	550.0	706	1,209	1,513
56.15	1,200	555.0	171	1,380	1,960

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.410 in/hr Exfiltration (assigned Rawl's rate - loamy sand) over Surface area**
#2	Primary	55.50'	**45.0 deg x 3.0' long x 0.50' rise Sharp-Crested Trap Weir** C= 2.56

Discarded OutFlow Max=0.05 cfs @ 12.77 hrs HW=55.53' (Free Discharge)
↑—**1=Exfiltration (assigned Rawl's rate - loamy sand)** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.05 cfs @ 12.77 hrs HW=55.53' (Free Discharge)
↑—**2=Sharp-Crested Trap Weir** (Weir Controls 0.05 cfs @ 0.56 fps)

Time span=0.00-30.00 hrs, dt=0.04 hrs, 751 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-B: Existing West Runoff Area=18,910 sf Runoff Depth=0.01"
Flow Length=110' Tc=12.4 min CN=39 Runoff=0.00 cfs 17 cf

Subcatchment Pr-B: Proposed West Runoff Area=18,910 sf Runoff Depth=0.36"
Tc=5.0 min CN=55 Runoff=0.08 cfs 572 cf

Pond 2: swale 250 l.f. Peak Elev=54.62' Storage=70 cf Inflow=0.08 cfs 572 cf
Discarded=0.03 cfs 572 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 572 cf

Total Runoff Area = 37,820 sf Runoff Volume = 589 cf Average Runoff Depth = 0.19"
94.71% Pervious Area = 35,820 sf 5.29% Impervious Area = 2,000 sf

Time span=0.00-30.00 hrs, dt=0.04 hrs, 751 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-B: Existing West Runoff Area=18,910 sf Runoff Depth=0.17"
Flow Length=110' Tc=12.4 min CN=39 Runoff=0.01 cfs 269 cf

Subcatchment Pr-B: Proposed West Runoff Area=18,910 sf Runoff Depth=0.91"
Tc=5.0 min CN=55 Runoff=0.37 cfs 1,428 cf

Pond 2: swale 250 l.f. Peak Elev=55.20' Storage=465 cf Inflow=0.37 cfs 1,428 cf
Discarded=0.04 cfs 1,428 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 1,428 cf

Total Runoff Area = 37,820 sf Runoff Volume = 1,697 cf Average Runoff Depth = 0.54"
94.71% Pervious Area = 35,820 sf 5.29% Impervious Area = 2,000 sf

Time span=0.00-30.00 hrs, dt=0.04 hrs, 751 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-B: Existing West Runoff Area=18,910 sf Runoff Depth=0.38"
Flow Length=110' Tc=12.4 min CN=39 Runoff=0.05 cfs 593 cf

Subcatchment Pr-B: Proposed West Runoff Area=18,910 sf Runoff Depth=1.38"
Tc=5.0 min CN=55 Runoff=0.62 cfs 2,169 cf

Pond 2: swale 250 l.f. Peak Elev=55.53' Storage=744 cf Inflow=0.62 cfs 2,169 cf
Discarded=0.05 cfs 1,989 cf Primary=0.05 cfs 180 cf Outflow=0.10 cfs 2,169 cf

Total Runoff Area = 37,820 sf Runoff Volume = 2,762 cf Average Runoff Depth = 0.88"
94.71% Pervious Area = 35,820 sf 5.29% Impervious Area = 2,000 sf

Time span=0.00-30.00 hrs, dt=0.04 hrs, 751 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Ex-B: Existing West Runoff Area=18,910 sf Runoff Depth=0.84"
Flow Length=110' Tc=12.4 min CN=39 Runoff=0.19 cfs 1,325 cf

Subcatchment Pr-B: Proposed West Runoff Area=18,910 sf Runoff Depth=2.25"
Tc=5.0 min CN=55 Runoff=1.10 cfs 3,549 cf

Pond 2: swale 250 l.f. Peak Elev=55.64' Storage=847 cf Inflow=1.10 cfs 3,549 cf
Discarded=0.05 cfs 2,351 cf Primary=0.52 cfs 1,197 cf Outflow=0.58 cfs 3,549 cf

Total Runoff Area = 37,820 sf Runoff Volume = 4,874 cf Average Runoff Depth = 1.55"
94.71% Pervious Area = 35,820 sf 5.29% Impervious Area = 2,000 sf

THIS CHECK HAS A COLORED BACKGROUND AND CONTAINS MULTIPLE SECURITY FEATURES - SEE BACK FOR DETAILS

FIRST CITIZENS' FEDERAL CREDIT UNION

Think First.

200 Mill Road, Suite 100, Fairhaven, MA 02719 | 1-800-642-7515

Official Check

75366

53-8458 / 2113

May 22, 2019

Pay to the Order of: **Town Of Mashpee**

$1,012.50

One Thousand Twelve and 50/100********

Memo Sub Division Project

HEAT SENSITIVE RUB AREA TO VERIFY

Authorized Signature

⑈075366⑈ ⑆211384586⑆ 530000000 7⑈

Town of Mashpee
Planning Board
16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM D
COVENANT

The undersigned _____ of _____ County, Massachusetts, hereinafter called the "Covenantor," having submitted to the Mashpee Planning Board a definitive plan of a subdivision, entitled _____ dated _____ made by _____, does hereby covenant and agree with said Planning Board and the successors in office of said Board, pursuant to G.L. (Ter. Ed.) C. 41, Sec. 81U, as amended, that:

1. The covenantor is the owner of record of the premises shown on said plan;

2. This covenant shall run with the land and be binding upon the executors, administrators, heirs, assigns of the covenantor, and their successors in title to the premises shown on said plan;

3. The construction of ways and the installation of municipal services shall be provided to serve any lot in accordance with the applicable Rules and Regulations of said Board before such lot may be built upon or conveyed, other than by mortgage deed; provided that a mortgagee who acquires title to the mortgaged premises by foreclosure or otherwise and any succeeding owner of the mortgaged premises or part thereof may sell any such lot, subject only to that portion of this covenant which provides that no lot so sold shall be built upon until such ways and services have been provided to serve such lot;

4. Nothing herein shall be deemed to prohibit a conveyance subject to this covenant by a single deed of the entire parcel of land shown on the subdivision plan or of all lots not previously released by the Planning Board without first providing such ways and services;

5. This covenant shall take effect upon the approval of said plan;

6. Reference to this covenant shall be entered upon such plan and this covenant shall be recorded when said plan is recorded.

The undersigned _____ wife, husband of the covenantor hereby agree that such interest as I, we, may have in said premises shall be subject to the provisions of this covenant and insofar as is necessary release all rights of tenancy by the courtesy, dower, homestead and other interest therein.

EXECUTED as a sealed instrument this _____ day of _____, 20_____.

_____ _____

_____ _____

_____ _____

COMMONWEALTH OF MASSACHUSETTS
County of Barnstable

On this _____ day of _____, 20_____, before me, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification,which were _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

_____
Notary Public, Commonwealth of Massachusetts

My Commission expires _____, 20_____.

Town of Mashpee
Planning Board
16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM N

NOTICE OF APPLICATION FILING WITH THE MASHPEE PLANNING BOARD

To the Mashpee Town Clerk:

This is to notify you that on June 6, , 20 19 an application for

____ endorsement of a plan believed not to require approval

____ approval of preliminary plan

__X__ approval of definitive plan

was submitted to the Mashpee Planning Board at its public meeting by

Mark and Donna Lopez , 130 Meetinghouse Road, Mashpee, MA.
Applicant name Applicant address

The land to which the application relates appears on the current Mashpee Assessors Maps as 45-50-0 .

and is generally described as located 103 Meetinghouse Road, Mashpee, MA consisting of 284,184 +/- sq. ft. area. Located to the west side of Meetinghouse Road and to the east of Mashpee River. R-5 Zoned. Cluster Subdivision under Town of Mashpee Zoning Bylaw, ARTICLE IX, §174-47 to create three (3) buildable lots and two (2) open space parcels.

This notice must be submitted to the Town Clerk by delivery or by registered or certified mail, postage prepaid, along with a copy of the application and submitted plans.

Received by Planning Board on _____, 20____.

_____
for Mashpee Planning Board

Town of Mashpee
Planning Board

I hereby attest that Mark V. Lopez and Donna Jean Lopez
OWNER OF RECORD

Assess map 45 parcel 50, 103 Meetinghouse Road, Mashpee, MA 02649
ADDRESS

is (are) the owner(s) of the above-referenced property.

I hereby further attest that the owner of the above-cited property is not, to the best of my knowledge, in arrears of payment of any local taxes as may be applicable under Section 1 of Chapter 112 of the Mashpee Code.

Treasurer/Collector _____ **Date** 5.29.19

May 21, 2019

Mr. Evan Lehrer, Town Planner
Town of Mashpee
16 Great Neck Road North
Mashpee, MA 02649

RE: Application for Approval of Definitive Plan for 103 Meetinghouse Road, Mashpee, MA

Dear Mr. Lehrer:

This letter is in regard the above referenced application.

Please accept this letter as my written authorization to allow Matthew C. Costa, P.L.S., President, Cape and Islands Engineering, Inc. and/or his Associates to represent this Approval of Definitive Plan on my behalf.

If you have any questions, please feel free to contact me at 774-521-7026.

Sincerely,

Mark and Donna Lopez
103 Meetinghouse Road
Mashpee, MA 02649
774-521-7026

Mark V. Lopez

BOOK 3183 PAGE 272 27153

VINCENT C. LOPEZ and CAROL A. LOPEZ, husband and wife, both

of Mashpee, Barnstable County, Massachusetts for nominal non-monetary consideration paid

grant to MARK V. LOPEZ and DONNA JEAN LOPEZ, husband and wife, as joint tenants,

of 497 Hatchville Road, Hatchville, Massachusetts 02536 with quitclaim covenants

A certain parcel or lot of land in the Town of Mashpee, Barnstable County, Massachusetts on the westerly side of Meetinghouse Road and the easterly side of the Mashpee River, shown as Parcel "B" on a plan entitled, "Division Plan of Land in Mashpee, Mass. showing Parcel B. which is to be conveyed to Donna J. Lopez from Vincent C. Lopez, Scale: 1" = 60', August 13, 1980, Doyle Associates, Falmouth, Mass." to be recorded herewith to which plan reference is made for a more particular description, Reference PLAN BOOK 347, PAGE 39.

There is conveyed appurtenant to said Parcel "B" the right to pass and repass along the Ancient Way shown over both of Parcel "A" shown on said plan to the Meetinghouse Road.

For title see deed of Violet E. Salmon to us dated September 10, 1959 and recorded at the Barnstable County Registry of Deeds Book 1056, Page 462.

Executed as a sealed instrument this 16th day of October 1980

Vincent C. Lopez

Carol A. Lopez

The Commonwealth of Massachusetts

Barnstable ss. October 16, 1980

Then personally appeared the above named CAROL A. LOPEZ

and acknowledged the foregoing instrument to be HER free act and deed.

Before me, Arthur H. Rapoza

Notary Public

My commission expires October 1, 1982

RECORDED OCT 31 80

Form 5

Received by BOA:

RECEIVED
MAY 23 2019
5/24/19
BOARD OF ASSESSORS
OF MASHPEE

Updated: 3/7/2013

TOWN OF MASHPEE BOARD OF ASSESSORS
16 Great Neck Rd North, Mashpee, MA 02649
Phone # (508) 539-1404
Fax # (508) 539-1142
e-mail: assessing@mashpeema.gov

REQUEST FOR ABUTTERS LIST

Please note that the Assessing Dept. will respond to this request within ten (10) business days.

ABUTTERS TO: MAP 45 PARCEL 50 EXT __

ADDRESS OF SUBJECT PARCEL: 103 Meetinghouse Road, Mashpee

PLEASE CHECK THE TYPE OF ABUTTERS LIST THAT YOU ARE REQUESTING:
(Refer to requirements of the regulating authority requiring abutters list.)

_____ DIRECT ABUTTERS Check box if this abutters list is for the Cape Cod Commission: ☐

_____ ALL PARCELS **WITHIN A 100 FOOT** RADIUS OF SUBJECT (usual for Conservation Commission & Historical Commission)

XX ALL PARCELS **WITHIN A 300 FOOT** RADIUS OF SUBJECT

_____ ABUTTERS **TO THE ABUTTERS** WITHIN A 300 FOOT RADIUS OF SUBJECT

_____ OTHER (SPECIFY) _____

◄ ALL ABUTTERS LISTS ARE PRINTED WITH A MAP ON 8 ½ x 11 PAPER ►

•Standard mailing labels of abutters are available for an extra charge of $1.00 per page. (full or partial)

LABELS YES (YES or NO) NUMBER OF SETS OF LABELS 3

REQUESTED BY:
(PLEASE PRINT)

NAME: Cape & Islands Engineering, Inc.

ADDRESS: 800 Falmouth Road, Suite 301C, Mashpee, MA 02649

PHONE: 508-477-7272

DATE: May 23, 2019 SIGNATURE: Jean E. Duff-Still

FEES:		QUANTITY	
	BASIC ABUTTERS LIST (one subject parcel)	1	$5.00
	MAILING LABELS	3	$1.00 PER PAGE
	COMPLEX ABUTTERS LIST (multiple subject parcels)	____	$10.00 – $50.00 (varies by processing time)

TOTAL AMOUNT DUE: $ 8.00

Fee structure based on state guidelines for record production and copy costs.

Abutters to: 45-50-0

Certified by: Susan L Devine

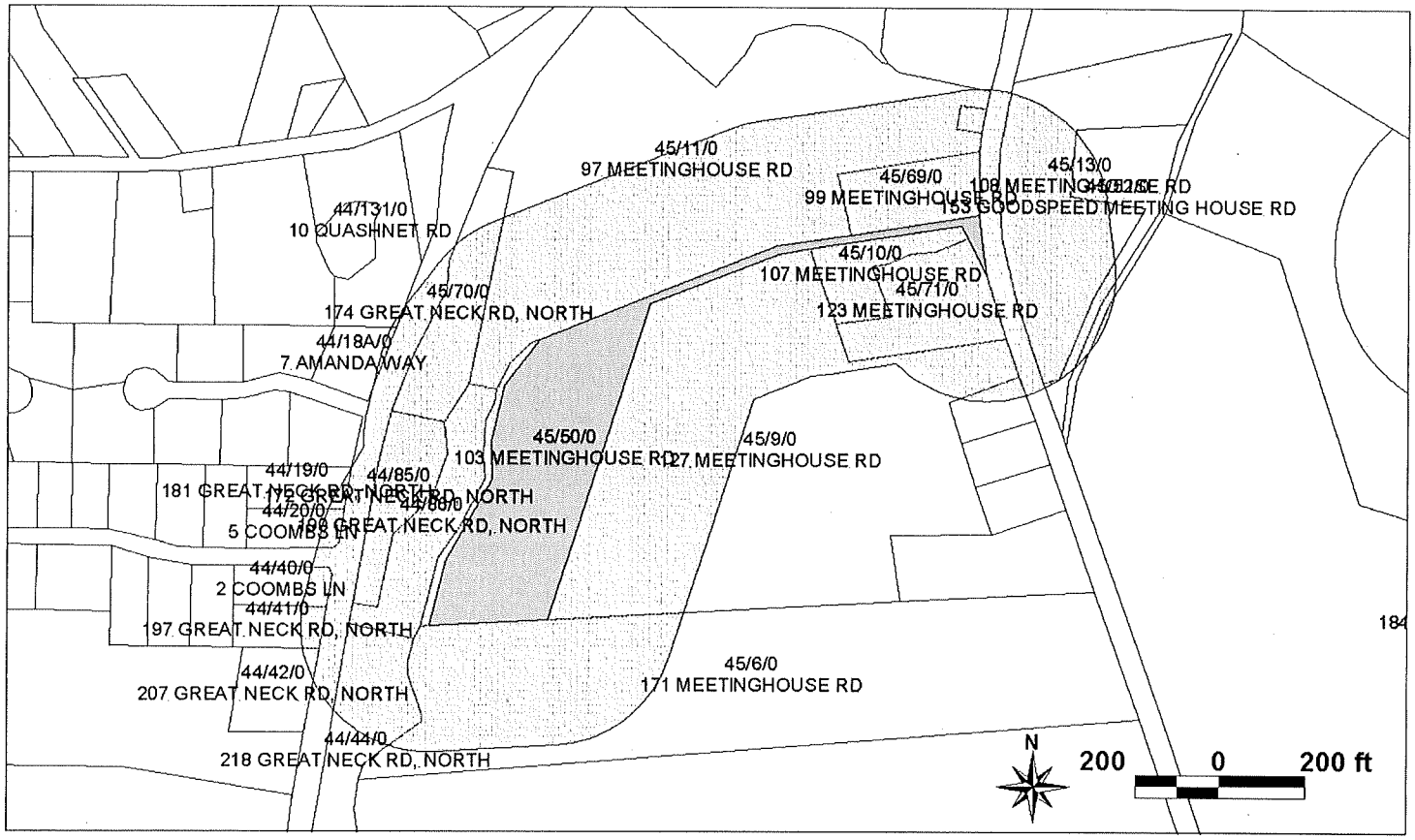
TOWN OF MASHPEE, MA
BOARD OF ASSESSORS
16 Great Neck Rd., North, Mashpee, MA 02649

Date: May 24, 2019

103 Meetinghouse Rd

Number of Abutters: 26

Abutters List Within 300 feet of Parcel 45/50/0



Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
1824	36-26-0-R	MILLS, WILLIAM C & JUDY M	92 GREAT NECK RD, NORTH	PO BOX 93	MASHPEE	MA	02649
1832	36-34-0-R	BARNSTABLE SERIES ONE LLC	72 MEETINGHOUSE RD	PO BOX 342	HYANNIS	MA	02601
2303	44-19-0-R	SURIYAARACHCHI, PANDULA & SURIYAARACHCHI RANGANIE	181 GREAT NECK RD, NORTH	181 GREAT NECK RD, NORTH	MASHPEE	MA	02649
2304	44-20-0-R	GREENE, BURLENE	5 COOMBS LN	102 PARSONS LANE	EAST FALMOUTH	MA	02536
2319	44-40-0-R	TURNER, MARIA	2 COOMBS LN	PO BOX 1823	MASHPEE	MA	02649
2320	44-41-0-R	NORTHROP, DAVID C	197 GREAT NECK RD, NORTH	1300 LAFAYETTE RD	NO KINGSTOWN	RI	02852
2321	44-42-0-R	HANDY, DEBORAH A	207 GREAT NECK RD, NORTH	207 GREAT NECK RD, NORTH	MASHPEE	MA	02649
2322	44-44-0-R	SNELL, JACQUELINE R	218 GREAT NECK RD, NORTH	4 ROLLING GREEN LANE	MASHPEE	MA	02649
2335	44-85-0-R	ATSALIS, CONSTANTINE R TR 66 BARNSTABLE ROAD RLTY TRUST	172 GREAT NECK RD, NORTH	46 CUMNER STREET	HYANNIS	MA	02601
2336	44-86-0-E	MASSACHUSETTS COMMONWEALTH OF DEPT FISH, WILDLIFE & ENV LAW	190 GREAT NECK RD, NORTH	251 CAUSEWAY ST - STE 400	BOSTON	MA	02114-2104
16958	44-131-0-R	DIAS, NORMA	10 QUASHNET RD	10 QUASHNET RD	MASHPEE	MA	02649
2369	44-18A-0-R	TIEXEIRA, DELRENE	7 AMANDA WAY	7 AMANDA WAY	MASHPEE	MA	02649
2376	45-6-0-E	TRUSTEES OF RESERVATIONS c/o RICHARD L FROTHINGHAM	171 MEETINGHOUSE RD	572 ESSEX STREET	BEVERLY	MA	01915
2379	45-9-0-E	MASHPEE TOWN OF CONSERVATION COMMISSION	127 MEETINGHOUSE RD	16 GREAT NECK RD NO	MASHPEE	MA	02649
2380	45-10-0-R	LOPEZ, KESUQS A & CORTNEY K	107 MEETINGHOUSE RD	107 MEETINGHOUSE RD	MASHPEE	MA	02649

Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
2381	45-11-0-E	MASSACHUSETTS COMMONWEALTH OF DEPT FISH, WILDLIFE & ENV LAW	97 MEETINGHOUSE RD	251 CAUSEWAY ST - STE 400	BOSTON	MA	02114-2104
2382	45-12-0-E	POCKNETT BURYING GROUNDS	95 MEETINGHOUSE RD	N	MASHPEE	MA	02649
2383	45-13-0-R	LOPEZ, VERNON N & MARY J	108 MEETINGHOUSE RD	108 MEETING HOUSE RD	MASHPEE	MA	02649
2388	45-50-0-R	LOPEZ, MARK V & DONNA JEAN	103 MEETINGHOUSE RD	103 MEETINGHOUSE RD	MASHPEE	MA	02649-2617
2389	45-51-0-E	MASHPEE TOWN OF	0-REAR MEETINGHOUSE RD	16 GREAT NECK RD NORTH	MASHPEE	MA	02649
2390	45-52-0-R	BLACK, MARLENE ELYES c/o MARLENE LOPEZ	153 GOODSPEED MEETING HOUSE RD	BOX 263	MASHPEE	MA	02649
2406	45-69-0-E	MASHPEE TOWN OF CONSERVATION COMMISSION	99 MEETINGHOUSE RD	16 GREAT NECK ROAD NORTH	MASHPEE	MA	02649
2407	45-70-0-R	ROBINSON, DOUGLAS & EVELYN	174 GREAT NECK RD, NORTH	PO BOX 2397	MASHPEE	MA	02649
2408	45-71-0-R	LOPEZ, RITA ANNE	123 MEETINGHOUSE RD	123 MEETINGHOUSE RD	MASHPEE	MA	02649
17021	45-75-0-E	UNITED STATES OF AMERICA TRUST FOR MASHPEE WAMPANOAG	184 MEETINGHOUSE RD	INDIAN AFFAIRS, MS-3642-MIB 1849 C STREET, NW	WASHINGTON	DC	20240
2410	45-8A-0-R	MARKLE, DAVID W & PAULA A	131 MEETINGHOUSE RD	6 JUNIPER HILL RD	BOYLSTON	MA	01505

Subject

SURFACE RUNOFF CONTRIBUTING OFFSITE AFTER PROPOSED ROAD IMPROVEMENTS (NO CHANGES)

CONTRIBUTING AREA 'B'
EXISTING ROAD = 240' x 10' = 2,450 S.F.
PROPOSED ROAD = 290' x 20' = 5,800 S.F.
PROPOSED ROAD + SWALE = 7,505 S.F.
ASSUMED IMPERVIOUS FOR FUTURE DEVELOPMENT OF LOT 2 & LOT 3 = 2,000 S.F.
TOTAL CONTRIBUTING AREA = 18,910 S.F.

CONTRIBUTING AREA 'A'
EXISTING ROAD = 500' X 10' = 5,000 S.F.
PROPOSED ROAD = 500' X 20' = 10,000 S.F.
PROPOSED ROAD + SWALE = 12,725 S.F.
IMPERVIOUS FOR EXISTING RESIDENTIAL DEVELOPMENT OF TWO LOTS = 3,350 S.F.
TOTAL CONTRIBUTING AREA = 38,825 S.F.

N

NAD 83

LOW POINT

DESIGN POINT #2

DESIGN POINT #1

DRAIN SWALE #2

DRAIN SWALE #1

SURFACE FLOW

HIGH POINT

IMPROVED ANCIENT WAY

SURFACE RUNOFF CONTRIBUTING OFFSITE AFTER PROPOSED ROAD IMPROVEMENTS (NO CHANGES)

OPEN SPACE

GRAVEL DRIVE

EXISTING SHED

Lot 3
23,789± S.F.
0.55 Acres

Lot 2
25,012± S.F.
0.57 Acres

EXISTING HOUSE

(50' WIDE - PUBLIC) MEETINGHOUSE ROAD

SURFACE RUNOFF CONTRIBUTING OFFSITE AFTER PROPOSED ROAD IMPROVEMENTS (NO CHANGES)

SURFACE RUNOFF FROM THESE TWO CONTRIBUTING AREAS REACH EXISTING LOW POINT (NO CHANGES)

SURFACE RUNOFF CONTRIBUTING OFFSITE AFTER PROPOSED ROAD IMPROVEMENTS (NO CHANGES)

0 60 100 200 300

SCALE: 1" = 60'

CAPE & ISLANDS ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING - ENVIRONMENTAL PERMITTING
INCORPORATED

SUMMERFIELD PARK
800 FALMOUTH ROAD SUITE 301C
MASHPEE, MA 02649

508.477.7272 PHONE
508.477.9072 FAX
info@CapeEng.com
www.CapeEng.com

PROJECT:
103 MEETINGHOUSE ROAD
MASHPEE, MASSACHUSETTS

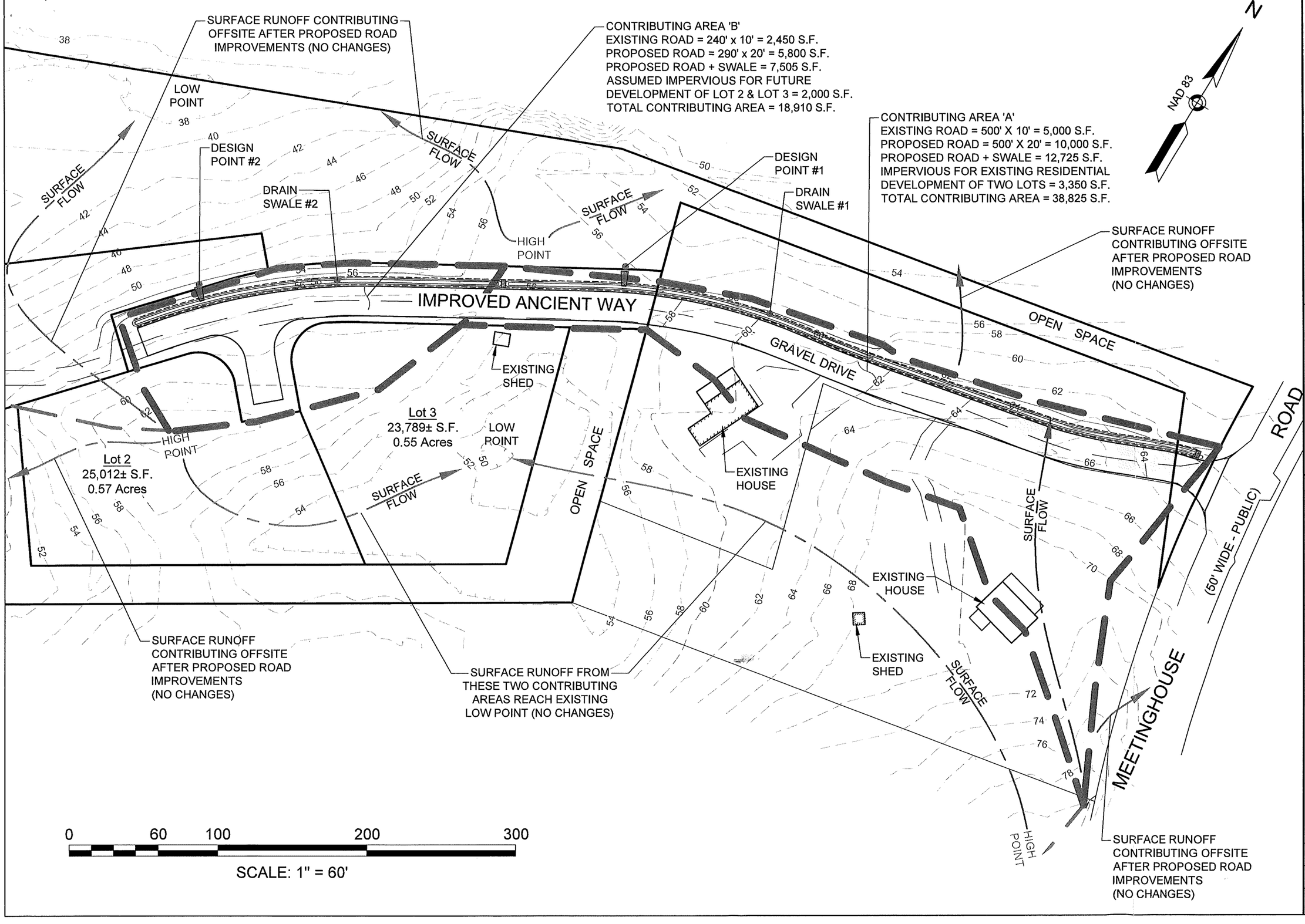
APPLICANT:
MARK & DONNA LOPEZ
103 MEETINGHOUSE ROAD
MASHPEE, MA

DRAINAGE CALCULATION AREAS
TO ACCOMPANY STORMWATER REPORT

Drawn By: RLR | Checked: MC

Date: MAY 16, 2019

SHEET: 1 OF 1



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PROJECT: 103 MEETINGHOUSE ROAD
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DRAINAGE CALCULATION AREAS
TO ACCOMPANY STORMWATER REPORT

Drawn By: RLR | Checked: MC

Date: MAY 16, 2019

SHEET: 1 OF 1

Town of Mashpee
Planning Board
16 Great Neck Road North
Mashpee, Massachusetts 02649

MASHPEE PLANNING BOARD
PUBLIC HEARING NOTICE

Pursuant to Massachusetts General Laws, Chapter 40A, Section 9, the Mashpee Planning Board will hold a public hearing on Wednesday, July 17, 2019 at 7:15 PM in the Waquoit Meeting Room, Mashpee Town Hall, 16 Great Neck Road North, Mashpee, MA 02649 to consider an application by Mark and Donna Lopez of 103 Meeting house Road, Mashpee, MA 02649 for approval of a Special Permit for a Cluster Subdivision under Mashpee Zoning Bylaw Section 174-47, as identified on the Mashpee Assessors Maps as Map and Block 45-50-0.

Plans may be reviewed in the offices of the Town Clerk or Town Planner at Mashpee Town Hall.

Submitted by:

Mary Waygan, *Chairman*
Mashpee Planning Board

Publication dates: Friday, June 21, 2019
Friday, June 28, 2019

Town of Mashpee
Planning Board
16 Great Neck Road North
Mashpee, Massachusetts 02649

TOWN OF MASHPEE
PLANNING BOARD
PUBLIC HEARING NOTICE

Pursuant to the Town of Mashpee Subdivision Rules and Regulations and Chapter 41, Section 81T of Massachusetts General Laws the Mashpee Planning Board will hold a public hearing on Wednesday, July 17, 2019 at 7:10 PM in the Waquoit Meeting Room, Mashpee Town Hall, 1st Floor, 16 Great Neck Road North, Mashpee, MA, 02649 to consider a definitive subdivision of land located at 103 Meetinghouse Road (Map 45 Block 5) submitted by Cape and Islands Engineering (applicant) on behalf of Mark and Donna Lopez (property owners).

Submitted by:

Mary Waygan, *Chairman*
Mashpee Planning Board

Publication Dates: Friday, June 21, 2019
Friday, June 28, 2019

Bk 29541 Pg136 #14890
03-29-2016 @ 01:54p

MASSACHUSETTS STATE EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 03-29-2016 @ 01:54pm
Ctl#: 1011 Doc#: 14890
Fee: $5,728.50 Cons: $1,675,000.00

QUITCLAIM DEED

CAPE COD COOPERATIVE BANK, a Massachusetts banking corporation with an address of 25 Benjamin Franklin Way, Hyannis, MA 02601,

For consideration paid in the full amount of One Million Six Hundred Seventy-five Thousand and no/100 dollars ($1,675,000.00),

Grant to **EVERGREEN ENERGY LLC**, a Massachusetts limited liability company with an address of 81 Echo Road, Mashpee, MA 02649,

with QUITCLAIM COVENANTS,

588 main Street, Mashpee

The property in Mashpee, Barnstable County, Massachusetts, at **588 Route 130 (Forestdale Road),** shown on the plan entitled "Plan of Land in Mashpee, Massachusetts, Route 130", dated August 22, 2001, prepared by David C. Thulin, PE, PLS, recorded in Barnstable County Registry of Deeds Plan Book 567, Page 75, bounded and described as follows:

NORTHERLY	by land shown on the Plan as of Boston Sand and Gravel and Land Court Plan 39332A, by four lines measuring 5.26, 617.69, 746.51, and 572.45 feet;
EASTERLY	by land shown on the Plan as Lot 3, 277.25 feet;
NORTHERLY	by said Lot 3, 846.09 feet;
NORTHEASTERLY	by Route 130, by two lines measuring 163,87 and 246.46 feet;
SOUTHEASTERLY	by land shown on the Plan as Lot 5, 370.00 feet;
NORTHEASTERLY	by said Lot 5, 0.68 feet;
SOUTHERLY	by land shown on the Plan as of Pamela M. Gangemi, Trustee, 2293.76 feet;
WESTERLY	by land shown on the Plan as of the USA, 115.36 feet;
SOUTHWESTERLY	by said USA land, 380.00 feet;
SOUTHERLY	by said USA land, 74.41 feet;
WESTERLY	by land shown on Plan as of the Massachusetts Military Reservation, in two lines, measuring 494.22 feet and 19.62 feet.

Containing 48.09 acres (2,094,989 sq. ft.) according to said plan.

BARNSTABLE COUNTY EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 03-29-2016 @ 01:54pm
Ctl#: 1011 Doc#: 14890
Fee: $4,522.50 Cons: $1,675,000.00

For the Grantor's title see Foreclosure Deed to it dated June 9, 2009 and recorded with said Deeds in Book 23803, Page 144.

The undersigned hereby certifies that the within transfer is in the ordinary course of the Grantor's business.

Executed as a sealed instrument this 28th day of March, 2016.

CAPE COD COOPERATIVE BANK

BY: _____
JOEL CROWELL, its President

For authority see vote registered
as Document No.1,092,590 with
the Barnstable County Land Registration
Section

COMMONWEALTH OF MASSACHUSETTS

Barnstable, ss:

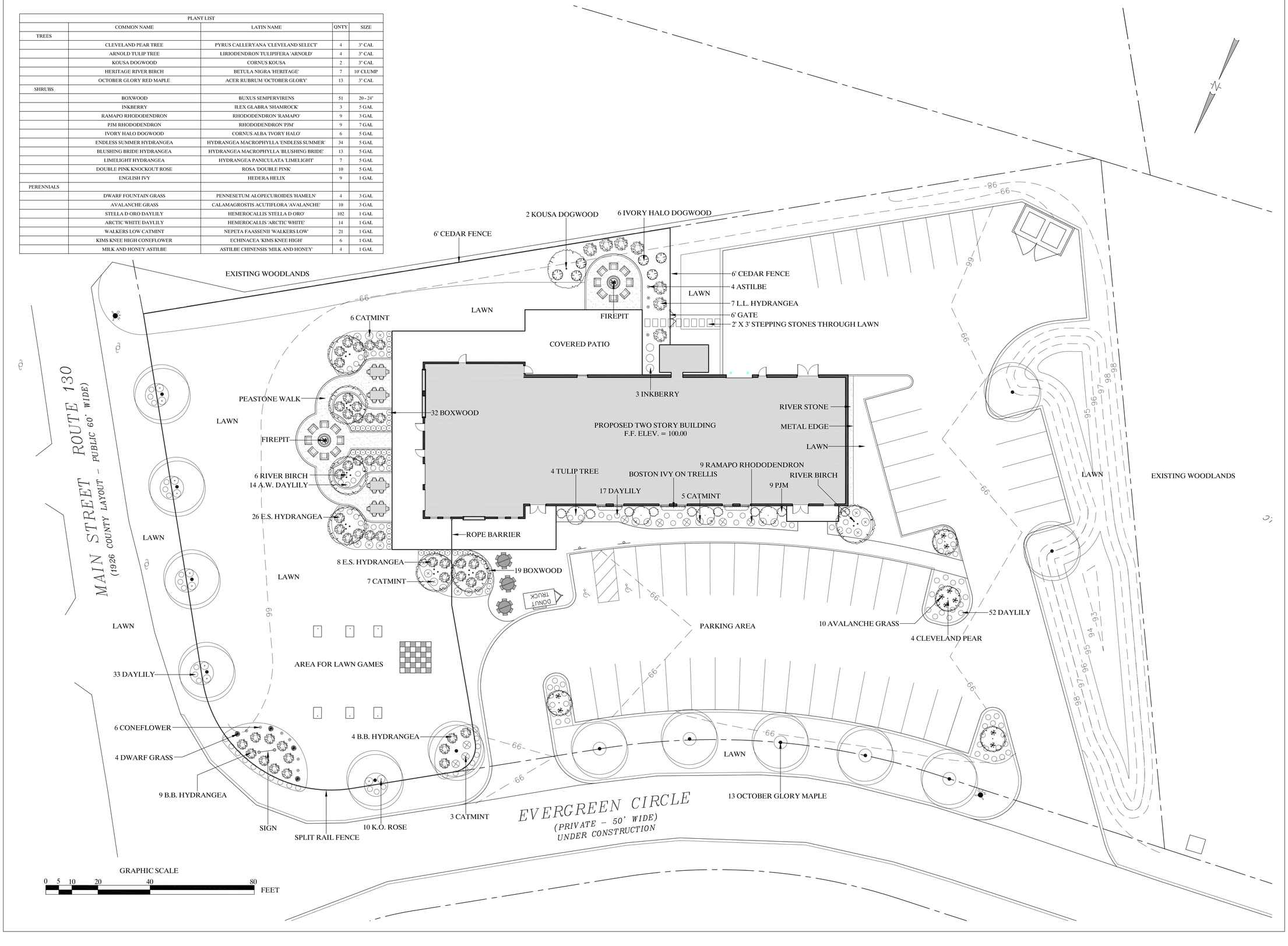
On this 28th day of March, 2016, before me, the undersigned notary public, personally appeared JOEL CROWELL, President as aforesaid, and proved to me through satisfactory evidence of identification, which was a ☐ driver's license, ☐ passport, or ☑ personally known to me, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily as President, an authorized agent for the CAPE COD COOPERATIVE BANK for its stated purpose.

_____
, Notary Public

My commission expires: 04-13-2018

LINDA LEGSDIN
MY COMMISSION EXPIRES 04-13-2018
COMMONWEALTH OF MASSACHUSETTS
NOTARY PUBLIC

PLANT LIST				
	COMMON NAME	LATIN NAME	QNTY	SIZE
TREES				
	CLEVELAND PEAR TREE	PYRUS CALLERYANA 'CLEVELAND SELECT'	4	3" CAL
	ARNOLD TULIP TREE	LIRIODENDRON TULIPIFERA 'ARNOLD'	4	3" CAL
	KOUSA DOGWOOD	CORNUS KOUSA	2	3" CAL
	HERITAGE RIVER BIRCH	BETULA NIGRA 'HERITAGE'	7	10' CLUMP
	OCTOBER GLORY RED MAPLE	ACER RUBRUM 'OCTOBER GLORY'	13	3" CAL
SHRUBS				
	BOXWOOD	BUXUS SEMPERVIRENS	51	20 - 24"
	INKBERRY	ILEX GLABRA 'SHAMROCK'	3	5 GAL
	RAMAPO RHODODENDRON	RHODODENDRON 'RAMAPO'	9	3 GAL
	PJM RHODODENDRON	RHODODENDRON 'PJM'	9	7 GAL
	IVORY HALO DOGWOOD	CORNUS ALBA 'IVORY HALO'	6	5 GAL
	ENDLESS SUMMER HYDRANGEA	HYDRANGEA MACROPHYLLA 'ENDLESS SUMMER'	34	5 GAL
	BLUSHING BRIDE HYDRANGEA	HYDRANGEA MACROPHYLLA 'BLUSHING BRIDE'	13	5 GAL
	LIMELIGHT HYDRANGEA	HYDRANGEA PANICULATA 'LIMELIGHT'	7	5 GAL
	DOUBLE PINK KNOCKOUT ROSE	ROSA 'DOUBLE PINK'	10	5 GAL
	ENGLISH IVY	HEDERA HELIX	9	1 GAL
PERENNIALS				
	DWARF FOUNTAIN GRASS	PENNESETUM ALOPECUROIDES 'HAMELN'	4	3 GAL
	AVALANCHE GRASS	CALAMAGROSTIS ACUTIFLORA 'AVALANCHE'	10	3 GAL
	STELLA D ORO DAYLILY	HEMEROCALLIS 'STELLA D ORO'	102	1 GAL
	ARCTIC WHITE DAYLILY	HEMEROCALLIS 'ARCTIC WHITE'	14	1 GAL
	WALKERS LOW CATMINT	NEPETA FAASSENII 'WALKERS LOW'	21	1 GAL
	KIMS KNEE HIGH CONEFLOWER	ECHINACEA 'KIMS KNEE HIGH'	6	1 GAL
	MILK AND HONEY ASTILBE	ASTILBE CHINENSIS 'MILK AND HONEY'	4	1 GAL



ML CURADOSSI

Landscape Design
&
3-D Imaging
Plymouth, MA 02360
MLCuradossi@GMail.com
508 360 5857
www.MLCuradossi.com

Prepared for:
Atlantic Design Engineers

CAPE COD COFFEE

10 Evergreen Circle
Mashpee, MA

Drafted By:
Michael Curadossi

Last Modified: 06/20/19

Scale 1"=16'-0"

L1.0

SITE PLAN

DESIGN ENGINEERS, INC.

Stormwater Report
For
Cape Cod Coffee
Mashpee, Massachusetts

Prepared for:
Modi, LLC
348 Main Street
Mashpee, MA 02649

Prepared by:
Atlantic Design Engineers, Inc.
P.O. Box 1051
Sandwich, Massachusetts 02563

June 21, 2019
Atlantic Project No. 3110.00

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This report analyzes the hydrological impacts of the proposed Cape Cod Coffee facility. Presently, the site is a wooded lot with flat topography. The project proposes a 2-story building, paved parking with curbing/berm, landscaping, recreational amenities, septic system, water, utilities and stormwater facilities. The use of the building will be a coffee shop that will include the processing, distribution and packaging of coffee as well as a shared industrial use tenant.

2.0 PROPOSED STORMWATER MANAGEMENT SYSTEM

The Stormwater system for the project has been evaluated and designed based upon DEP Stormwater Policy as well as the Stormwater Management Section of the 2018 Town of Mashpee Zoning Bylaws (§174-27.2).

Stormwater runoff from the proposed development will be directed to a closed drainage system consisting of deep sump hooded catch basins and manholes that discharge to an open vegetated basin that incorporates sediment forebays, infiltration, and subsurface leaching fields comprised of concrete galleys.

As indicated in the Post-Development watershed plan, stormwater runoff from subcatchment 1S (the majority of the site) will drain to catch basins and then be conveyed to sediment forebays before overflowing into the infiltration basin. The infiltration basin will include an outlet structure consisting of an 18" diameter riser pipe that is routed to an underground leaching system sized to handle up to the 100 year storm event. A closed roof drain system along the perimeter of the building will handle the routing of the roof runoff (subcatchments RD-1, R-2 and RD-3) to three underground leaching systems which have been sized to handle the 100 year storm event.

3.0 COMPLIANCE WITH STORMWATER MANAGEMENT STANDARDS

Standard 1: No New Untreated Discharges

No Wetlands are located on or near the site and all new applicable impervious surfaces are being treated before infiltrating into the groundwater. Based on this it is our opinion that this standard has been met. The following structures have been incorporated to improve water quality prior to discharge:

- Catch basins with 4-foot sumps and hoods to settle out sediment and minimize oils entering system
- Forebays sized to accommodate the first flush volume (one inch over the impervious areas of the site).
- Infiltration basin and leaching fields sized to accommodate the 100-year design storm

Standard 2: Peak Rate Attenuation

The proposed infiltration basin and leaching fields have been designed to accommodate and contain on-site all of the runoff from the 100-year design storm for the developed areas of the site. Therefore there will be no increase in runoff to abutting properties. Note that the basins have been conservatively sized by not taking credit for infiltration within the forebays.

Standard 3: Groundwater Recharge

Test pits have been performed on-site and sandy soils were witnessed in the C2 and C3 horizons as seen in the test results (see Appendix D). The infiltration basin and leaching fields were located in these horizons. The infiltration rate used is based on the MASS DEP standard RAWLS rate for sandy soils and therefore Hydrologic Soil Group A has been selected. The groundwater recharge volume required for the proposed impervious surfaces is calculated by the following formula:

$$R_v = (F)(A_{IMP})$$

R_v = Required Recharge Volume
F=Target Depth Factor: 0.60 inch
A_{IMP} = Proposed Impervious Area
(A Target Depth Factor of 0.6 has been applied over the entire site as a conservative approach)

The total impervious areas associated with the site development (not including roof areas) approximately 27,893 sq ft. Based on the recharge rate of 0.6 inches of runoff over the entire impervious area, approximately 1,395 cubic feet of recharge volume is required. This volume is provided in the basin and leach field which are capable of storing (and recharging) more than 8,275 cubic feet of runoff.

Standard 4: Water Quality

The project has been designed with structures to remove total suspended solids (TSS) prior to discharge. Together with regular maintenance of the project as described in the Operation and Maintenance plan, the TSS removal will exceed the 80% removal required by the Stormwater Management Standards, as well as the requirement to remove 44% TSS prior to discharge to an infiltration basin in soils with rapid infiltration. The proposed TSS removal provided by the BMP structures (and street sweeping) is summarized in the TSS Removal Table in Appendix C.

Two sediment forebays have been sized to provide Water Quality Volume for 27,893 SF of impervious surface. The required Water Quality Volume is as follows:

$$V_{WQ} = (1\ in/12in/ft)*(27{,}893\ SF)$$

$$V_{WQ} = 2{,}324\ CF$$

The required Water Quality Volume is provided within the sediment forebays, which have a total volume of 2,377 cf (see calculations in Appendix C). As a result, it is our opinion that Standard 4 has been met.

Standard 5: Land Uses with Higher Pollutant Loads (LUHPPLs)

The proposed development is not a LUHPPL and therefore Standard 5 is not applicable.

Standard 6: Critical Areas

The project does not have any discharges within a Zone II, Interim Wellhead Protection Areas or near or to any Critical Areas as defined by the Massachusetts Stormwater Handbook. Therefore, it is our opinion that Standard 6 is not applicable.

Standard 7: Redevelopment Projects

The proposed project is not a redevelopment project and therefore Standard 7 is not applicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

Construction Period Erosion and Sedimentation Control notes are provided on the Site plans along with notes/instructions for the contractor and details/location of all erosion control measures. The project will be covered under a NPDES CGP and a SWPPP will be submitted before land disturbance begins.

Standard 9: Long Term Operation and Maintenance Plan

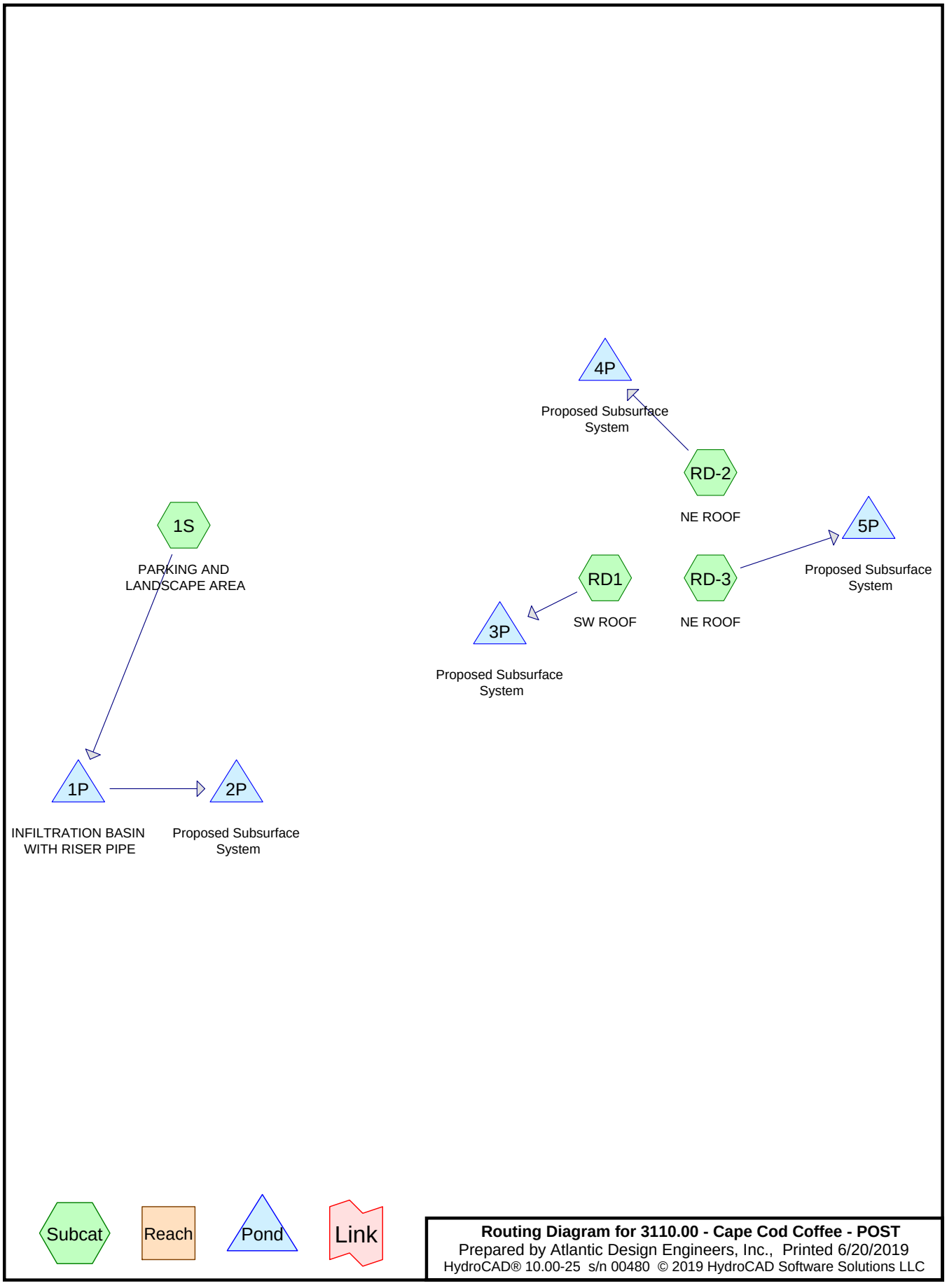
A Stormwater Operation and Maintenance Plan is provided in Appendix D.

Standard 10: Prohibition of Illicit Discharges

To our knowledge, there are no existing illicit discharges to existing stormwater systems on the Site and measures to prevent illicit discharges from the proposed development to proposed stormwater systems on the Site is included within the Long Term Pollution Prevention Plan. As required, the Illicit Discharge Compliance Statement will be signed by the Responsible Party prior to the start of construction.

APPENDIX A

Post Development HydroCAD Stormwater Analysis



Routing Diagram for 3110.00 - Cape Cod Coffee - POST
Prepared by Atlantic Design Engineers, Inc., Printed 6/20/2019

Time span=1.00-73.00 hrs, dt=0.010 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PARKING AND Runoff Area=42,782 sf 74.48% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=83 Runoff=1.58 cfs 4,900 cf

Subcatchment RD-2: NE ROOF Runoff Area=3,471 sf 100.00% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=98 Runoff=0.22 cfs 775 cf

Subcatchment RD-3: NE ROOF Runoff Area=3,267 sf 100.00% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=98 Runoff=0.21 cfs 729 cf

Subcatchment RD1: SW ROOF Runoff Area=4,292 sf 100.00% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=98 Runoff=0.28 cfs 958 cf

Pond 1P: INFILTRATION BASIN WITH RISER Peak Elev=94.81' Storage=1,641 cf Inflow=1.58 cfs 4,900 cf
Discarded=0.26 cfs 4,900 cf Primary=0.00 cfs 0 cf Outflow=0.26 cfs 4,900 cf

Pond 2P: Proposed Subsurface System Peak Elev=92.25' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 3P: Proposed Subsurface System Peak Elev=93.79' Storage=174 cf Inflow=0.28 cfs 958 cf
Outflow=0.08 cfs 958 cf

Pond 4P: Proposed Subsurface System Peak Elev=93.52' Storage=115 cf Inflow=0.22 cfs 775 cf
Outflow=0.08 cfs 775 cf

Pond 5P: Proposed Subsurface System Peak Elev=93.72' Storage=126 cf Inflow=0.21 cfs 729 cf
Outflow=0.06 cfs 729 cf

Total Runoff Area = 53,812 sf Runoff Volume = 7,362 cf Average Runoff Depth = 1.64"
20.29% Pervious = 10,919 sf 79.71% Impervious = 42,893 sf

Summary for Subcatchment 1S: PARKING AND LANDSCAPE AREA

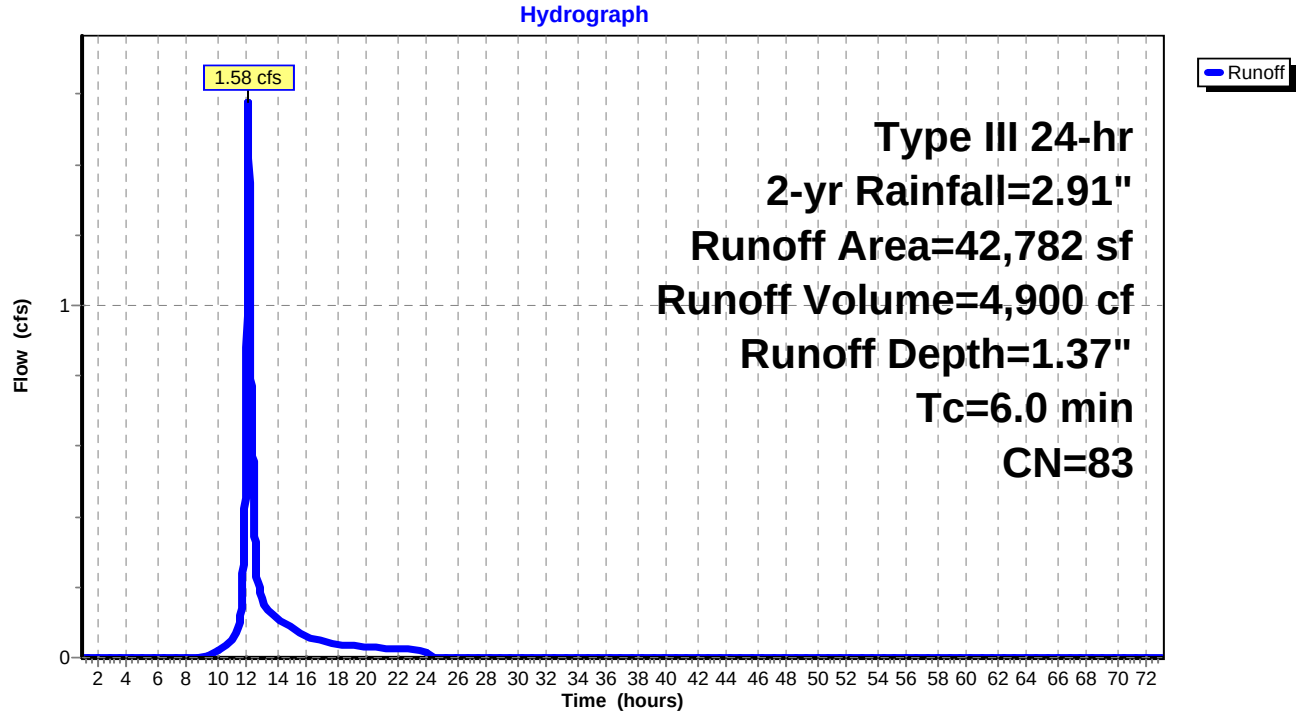
Runoff = 1.58 cfs @ 12.09 hrs, Volume= 4,900 cf, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-yr Rainfall=2.91"

	Area (sf)	CN	Description
	27,893	98	Paved parking, HSG A
	2,620	98	Water Surface, HSG A
	10,919	39	>75% Grass cover, Good, HSG A
*	1,350	98	Roofs, HSG A- Covered Pavilion and Walk in Cooler
	42,782	83	Weighted Average
	10,919		25.52% Pervious Area
	31,863		74.48% Impervious Area

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

Subcatchment 1S: PARKING AND LANDSCAPE AREA



Summary for Subcatchment RD-2: NE ROOF

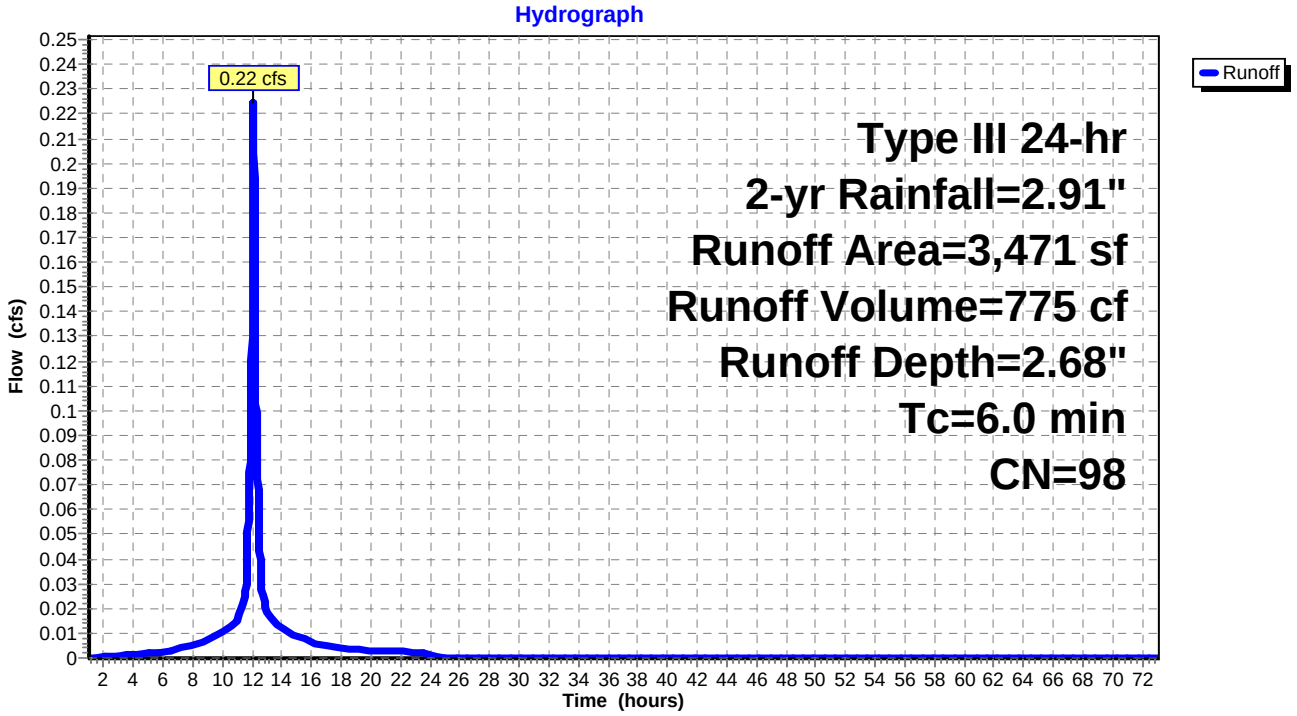
Runoff = 0.22 cfs @ 12.08 hrs, Volume= 775 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-yr Rainfall=2.91"

Area (sf)	CN	Description
3,471	98	Roofs, HSG A
3,471		100.00% Impervious Area

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

Subcatchment RD-2: NE ROOF



Summary for Subcatchment RD-3: NE ROOF

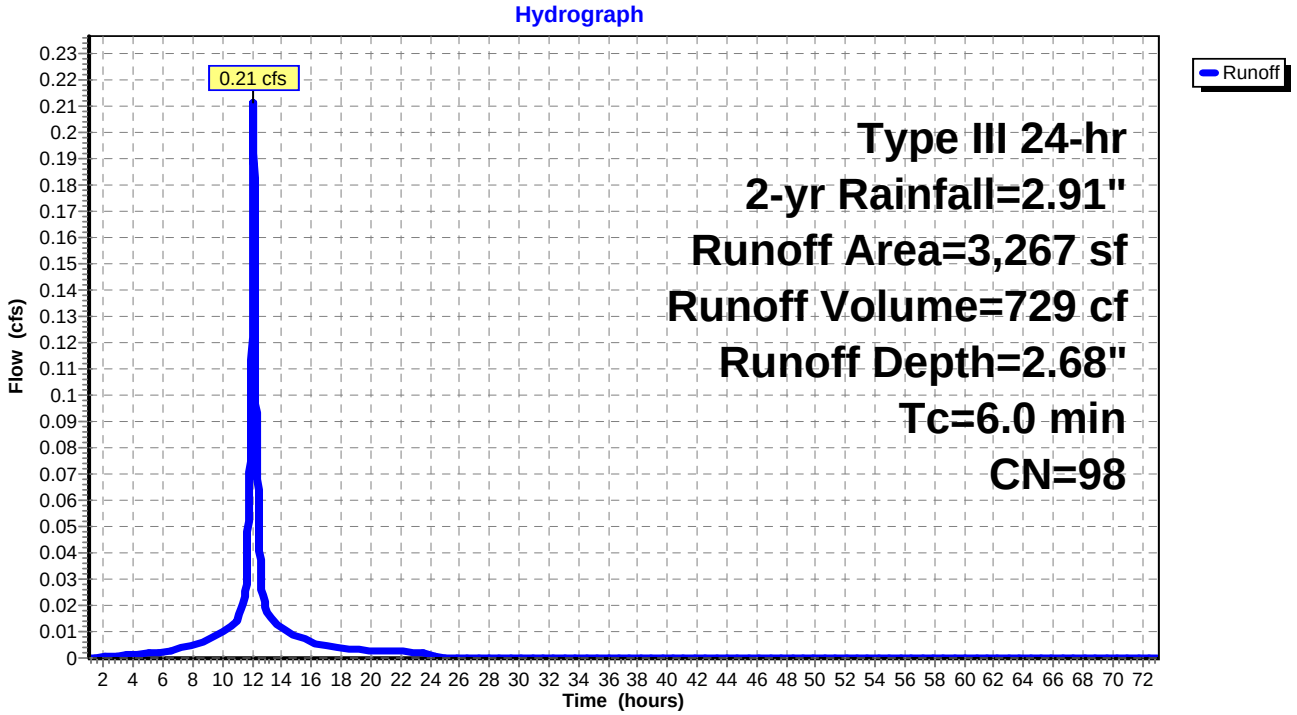
Runoff = 0.21 cfs @ 12.08 hrs, Volume= 729 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-yr Rainfall=2.91"

Area (sf)	CN	Description
3,267	98	Roofs, HSG A
3,267		100.00% Impervious Area

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

Subcatchment RD-3: NE ROOF



Summary for Subcatchment RD1: SW ROOF

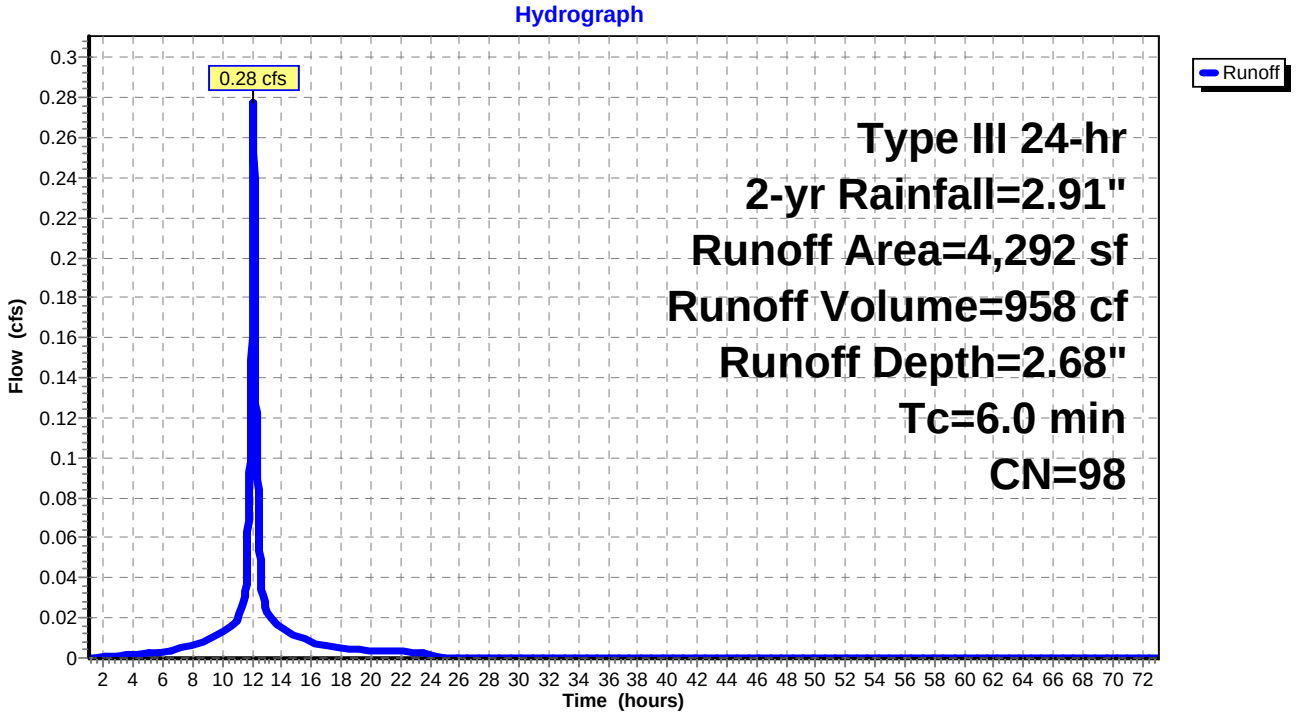
Runoff = 0.28 cfs @ 12.08 hrs, Volume= 958 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 2-yr Rainfall=2.91"

Area (sf)	CN	Description
4,292	98	Roofs, HSG A
4,292		100.00% Impervious Area

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

Subcatchment RD1: SW ROOF



Summary for Pond 1P: INFILTRATION BASIN WITH RISER PIPE

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 1.37" for 2-yr event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 4,900 cf
Outflow = 0.26 cfs @ 12.60 hrs, Volume= 4,900 cf, Atten= 84%, Lag= 30.5 min
Discarded = 0.26 cfs @ 12.60 hrs, Volume= 4,900 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 94.81' @ 12.60 hrs Surf.Area= 1,349 sf Storage= 1,641 cf

Plug-Flow detention time= 62.2 min calculated for 4,899 cf (100% of inflow)
Center-of-Mass det. time= 62.2 min (899.7 - 837.5)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	9,279 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

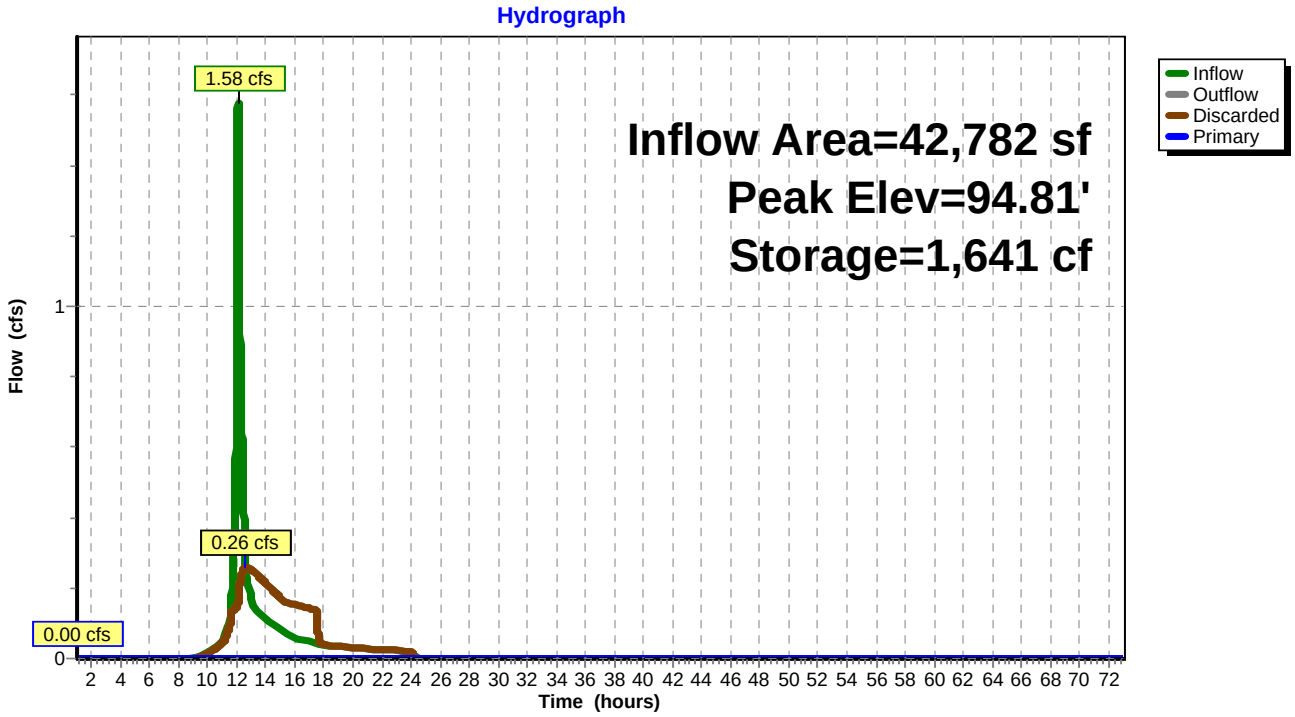
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	699	190.0	0	0	699
94.00	837	146.0	767	767	1,887
95.00	1,489	266.0	1,147	1,914	5,827
96.00	2,038	283.0	1,756	3,671	6,619
97.00	2,620	300.0	2,323	5,994	7,460
98.00	4,000	425.0	3,286	9,279	14,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	93.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	95.00'	**8.0" Round Culvert** L= 12.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.88' S= 0.0096 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Device 2	96.80'	**18.0" Horiz. 18" DIA RISER PIPE** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.26 cfs @ 12.60 hrs HW=94.81' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=93.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)
└**3=18" DIA RISER PIPE** (Controls 0.00 cfs)

Pond 1P: INFILTRATION BASIN WITH RISER PIPE



Summary for Pond 2P: Proposed Subsurface System

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 92.25' @ 1.00 hrs Surf.Area= 851 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

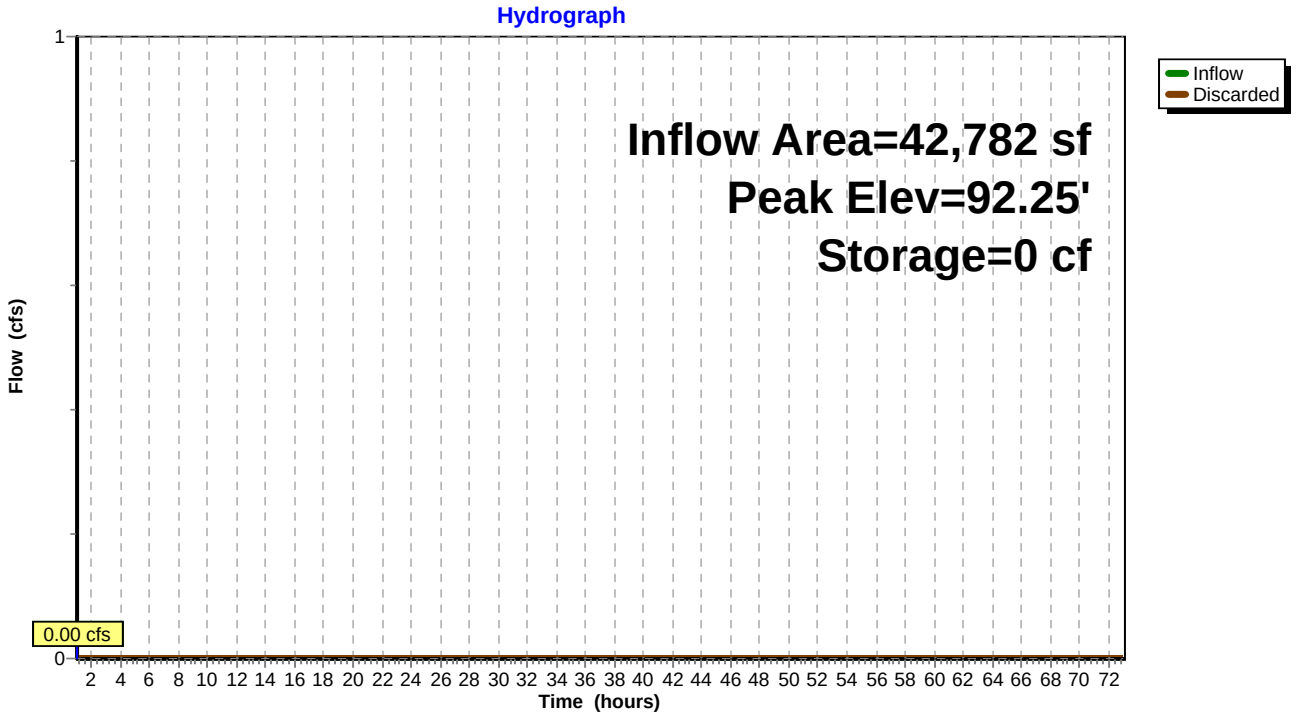
Volume	Invert	Avail.Storage	Storage Description
#1A	92.25'	684 cf	**30.40'W x 28.00'L x 4.50'H Field A** 3,830 cf Overall - 2,120 cf Embedded = 1,711 cf x 40.0% Voids
#2A	92.75'	1,596 cf	**Concrete Galley 4x4x4** x 36 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 36 Chambers in 6 Rows
		2,281 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.25'	**8.270 in/hr Exfiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=92.25' (Free Discharge)
↑**1=Exfiltration** (Controls 0.00 cfs)

Pond 2P: Proposed Subsurface System



Summary for Pond 3P: Proposed Subsurface System

Inflow Area = 4,292 sf,100.00% Impervious, Inflow Depth = 2.68" for 2-yr event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 958 cf
Outflow = 0.08 cfs @ 12.41 hrs, Volume= 958 cf, Atten= 71%, Lag= 19.5 min
Discarded = 0.08 cfs @ 12.41 hrs, Volume= 958 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 93.79' @ 12.41 hrs Surf.Area= 346 sf Storage= 174 cf

Plug-Flow detention time= 11.0 min calculated for 958 cf (100% of inflow)
Center-of-Mass det. time= 11.0 min (769.4 - 758.4)

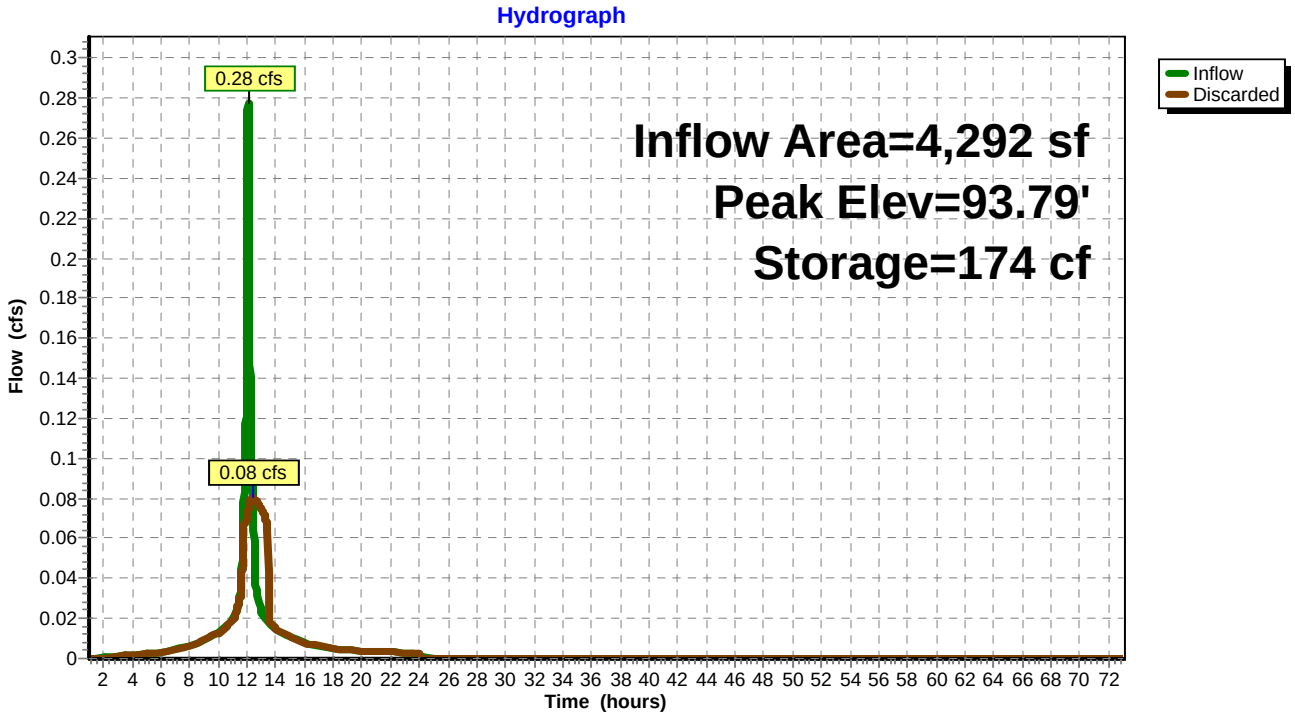
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.08 cfs @ 12.41 hrs HW=93.79' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Pond 3P: Proposed Subsurface System



Summary for Pond 4P: Proposed Subsurface System

Inflow Area = 3,471 sf,100.00% Impervious, Inflow Depth = 2.68" for 2-yr event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 775 cf
Outflow = 0.08 cfs @ 12.35 hrs, Volume= 775 cf, Atten= 66%, Lag= 16.2 min
Discarded = 0.08 cfs @ 12.35 hrs, Volume= 775 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 93.52' @ 12.35 hrs Surf.Area= 346 sf Storage= 115 cf

Plug-Flow detention time= 7.4 min calculated for 775 cf (100% of inflow)
Center-of-Mass det. time= 7.4 min (765.9 - 758.4)

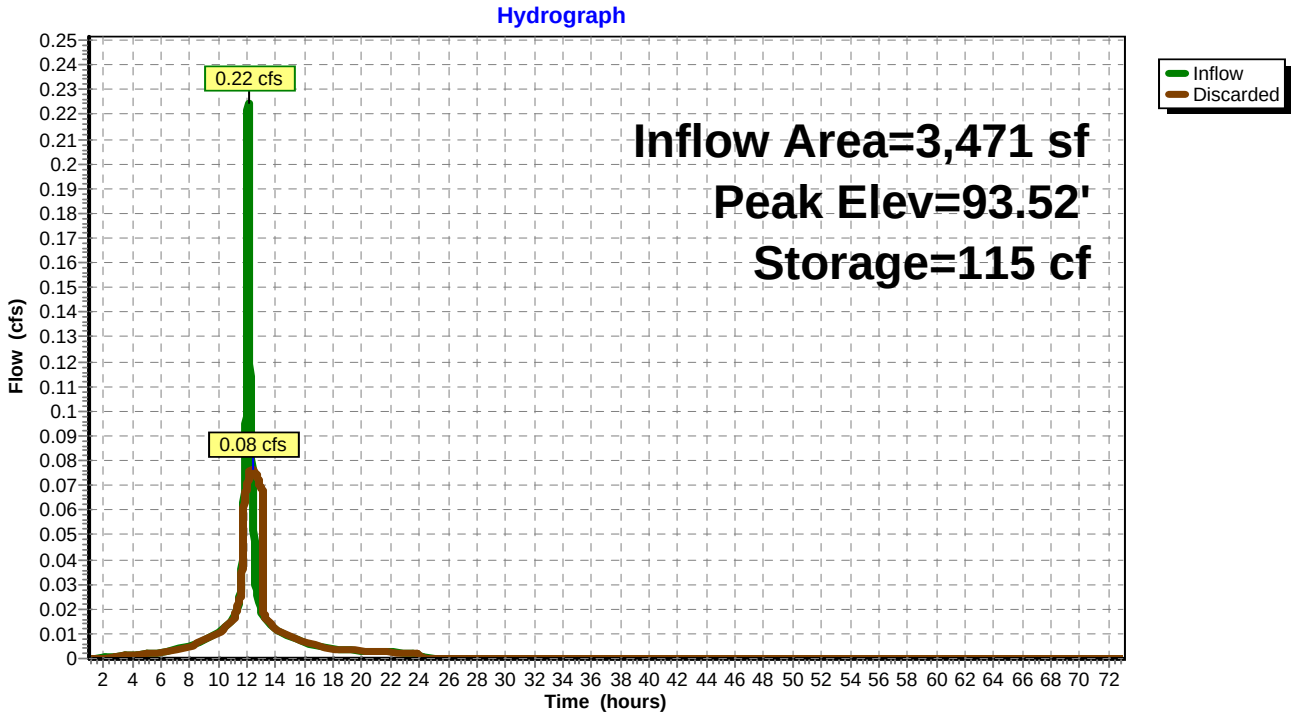
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.08 cfs @ 12.35 hrs HW=93.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.08 cfs)

Pond 4P: Proposed Subsurface System



Summary for Pond 5P: Proposed Subsurface System

Inflow Area = 3,267 sf,100.00% Impervious, Inflow Depth = 2.68" for 2-yr event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 729 cf
Outflow = 0.06 cfs @ 12.39 hrs, Volume= 729 cf, Atten= 70%, Lag= 18.5 min
Discarded = 0.06 cfs @ 12.39 hrs, Volume= 729 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 93.72' @ 12.39 hrs Surf.Area= 275 sf Storage= 126 cf

Plug-Flow detention time= 9.9 min calculated for 729 cf (100% of inflow)
Center-of-Mass det. time= 9.9 min (768.3 - 758.4)

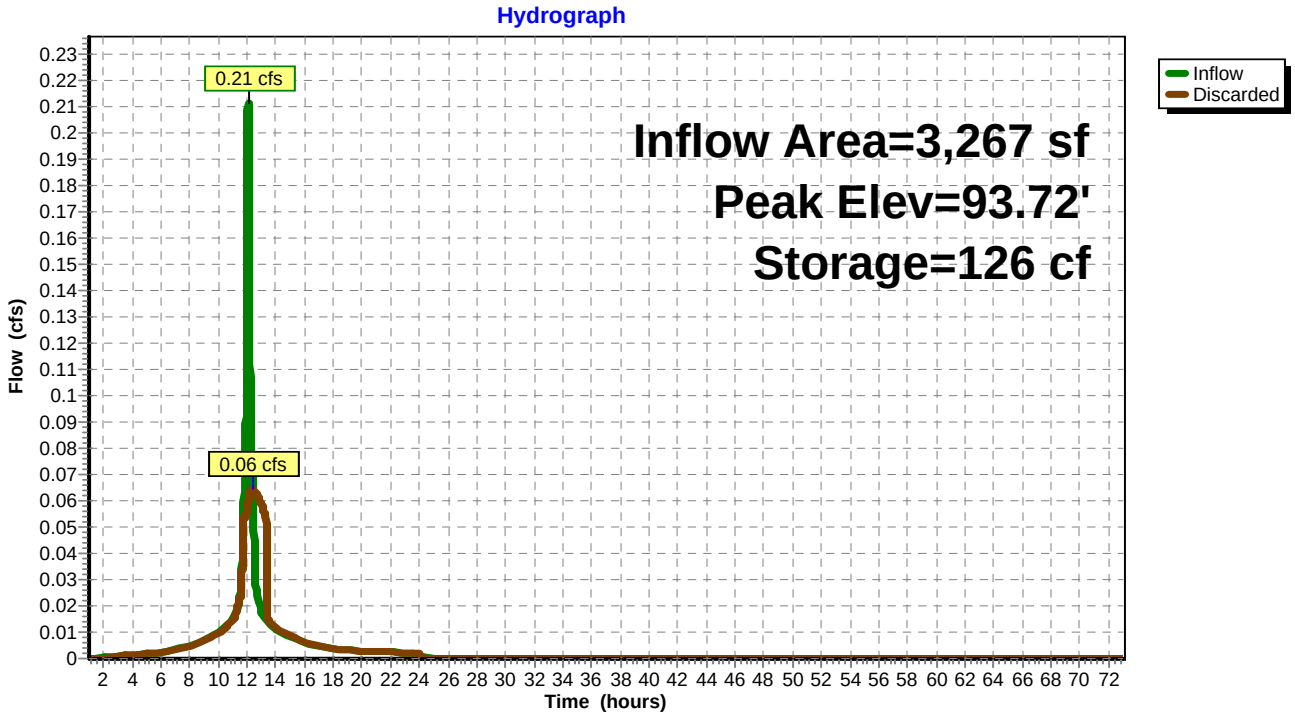
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	283 cf	**17.20'W x 16.00'L x 4.50'H Field A** 1,238 cf Overall - 530 cf Embedded = 709 cf x 40.0% Voids
#2A	93.30'	399 cf	**Concrete Galley 4x4x4** x 9 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 9 Chambers in 3 Rows
		683 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.06 cfs @ 12.39 hrs HW=93.72' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Pond 5P: Proposed Subsurface System



Time span=1.00-73.00 hrs, dt=0.010 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PARKING AND Runoff Area=42,782 sf 74.48% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=83 Runoff=3.08 cfs 9,559 cf

Subcatchment RD-2: NE ROOF Runoff Area=3,471 sf 100.00% Impervious Runoff Depth>4.21"
Tc=6.0 min CN=98 Runoff=0.35 cfs 1,219 cf

Subcatchment RD-3: NE ROOF Runoff Area=3,267 sf 100.00% Impervious Runoff Depth>4.21"
Tc=6.0 min CN=98 Runoff=0.33 cfs 1,147 cf

Subcatchment RD1: SW ROOF Runoff Area=4,292 sf 100.00% Impervious Runoff Depth>4.21"
Tc=6.0 min CN=98 Runoff=0.43 cfs 1,507 cf

Pond 1P: INFILTRATION BASIN WITH RISER Peak Elev=96.02' Storage=3,713 cf Inflow=3.08 cfs 9,559 cf
Discarded=0.39 cfs 9,559 cf Primary=0.00 cfs 0 cf Outflow=0.39 cfs 9,559 cf

Pond 2P: Proposed Subsurface System Peak Elev=92.25' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 3P: Proposed Subsurface System Peak Elev=94.64' Storage=359 cf Inflow=0.43 cfs 1,507 cf
Outflow=0.09 cfs 1,507 cf

Pond 4P: Proposed Subsurface System Peak Elev=94.17' Storage=256 cf Inflow=0.35 cfs 1,219 cf
Outflow=0.09 cfs 1,219 cf

Pond 5P: Proposed Subsurface System Peak Elev=94.53' Storage=263 cf Inflow=0.33 cfs 1,147 cf
Outflow=0.07 cfs 1,147 cf

Total Runoff Area = 53,812 sf Runoff Volume = 13,432 cf Average Runoff Depth = 3.00"
20.29% Pervious = 10,919 sf 79.71% Impervious = 42,893 sf

Summary for Subcatchment 1S: PARKING AND LANDSCAPE AREA

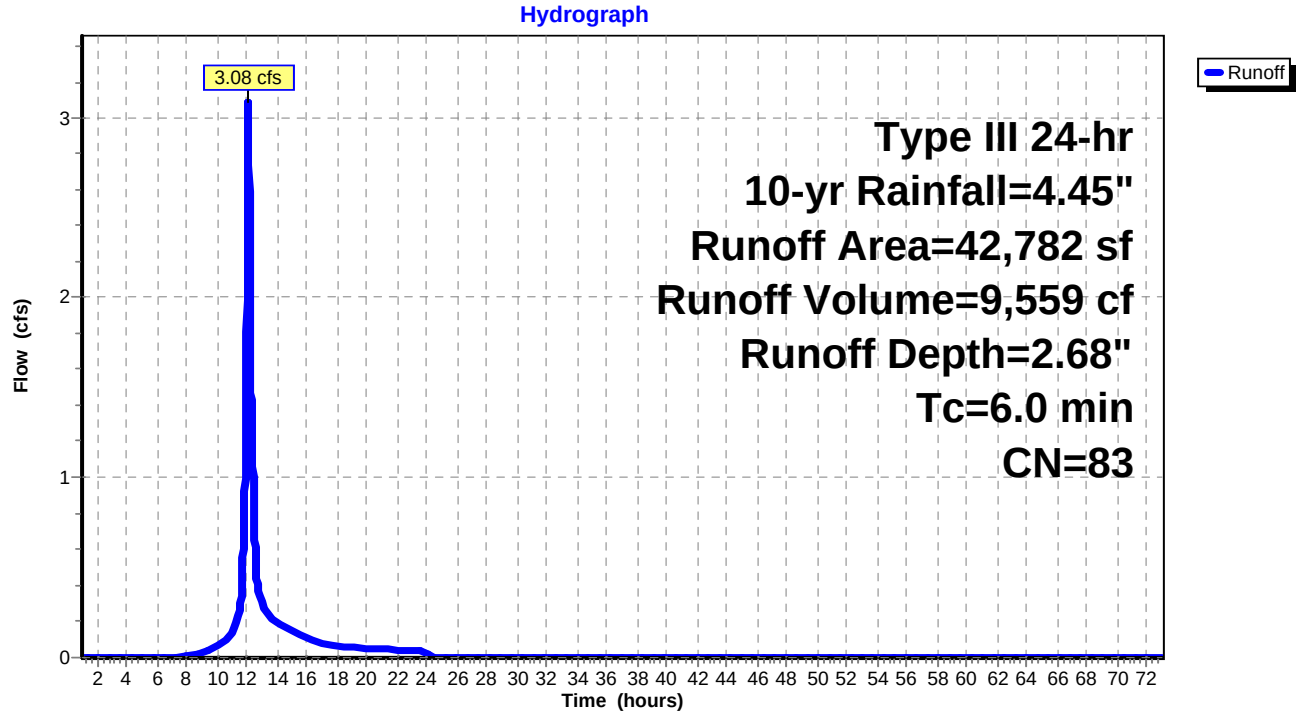
Runoff = 3.08 cfs @ 12.09 hrs, Volume= 9,559 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-yr Rainfall=4.45"

	Area (sf)	CN	Description
	27,893	98	Paved parking, HSG A
	2,620	98	Water Surface, HSG A
	10,919	39	>75% Grass cover, Good, HSG A
*	1,350	98	Roofs, HSG A- Covered Pavilion and Walk in Cooler
	42,782	83	Weighted Average
	10,919		25.52% Pervious Area
	31,863		74.48% Impervious Area

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

Subcatchment 1S: PARKING AND LANDSCAPE AREA



Summary for Subcatchment RD-2: NE ROOF

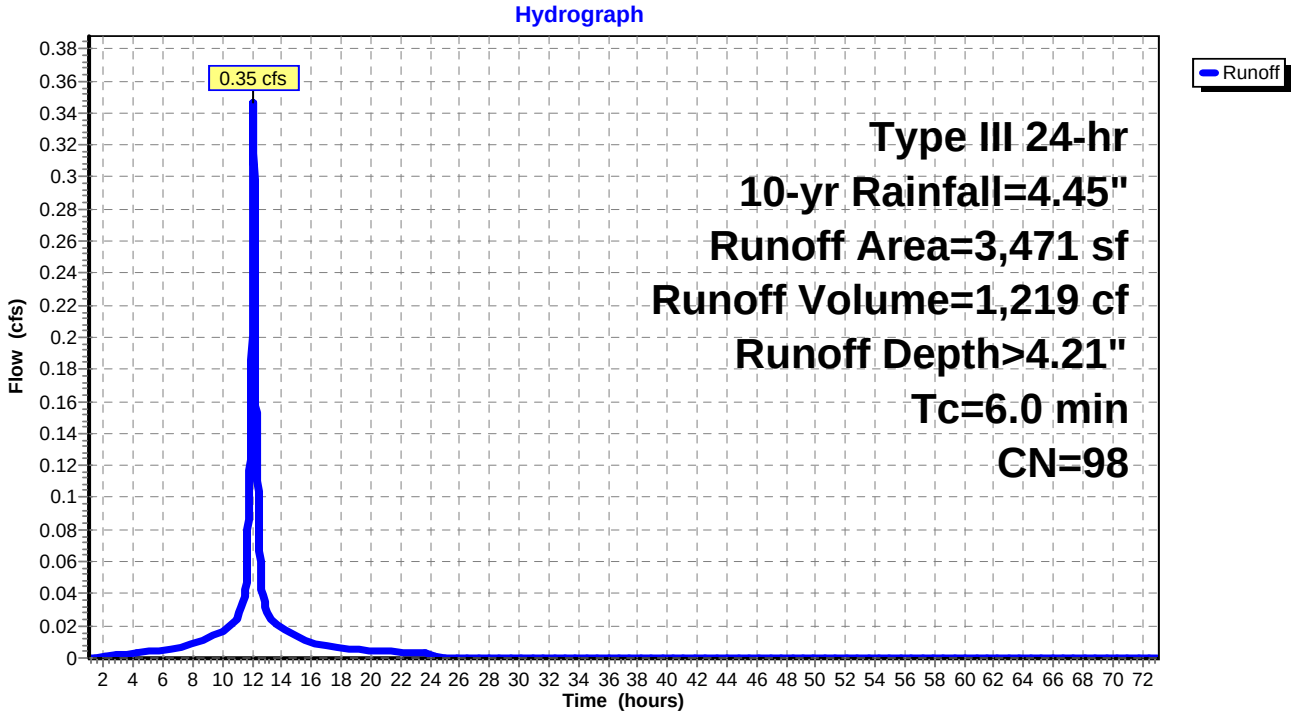
Runoff = 0.35 cfs @ 12.08 hrs, Volume= 1,219 cf, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-yr Rainfall=4.45"

Area (sf)	CN	Description
3,471	98	Roofs, HSG A
3,471		100.00% Impervious Area

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

Subcatchment RD-2: NE ROOF



Summary for Subcatchment RD-3: NE ROOF

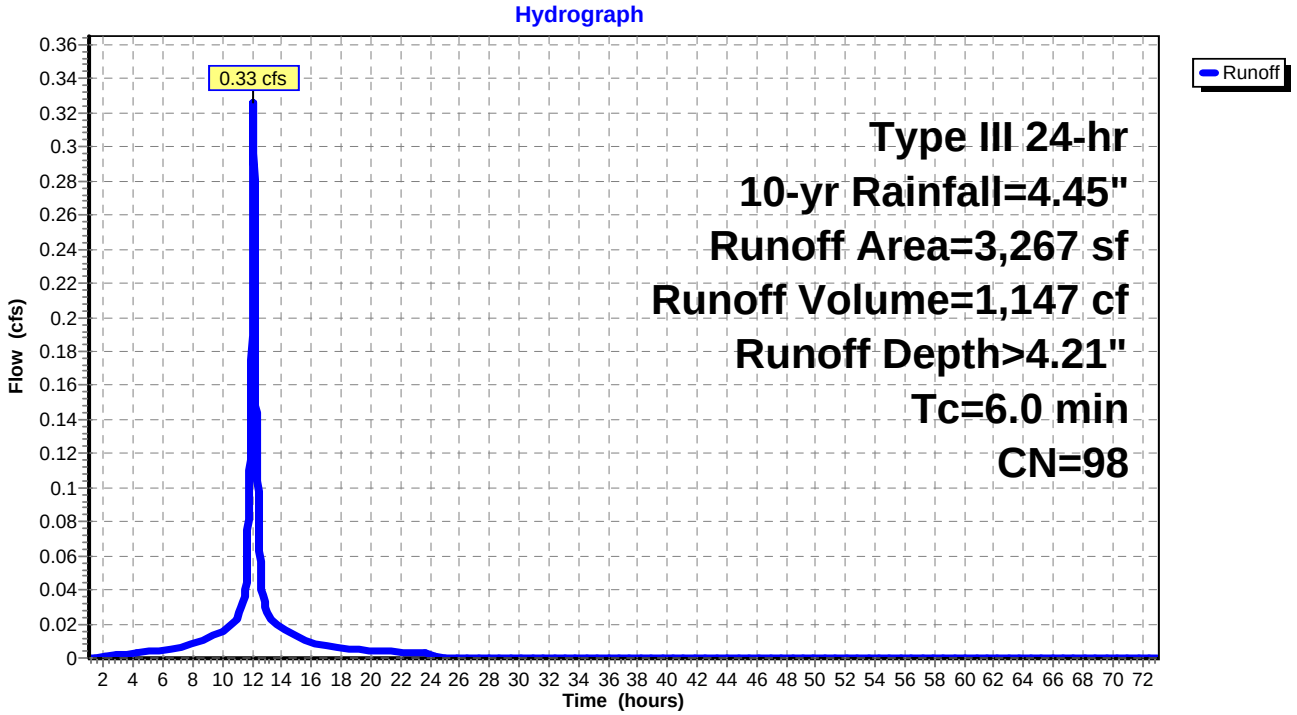
Runoff = 0.33 cfs @ 12.08 hrs, Volume= 1,147 cf, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-yr Rainfall=4.45"

Area (sf)	CN	Description
3,267	98	Roofs, HSG A
3,267		100.00% Impervious Area

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

Subcatchment RD-3: NE ROOF



Summary for Subcatchment RD1: SW ROOF

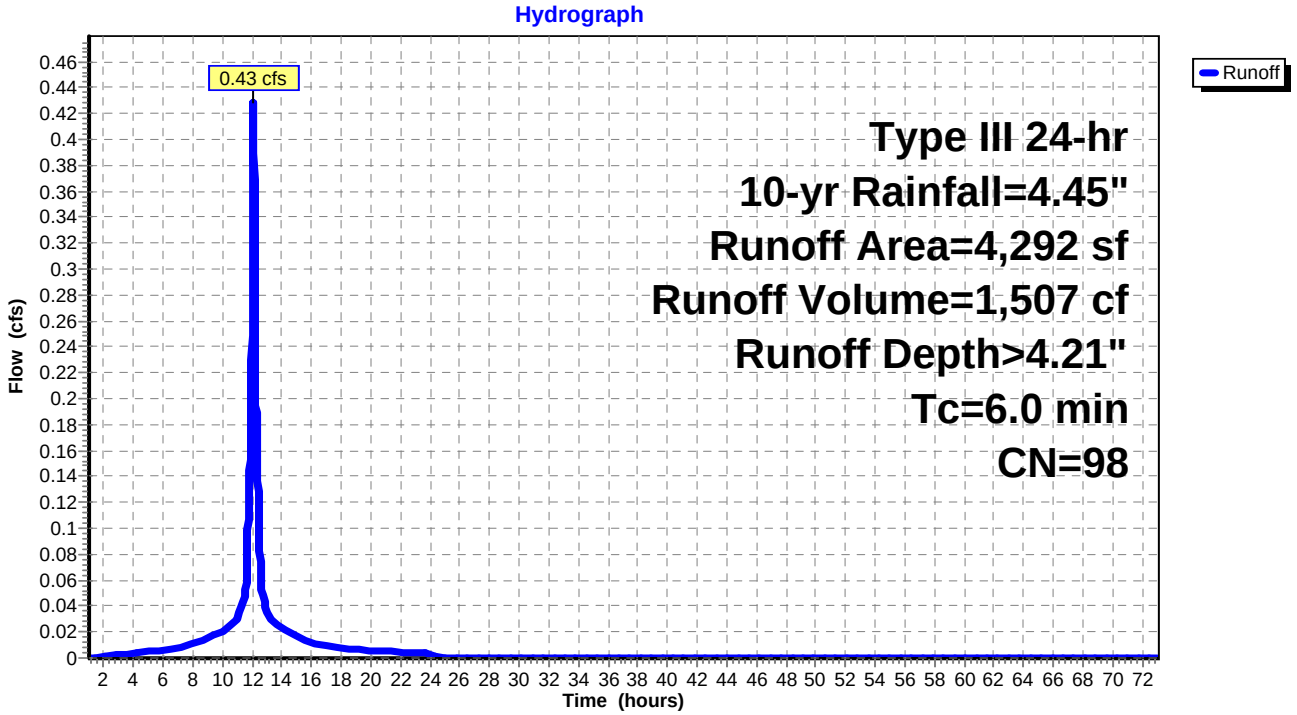
Runoff = 0.43 cfs @ 12.08 hrs, Volume= 1,507 cf, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 10-yr Rainfall=4.45"

Area (sf)	CN	Description
4,292	98	Roofs, HSG A
4,292		100.00% Impervious Area

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

Subcatchment RD1: SW ROOF



Summary for Pond 1P: INFILTRATION BASIN WITH RISER PIPE

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 2.68" for 10-yr event
Inflow = 3.08 cfs @ 12.09 hrs, Volume= 9,559 cf
Outflow = 0.39 cfs @ 12.71 hrs, Volume= 9,559 cf, Atten= 87%, Lag= 37.4 min
Discarded = 0.39 cfs @ 12.71 hrs, Volume= 9,559 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 96.02' @ 12.71 hrs Surf.Area= 2,049 sf Storage= 3,713 cf

Plug-Flow detention time= 98.7 min calculated for 9,558 cf (100% of inflow)
Center-of-Mass det. time= 98.7 min (917.0 - 818.3)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	9,279 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

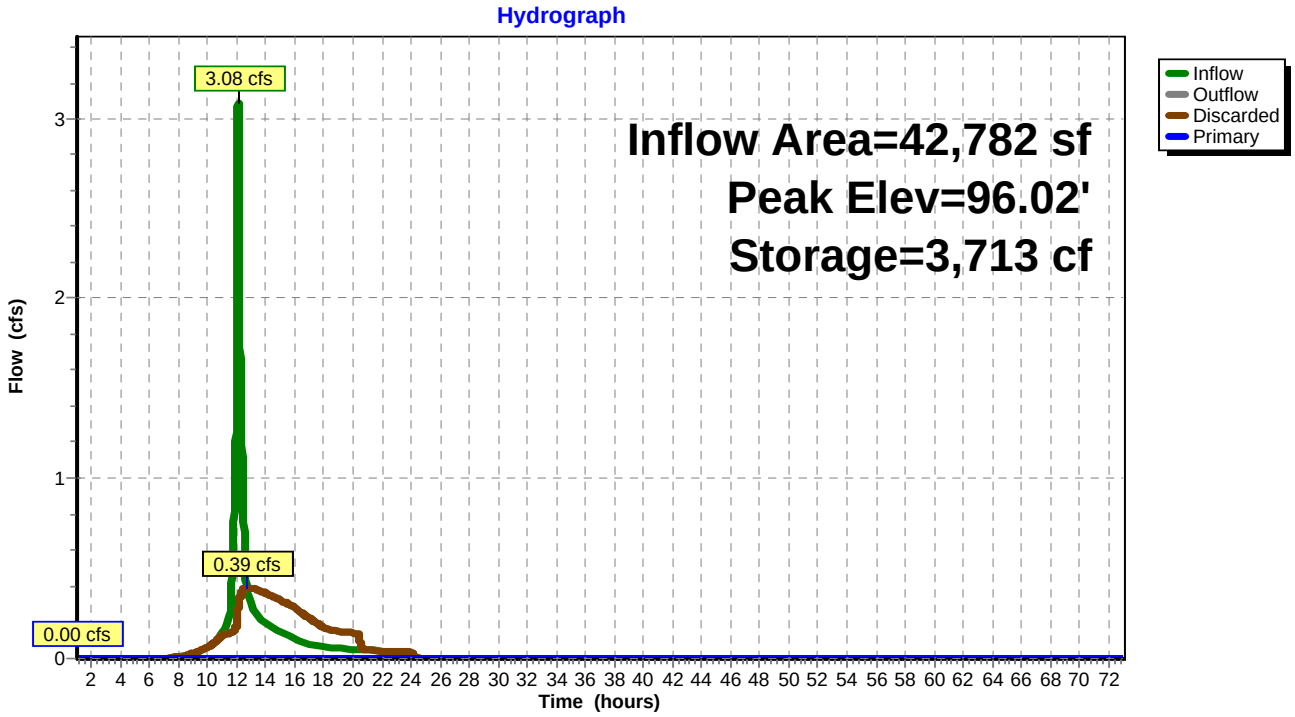
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	699	190.0	0	0	699
94.00	837	146.0	767	767	1,887
95.00	1,489	266.0	1,147	1,914	5,827
96.00	2,038	283.0	1,756	3,671	6,619
97.00	2,620	300.0	2,323	5,994	7,460
98.00	4,000	425.0	3,286	9,279	14,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	93.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	95.00'	**8.0" Round Culvert** L= 12.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.88' S= 0.0096 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Device 2	96.80'	**18.0" Horiz. 18" DIA RISER PIPE** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.39 cfs @ 12.71 hrs HW=96.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=93.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)
└**3=18" DIA RISER PIPE** (Controls 0.00 cfs)

Pond 1P: INFILTRATION BASIN WITH RISER PIPE



Summary for Pond 2P: Proposed Subsurface System

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 92.25' @ 1.00 hrs Surf.Area= 851 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

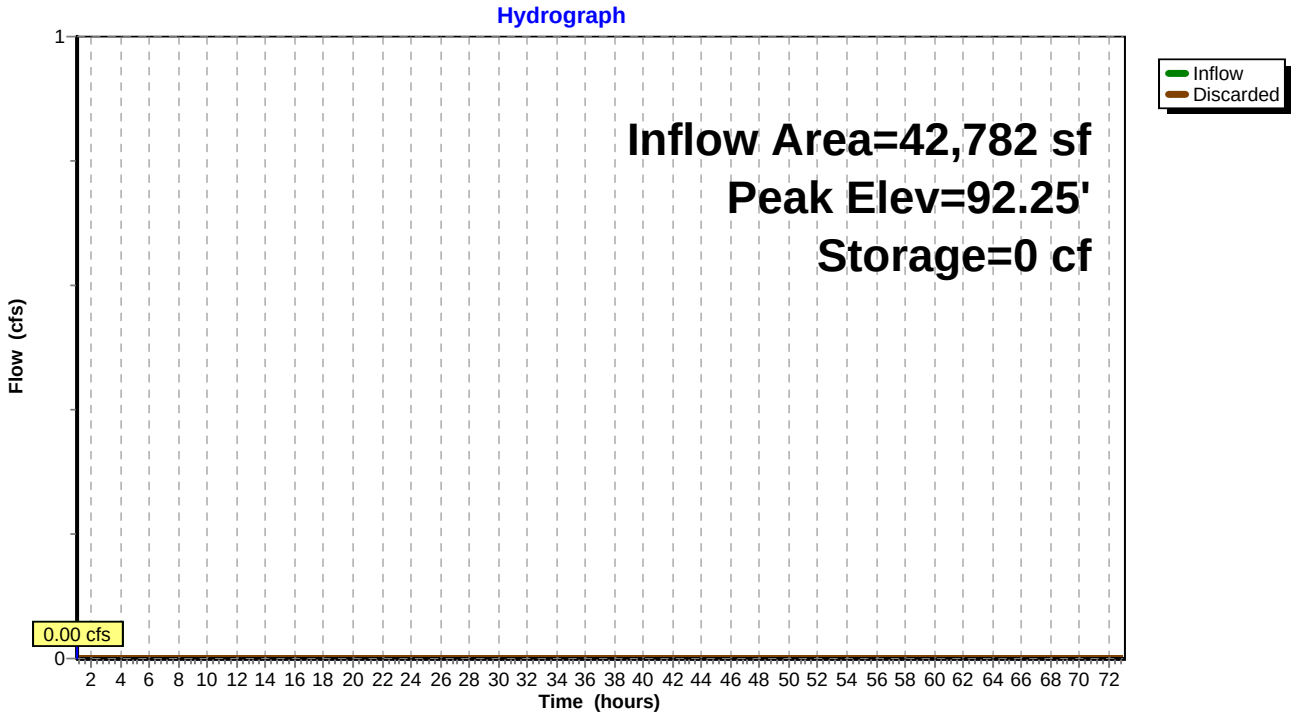
Volume	Invert	Avail.Storage	Storage Description
#1A	92.25'	684 cf	**30.40'W x 28.00'L x 4.50'H Field A** 3,830 cf Overall - 2,120 cf Embedded = 1,711 cf x 40.0% Voids
#2A	92.75'	1,596 cf	**Concrete Galley 4x4x4** x 36 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 36 Chambers in 6 Rows
		2,281 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.25'	**8.270 in/hr Exfiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=92.25' (Free Discharge)
↑**1=Exfiltration** (Controls 0.00 cfs)

Pond 2P: Proposed Subsurface System



Summary for Pond 3P: Proposed Subsurface System

Inflow Area = 4,292 sf,100.00% Impervious, Inflow Depth > 4.21" for 10-yr event
Inflow = 0.43 cfs @ 12.08 hrs, Volume= 1,507 cf
Outflow = 0.09 cfs @ 12.49 hrs, Volume= 1,507 cf, Atten= 78%, Lag= 24.3 min
Discarded = 0.09 cfs @ 12.49 hrs, Volume= 1,507 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 94.64' @ 12.49 hrs Surf.Area= 346 sf Storage= 359 cf

Plug-Flow detention time= 21.9 min calculated for 1,507 cf (100% of inflow)
Center-of-Mass det. time= 21.9 min (771.9 - 750.0)

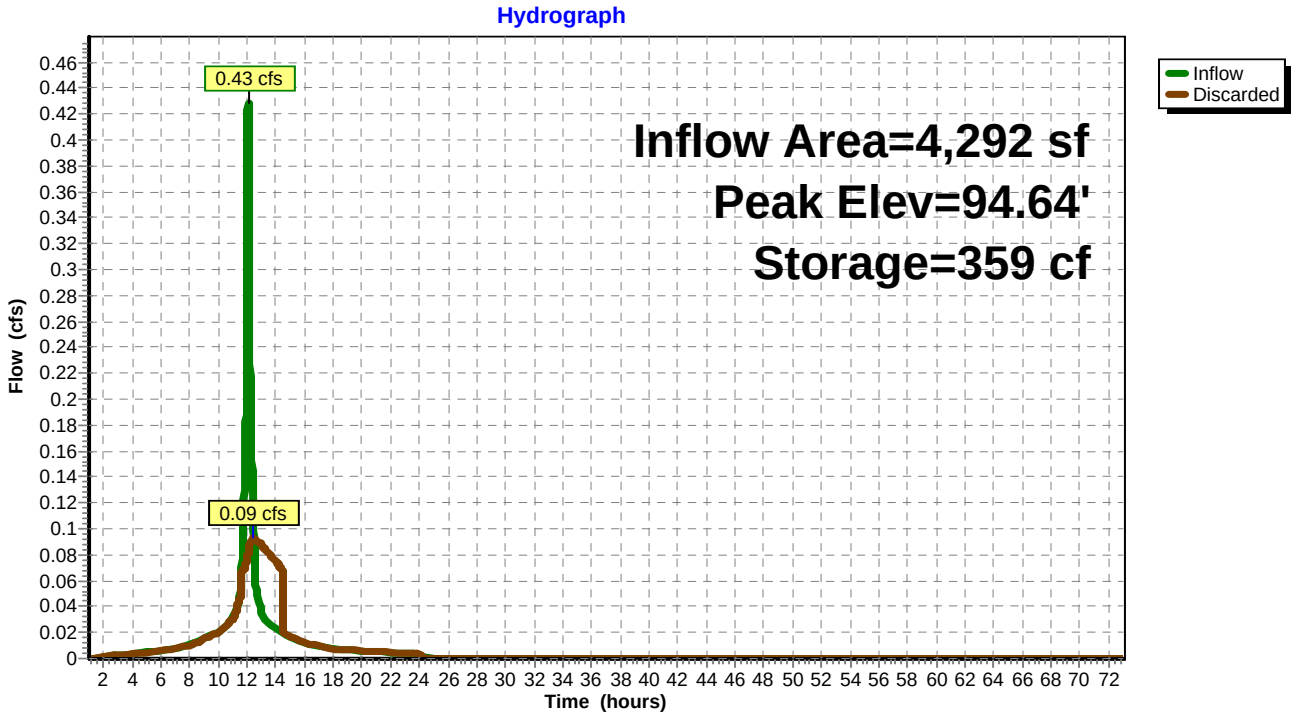
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.09 cfs @ 12.49 hrs HW=94.64' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 3P: Proposed Subsurface System



Summary for Pond 4P: Proposed Subsurface System

Inflow Area = 3,471 sf,100.00% Impervious, Inflow Depth > 4.21" for 10-yr event
Inflow = 0.35 cfs @ 12.08 hrs, Volume= 1,219 cf
Outflow = 0.09 cfs @ 12.45 hrs, Volume= 1,219 cf, Atten= 75%, Lag= 22.2 min
Discarded = 0.09 cfs @ 12.45 hrs, Volume= 1,219 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 94.17' @ 12.45 hrs Surf.Area= 346 sf Storage= 256 cf

Plug-Flow detention time= 15.8 min calculated for 1,219 cf (100% of inflow)
Center-of-Mass det. time= 15.8 min (765.8 - 750.0)

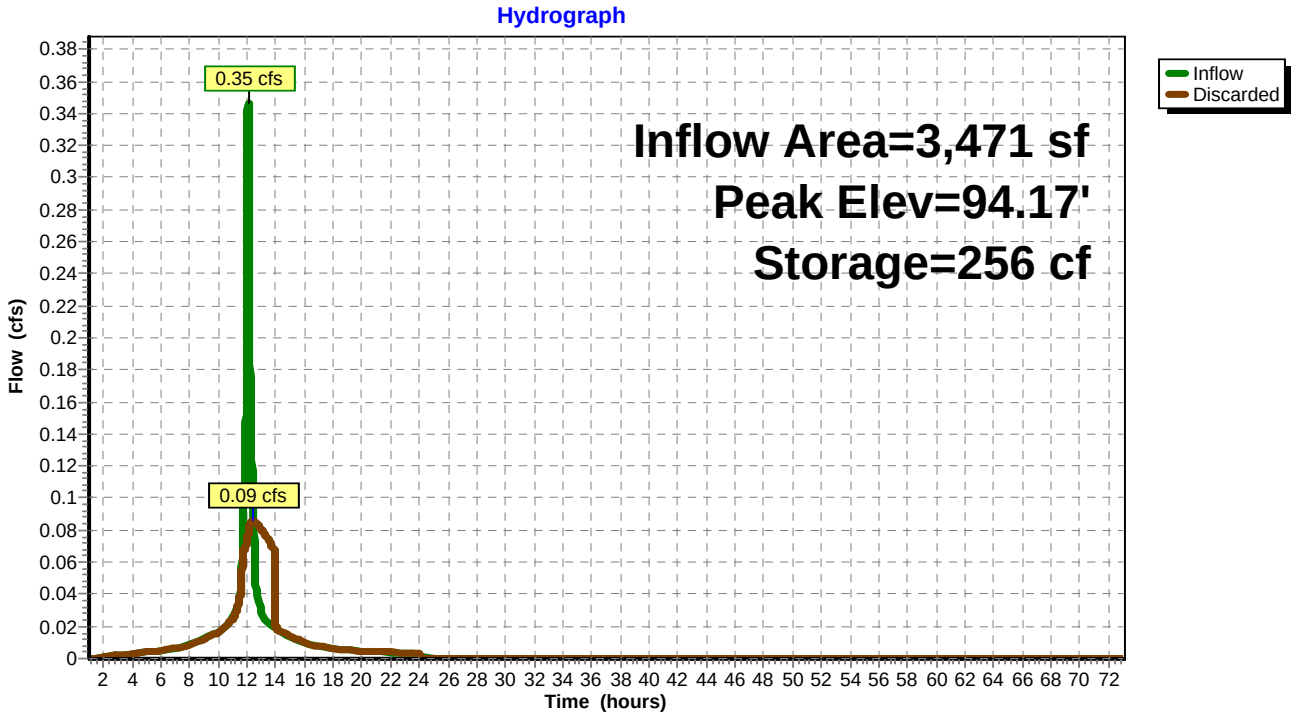
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.09 cfs @ 12.45 hrs HW=94.17' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 4P: Proposed Subsurface System



Summary for Pond 5P: Proposed Subsurface System

Inflow Area = 3,267 sf,100.00% Impervious, Inflow Depth > 4.21" for 10-yr event
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 1,147 cf
Outflow = 0.07 cfs @ 12.47 hrs, Volume= 1,147 cf, Atten= 77%, Lag= 23.5 min
Discarded = 0.07 cfs @ 12.47 hrs, Volume= 1,147 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 94.53' @ 12.47 hrs Surf.Area= 275 sf Storage= 263 cf

Plug-Flow detention time= 19.6 min calculated for 1,147 cf (100% of inflow)
Center-of-Mass det. time= 19.6 min (769.7 - 750.0)

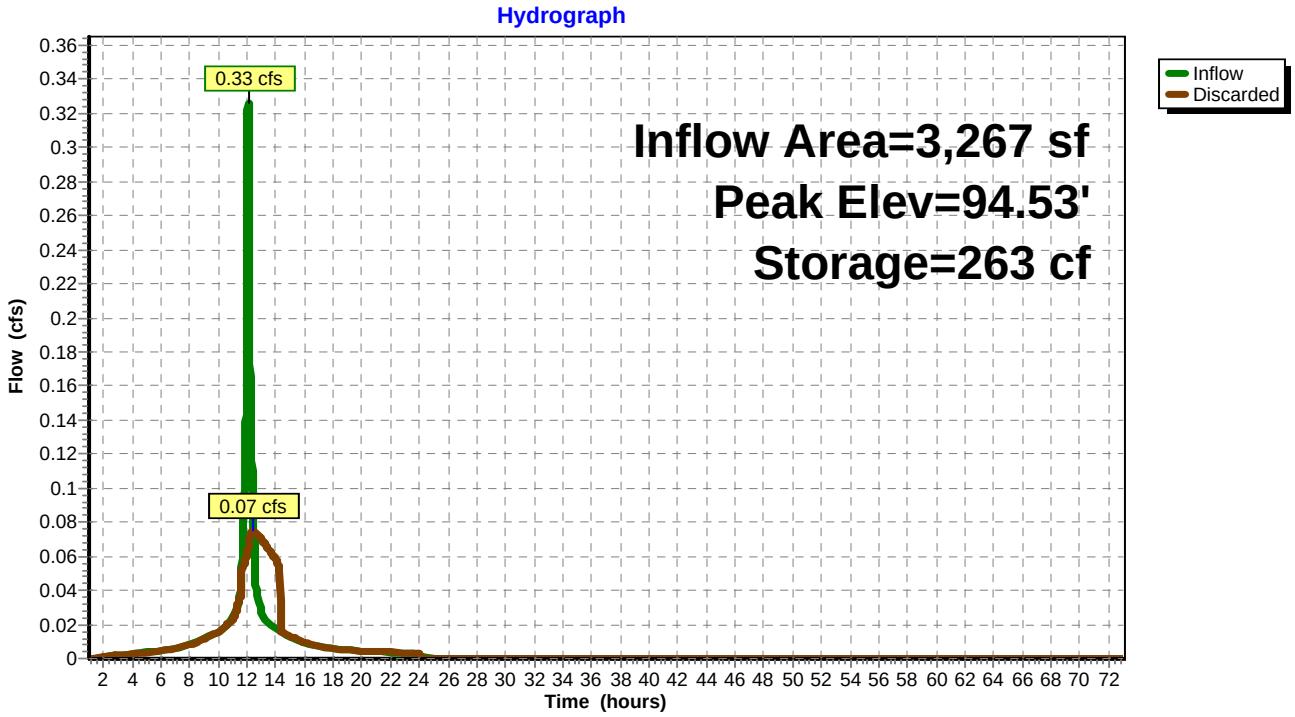
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	283 cf	**17.20'W x 16.00'L x 4.50'H Field A** 1,238 cf Overall - 530 cf Embedded = 709 cf x 40.0% Voids
#2A	93.30'	399 cf	**Concrete Galley 4x4x4** x 9 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 9 Chambers in 3 Rows
		683 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.07 cfs @ 12.47 hrs HW=94.53' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.07 cfs)

Pond 5P: Proposed Subsurface System



Time span=1.00-73.00 hrs, dt=0.010 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PARKING AND Runoff Area=42,782 sf 74.48% Impervious Runoff Depth=3.55"
Tc=6.0 min CN=83 Runoff=4.06 cfs 12,647 cf

Subcatchment RD-2: NE ROOF Runoff Area=3,471 sf 100.00% Impervious Runoff Depth>5.17"
Tc=6.0 min CN=98 Runoff=0.42 cfs 1,496 cf

Subcatchment RD-3: NE ROOF Runoff Area=3,267 sf 100.00% Impervious Runoff Depth>5.17"
Tc=6.0 min CN=98 Runoff=0.40 cfs 1,408 cf

Subcatchment RD1: SW ROOF Runoff Area=4,292 sf 100.00% Impervious Runoff Depth>5.17"
Tc=6.0 min CN=98 Runoff=0.52 cfs 1,850 cf

Pond 1P: INFILTRATION BASIN WITH RISER Peak Elev=96.69' Storage=5,218 cf Inflow=4.06 cfs 12,647 cf
Discarded=0.47 cfs 12,647 cf Primary=0.00 cfs 0 cf Outflow=0.47 cfs 12,647 cf

Pond 2P: Proposed Subsurface System Peak Elev=92.25' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 3P: Proposed Subsurface System Peak Elev=95.19' Storage=479 cf Inflow=0.52 cfs 1,850 cf
Outflow=0.10 cfs 1,850 cf

Pond 4P: Proposed Subsurface System Peak Elev=94.60' Storage=351 cf Inflow=0.42 cfs 1,496 cf
Outflow=0.09 cfs 1,496 cf

Pond 5P: Proposed Subsurface System Peak Elev=95.06' Storage=353 cf Inflow=0.40 cfs 1,408 cf
Outflow=0.08 cfs 1,408 cf

Total Runoff Area = 53,812 sf Runoff Volume = 17,401 cf Average Runoff Depth = 3.88"
20.29% Pervious = 10,919 sf 79.71% Impervious = 42,893 sf

Summary for Subcatchment 1S: PARKING AND LANDSCAPE AREA

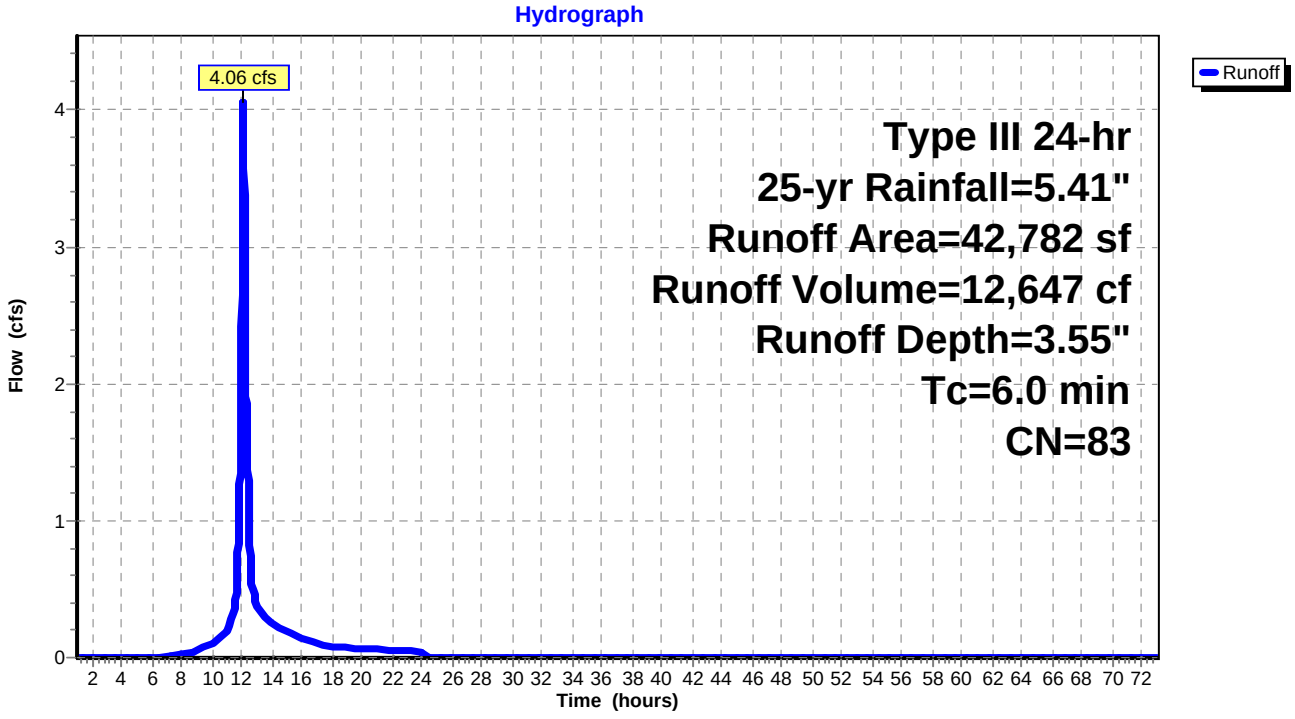
Runoff = 4.06 cfs @ 12.09 hrs, Volume= 12,647 cf, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-yr Rainfall=5.41"

	Area (sf)	CN	Description
	27,893	98	Paved parking, HSG A
	2,620	98	Water Surface, HSG A
	10,919	39	>75% Grass cover, Good, HSG A
*	1,350	98	Roofs, HSG A- Covered Pavilion and Walk in Cooler
	42,782	83	Weighted Average
	10,919		25.52% Pervious Area
	31,863		74.48% Impervious Area

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

Subcatchment 1S: PARKING AND LANDSCAPE AREA



Summary for Subcatchment RD-2: NE ROOF

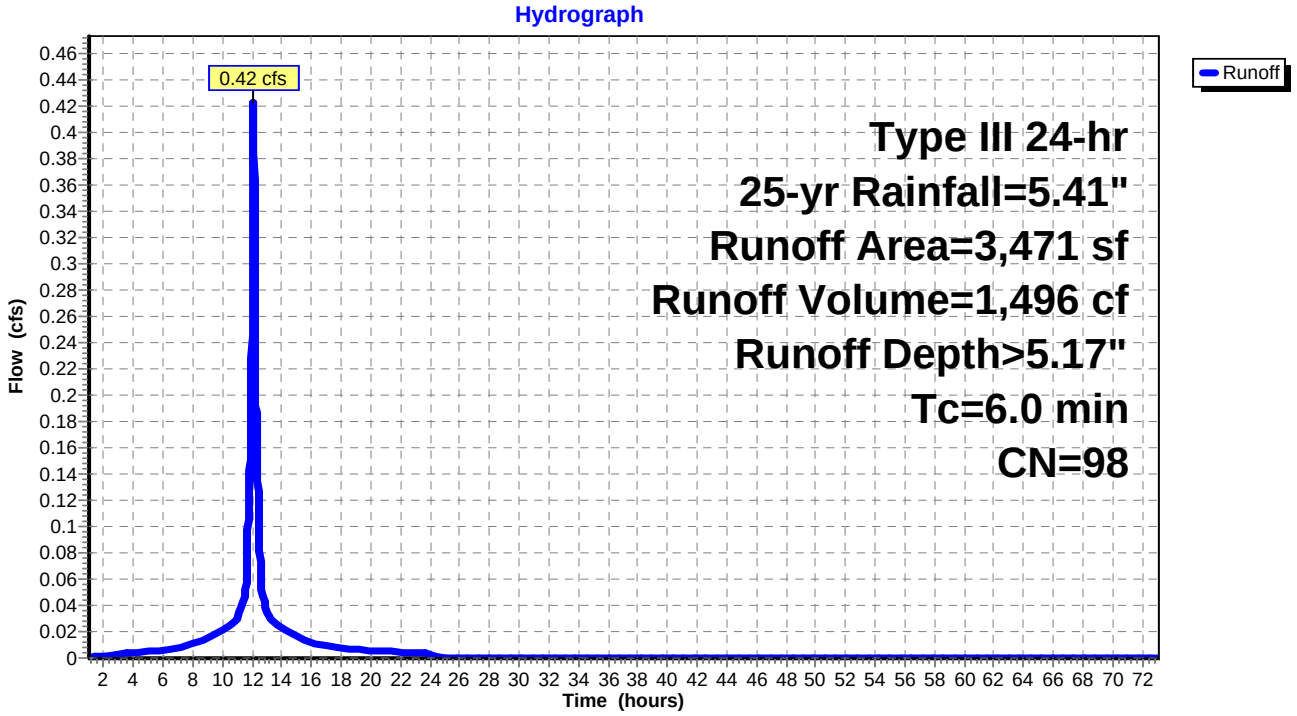
Runoff = 0.42 cfs @ 12.08 hrs, Volume= 1,496 cf, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-yr Rainfall=5.41"

Area (sf)	CN	Description
3,471	98	Roofs, HSG A
3,471		100.00% Impervious Area

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

Subcatchment RD-2: NE ROOF



Summary for Subcatchment RD-3: NE ROOF

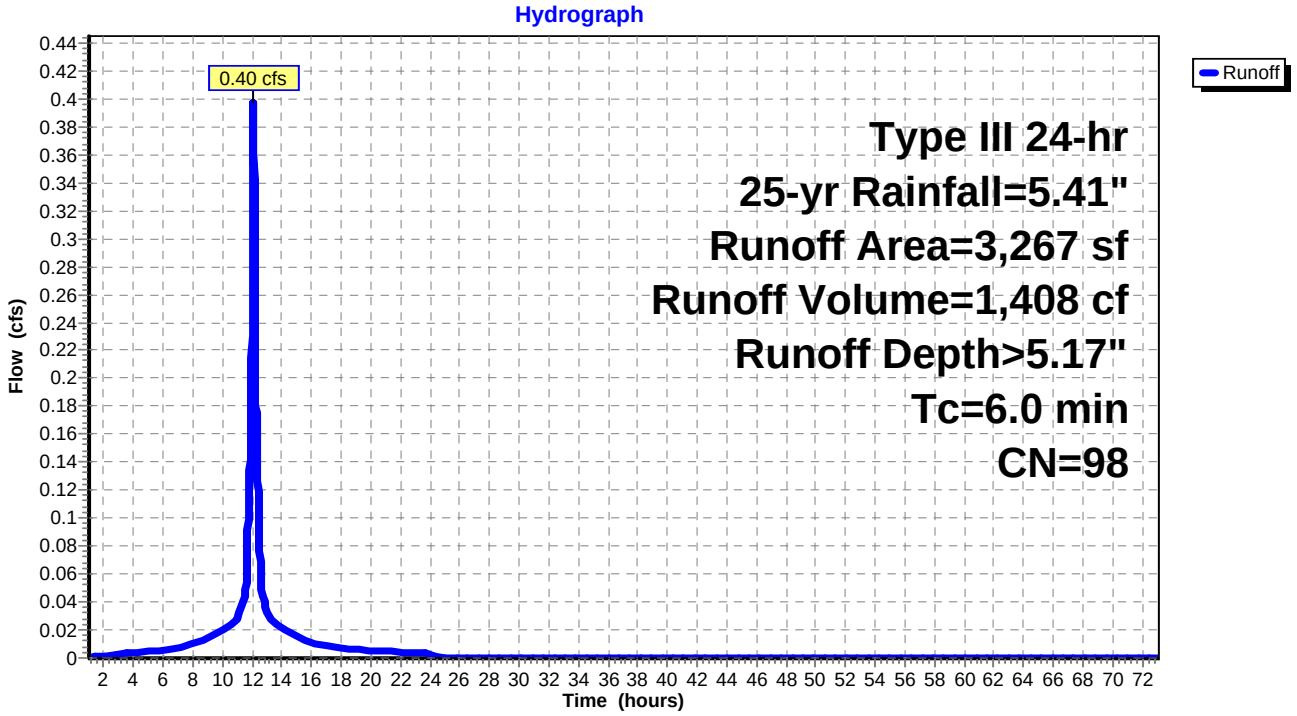
Runoff = 0.40 cfs @ 12.08 hrs, Volume= 1,408 cf, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-yr Rainfall=5.41"

Area (sf)	CN	Description
3,267	98	Roofs, HSG A
3,267		100.00% Impervious Area

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

Subcatchment RD-3: NE ROOF



Summary for Subcatchment RD1: SW ROOF

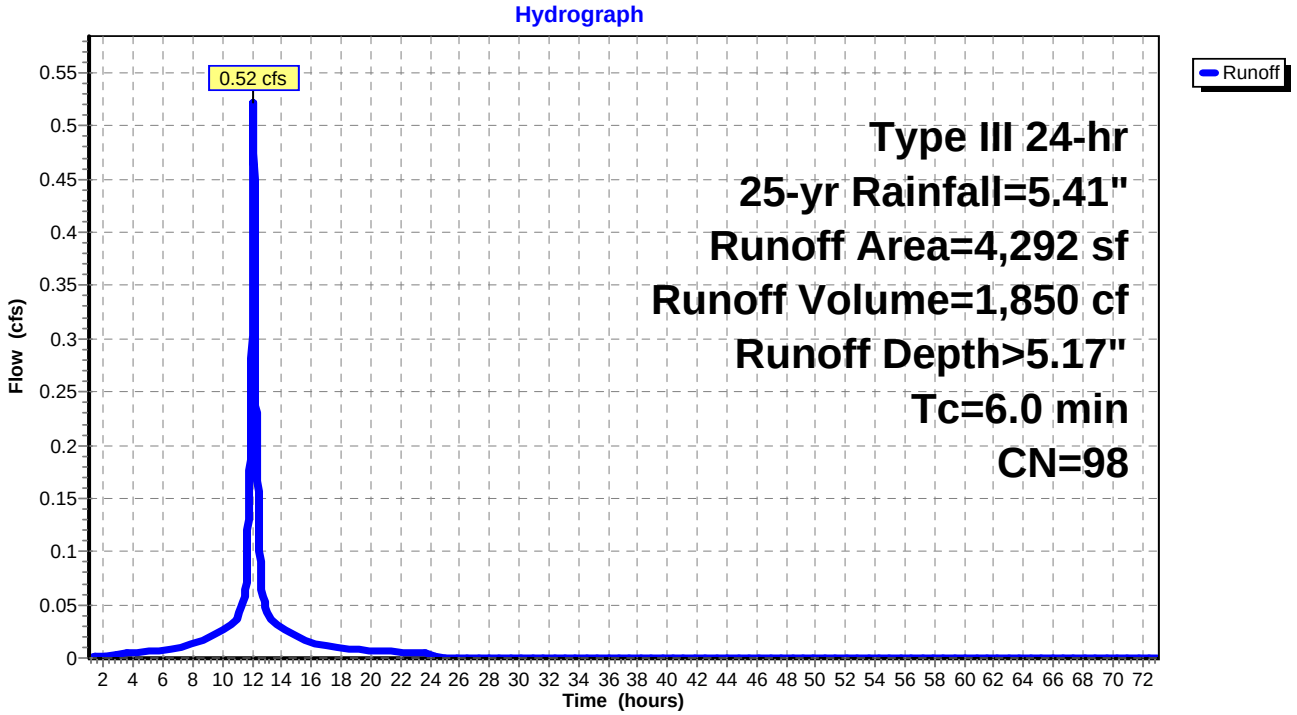
Runoff = 0.52 cfs @ 12.08 hrs, Volume= 1,850 cf, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 25-yr Rainfall=5.41"

Area (sf)	CN	Description
4,292	98	Roofs, HSG A
4,292		100.00% Impervious Area

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

Subcatchment RD1: SW ROOF



Summary for Pond 1P: INFILTRATION BASIN WITH RISER PIPE

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 3.55" for 25-yr event
Inflow = 4.06 cfs @ 12.09 hrs, Volume= 12,647 cf
Outflow = 0.47 cfs @ 12.79 hrs, Volume= 12,647 cf, Atten= 89%, Lag= 42.3 min
Discarded = 0.47 cfs @ 12.79 hrs, Volume= 12,647 cf
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 96.69' @ 12.79 hrs Surf.Area= 2,434 sf Storage= 5,218 cf

Plug-Flow detention time= 120.4 min calculated for 12,645 cf (100% of inflow)
Center-of-Mass det. time= 120.4 min (930.7 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	9,279 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

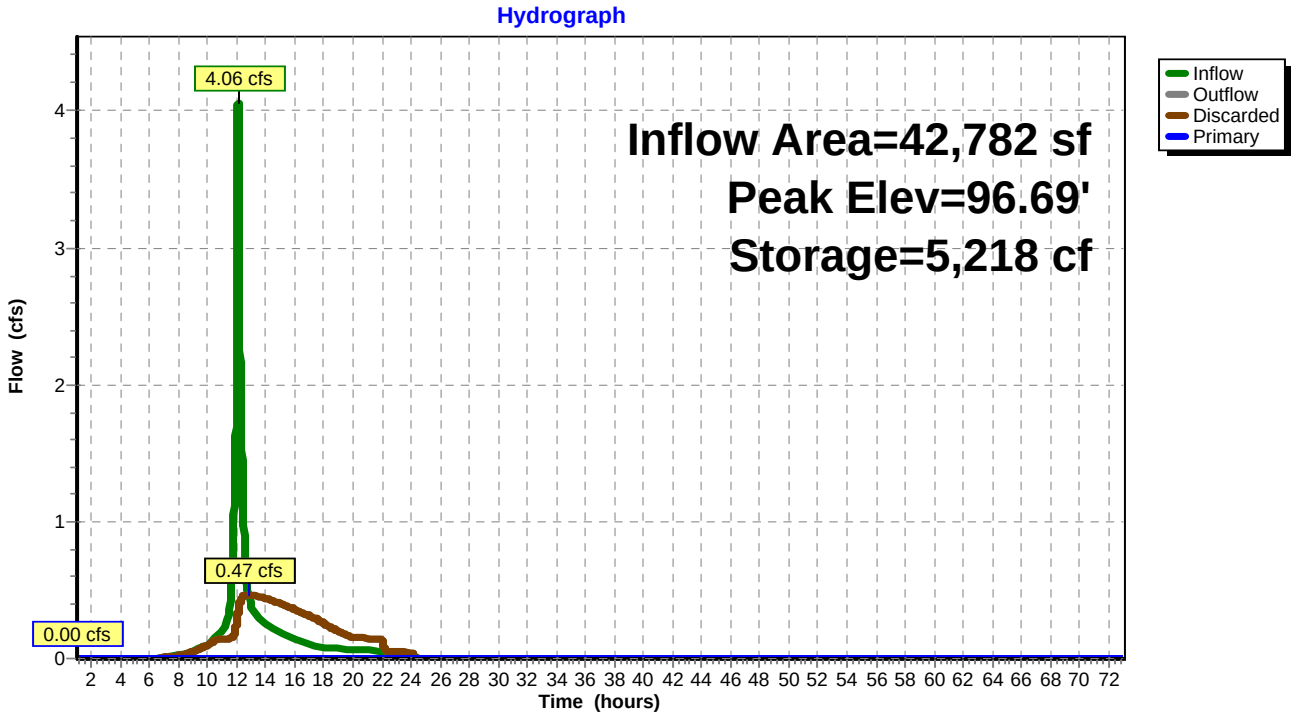
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	699	190.0	0	0	699
94.00	837	146.0	767	767	1,887
95.00	1,489	266.0	1,147	1,914	5,827
96.00	2,038	283.0	1,756	3,671	6,619
97.00	2,620	300.0	2,323	5,994	7,460
98.00	4,000	425.0	3,286	9,279	14,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	93.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	95.00'	**8.0" Round Culvert** L= 12.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.88' S= 0.0096 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Device 2	96.80'	**18.0" Horiz. 18" DIA RISER PIPE** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.47 cfs @ 12.79 hrs HW=96.69' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=93.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)
└**3=18" DIA RISER PIPE** (Controls 0.00 cfs)

Pond 1P: INFILTRATION BASIN WITH RISER PIPE



Summary for Pond 2P: Proposed Subsurface System

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 92.25' @ 1.00 hrs Surf.Area= 851 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

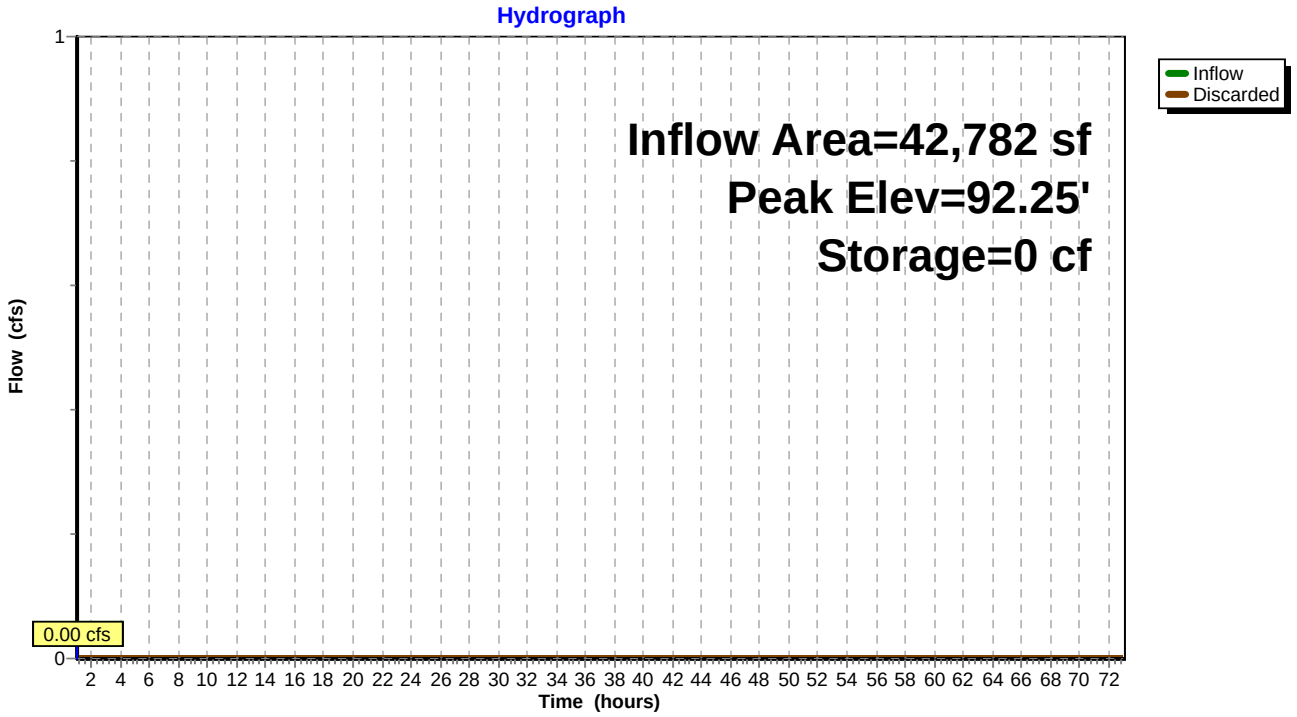
Volume	Invert	Avail.Storage	Storage Description
#1A	92.25'	684 cf	**30.40'W x 28.00'L x 4.50'H Field A** 3,830 cf Overall - 2,120 cf Embedded = 1,711 cf x 40.0% Voids
#2A	92.75'	1,596 cf	**Concrete Galley 4x4x4** x 36 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 36 Chambers in 6 Rows
		2,281 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.25'	**8.270 in/hr Exfiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 1.00 hrs HW=92.25' (Free Discharge)
↑**1=Exfiltration** (Controls 0.00 cfs)

Pond 2P: Proposed Subsurface System



Summary for Pond 3P: Proposed Subsurface System

Inflow Area = 4,292 sf,100.00% Impervious, Inflow Depth > 5.17" for 25-yr event
Inflow = 0.52 cfs @ 12.08 hrs, Volume= 1,850 cf
Outflow = 0.10 cfs @ 12.51 hrs, Volume= 1,850 cf, Atten= 81%, Lag= 25.9 min
Discarded = 0.10 cfs @ 12.51 hrs, Volume= 1,850 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 95.19' @ 12.51 hrs Surf.Area= 346 sf Storage= 479 cf

Plug-Flow detention time= 28.6 min calculated for 1,850 cf (100% of inflow)
Center-of-Mass det. time= 28.6 min (775.4 - 746.8)

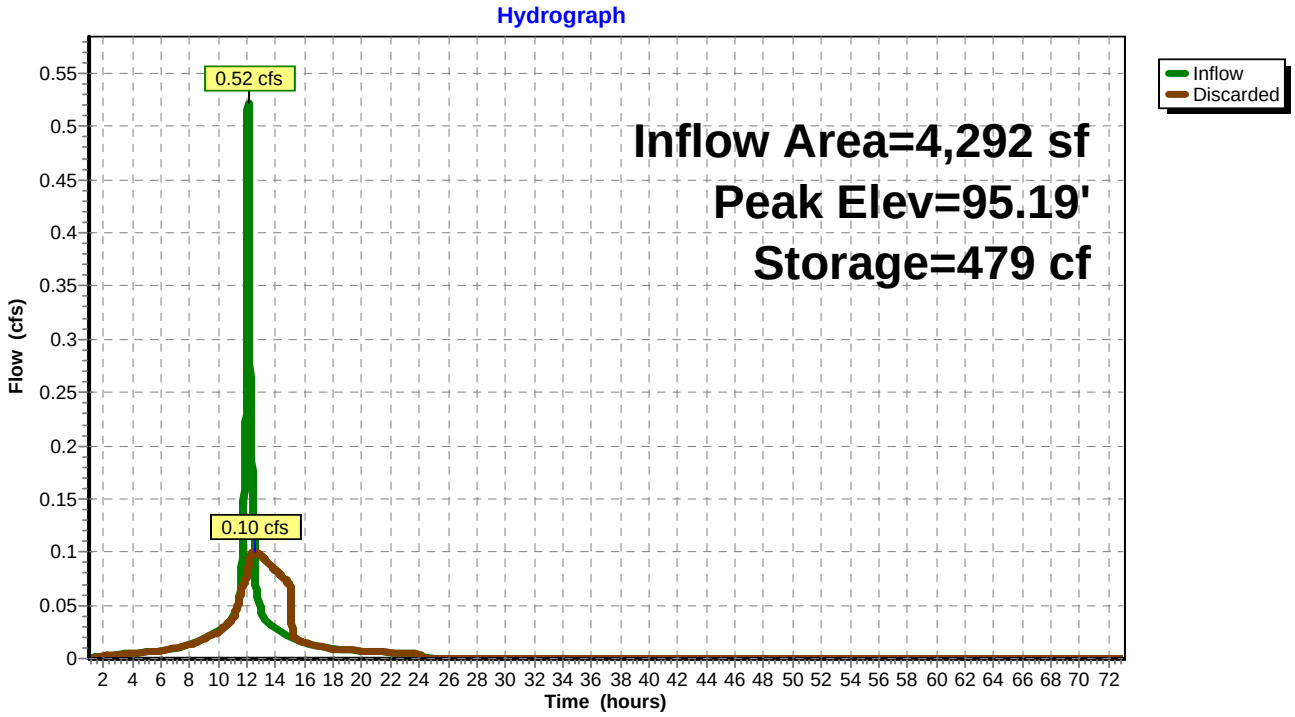
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.10 cfs @ 12.51 hrs HW=95.19' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.10 cfs)

Pond 3P: Proposed Subsurface System



Summary for Pond 4P: Proposed Subsurface System

Inflow Area = 3,471 sf,100.00% Impervious, Inflow Depth > 5.17" for 25-yr event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 1,496 cf
Outflow = 0.09 cfs @ 12.49 hrs, Volume= 1,496 cf, Atten= 78%, Lag= 24.2 min
Discarded = 0.09 cfs @ 12.49 hrs, Volume= 1,496 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 94.60' @ 12.49 hrs Surf.Area= 346 sf Storage= 351 cf

Plug-Flow detention time= 21.3 min calculated for 1,496 cf (100% of inflow)
Center-of-Mass det. time= 21.3 min (768.0 - 746.8)

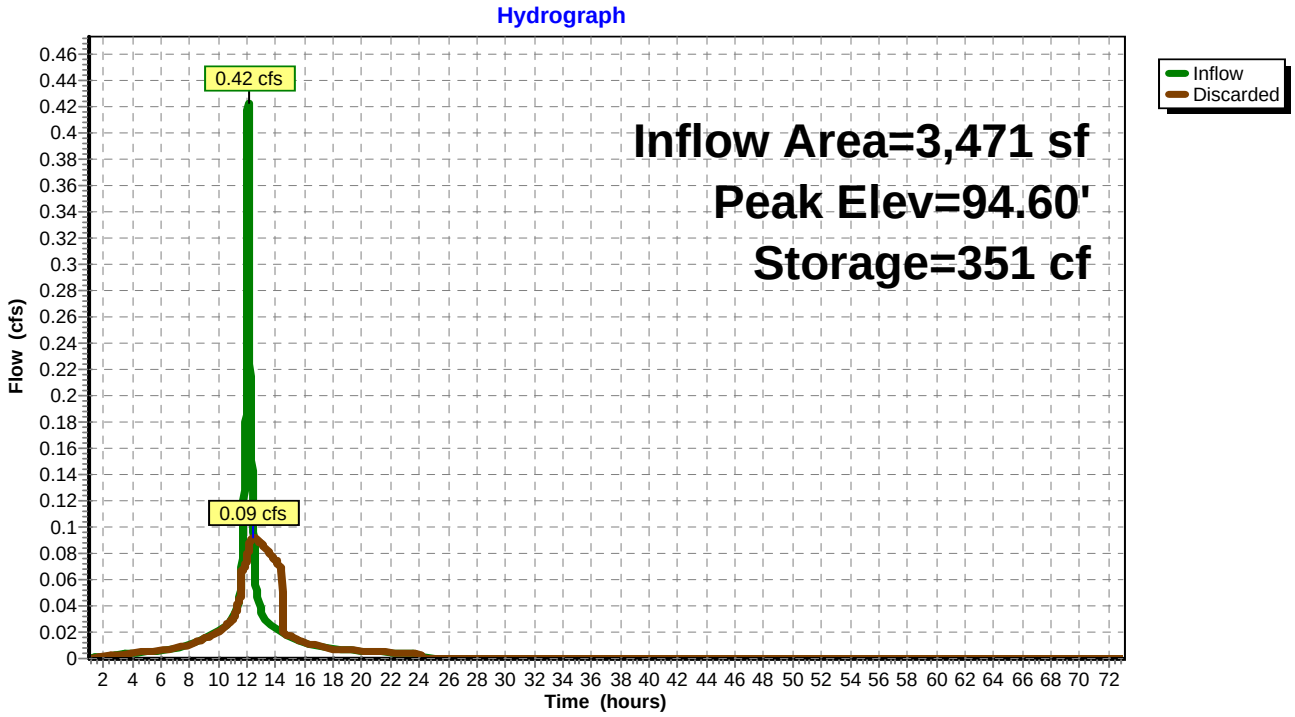
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.09 cfs @ 12.49 hrs HW=94.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 4P: Proposed Subsurface System



Summary for Pond 5P: Proposed Subsurface System

Inflow Area = 3,267 sf,100.00% Impervious, Inflow Depth > 5.17" for 25-yr event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 1,408 cf
Outflow = 0.08 cfs @ 12.50 hrs, Volume= 1,408 cf, Atten= 79%, Lag= 25.1 min
Discarded = 0.08 cfs @ 12.50 hrs, Volume= 1,408 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 95.06' @ 12.50 hrs Surf.Area= 275 sf Storage= 353 cf

Plug-Flow detention time= 25.7 min calculated for 1,408 cf (100% of inflow)
Center-of-Mass det. time= 25.7 min (772.4 - 746.8)

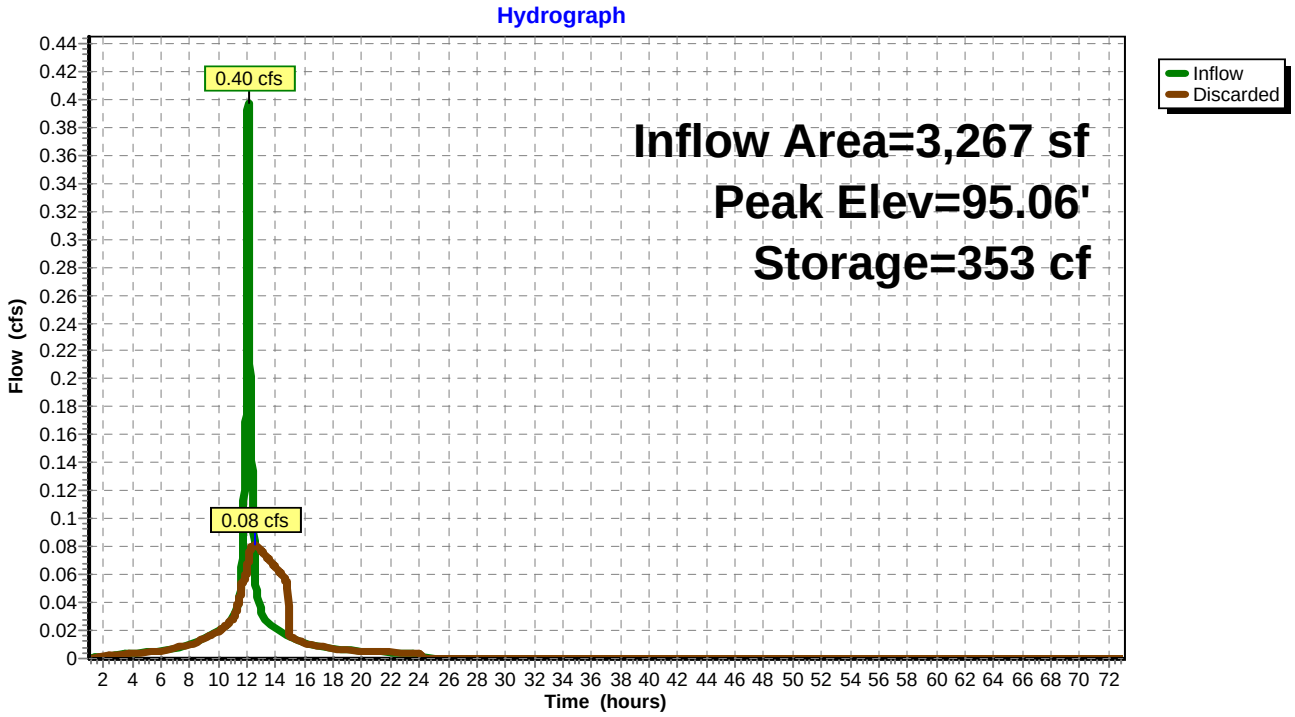
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	283 cf	**17.20'W x 16.00'L x 4.50'H Field A** 1,238 cf Overall - 530 cf Embedded = 709 cf x 40.0% Voids
#2A	93.30'	399 cf	**Concrete Galley 4x4x4** x 9 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 9 Chambers in 3 Rows
		683 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.08 cfs @ 12.50 hrs HW=95.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Pond 5P: Proposed Subsurface System



Time span=1.00-73.00 hrs, dt=0.010 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PARKING AND Runoff Area=42,782 sf 74.48% Impervious Runoff Depth=4.92"
Tc=6.0 min CN=83 Runoff=5.57 cfs 17,555 cf

Subcatchment RD-2: NE ROOF Runoff Area=3,471 sf 100.00% Impervious Runoff Depth>6.65"
Tc=6.0 min CN=98 Runoff=0.54 cfs 1,923 cf

Subcatchment RD-3: NE ROOF Runoff Area=3,267 sf 100.00% Impervious Runoff Depth>6.65"
Tc=6.0 min CN=98 Runoff=0.51 cfs 1,810 cf

Subcatchment RD1: SW ROOF Runoff Area=4,292 sf 100.00% Impervious Runoff Depth>6.65"
Tc=6.0 min CN=98 Runoff=0.67 cfs 2,378 cf

Pond 1P: INFILTRATION BASIN WITH RISER Peak Elev=97.04' Storage=6,100 cf Inflow=5.57 cfs 17,555 cf
Discarded=0.51 cfs 15,161 cf Primary=1.67 cfs 2,394 cf Outflow=2.18 cfs 17,555 cf

Pond 2P: Proposed Subsurface System Peak Elev=95.48' Storage=1,741 cf Inflow=1.67 cfs 2,394 cf
Outflow=0.24 cfs 2,394 cf

Pond 3P: Proposed Subsurface System Peak Elev=96.08' Storage=672 cf Inflow=0.67 cfs 2,378 cf
Outflow=0.11 cfs 2,378 cf

Pond 4P: Proposed Subsurface System Peak Elev=95.29' Storage=501 cf Inflow=0.54 cfs 1,923 cf
Outflow=0.10 cfs 1,923 cf

Pond 5P: Proposed Subsurface System Peak Elev=95.91' Storage=496 cf Inflow=0.51 cfs 1,810 cf
Outflow=0.09 cfs 1,810 cf

Total Runoff Area = 53,812 sf Runoff Volume = 23,667 cf Average Runoff Depth = 5.28"
20.29% Pervious = 10,919 sf 79.71% Impervious = 42,893 sf

Summary for Subcatchment 1S: PARKING AND LANDSCAPE AREA

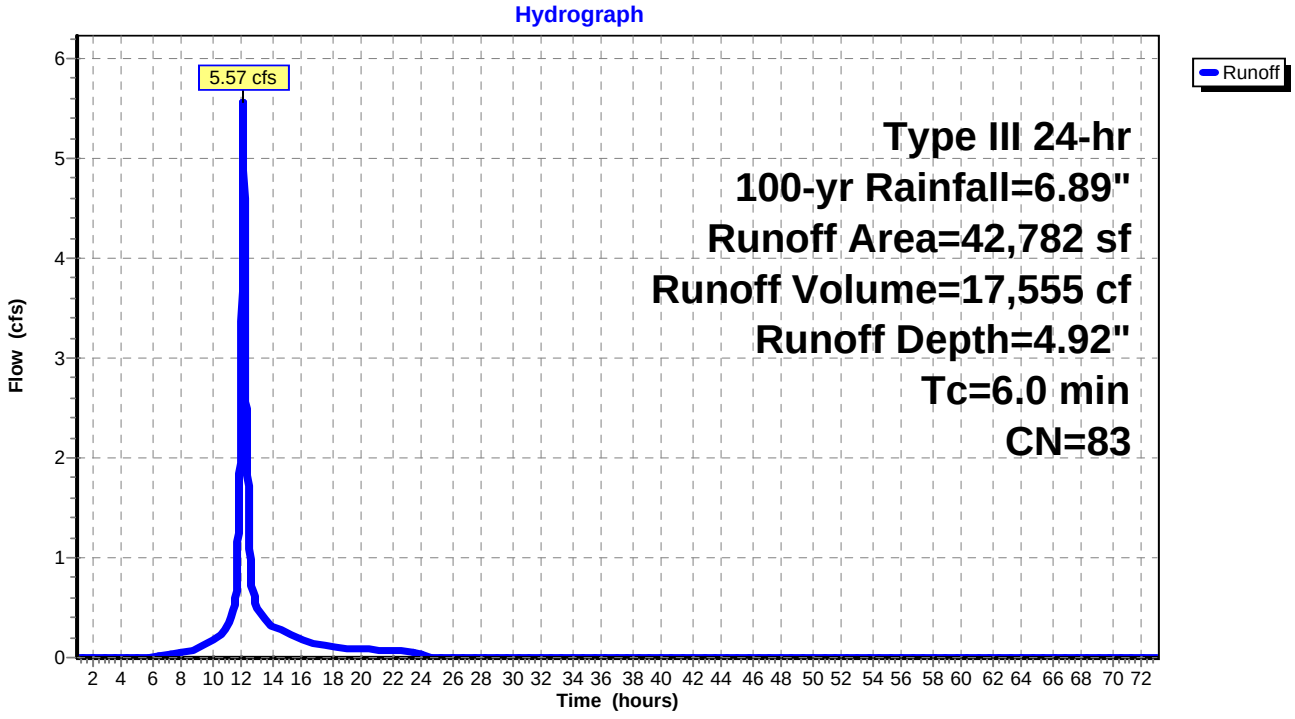
Runoff = 5.57 cfs @ 12.09 hrs, Volume= 17,555 cf, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 100-yr Rainfall=6.89"

	Area (sf)	CN	Description
	27,893	98	Paved parking, HSG A
	2,620	98	Water Surface, HSG A
	10,919	39	>75% Grass cover, Good, HSG A
*	1,350	98	Roofs, HSG A- Covered Pavilion and Walk in Cooler
	42,782	83	Weighted Average
	10,919		25.52% Pervious Area
	31,863		74.48% Impervious Area

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

Subcatchment 1S: PARKING AND LANDSCAPE AREA



Summary for Subcatchment RD-2: NE ROOF

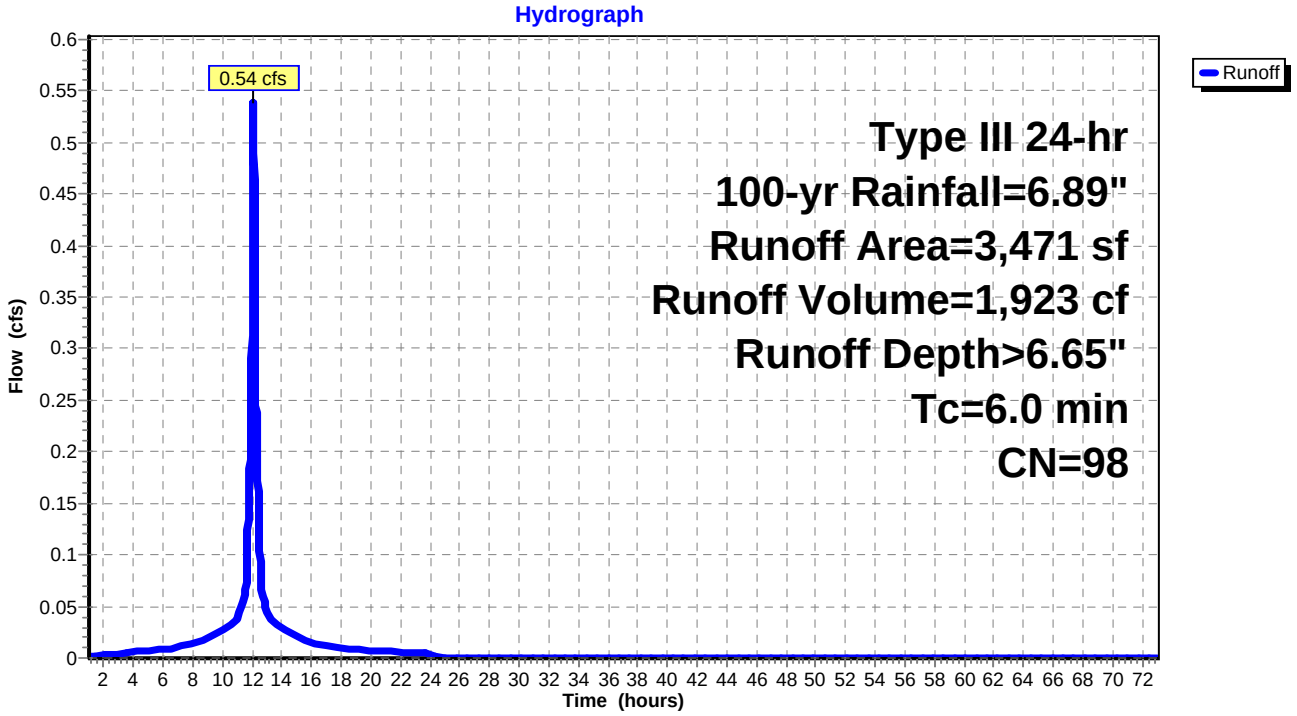
Runoff = 0.54 cfs @ 12.08 hrs, Volume= 1,923 cf, Depth> 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 100-yr Rainfall=6.89"

Area (sf)	CN	Description
3,471	98	Roofs, HSG A
3,471		100.00% Impervious Area

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

Subcatchment RD-2: NE ROOF



Summary for Subcatchment RD-3: NE ROOF

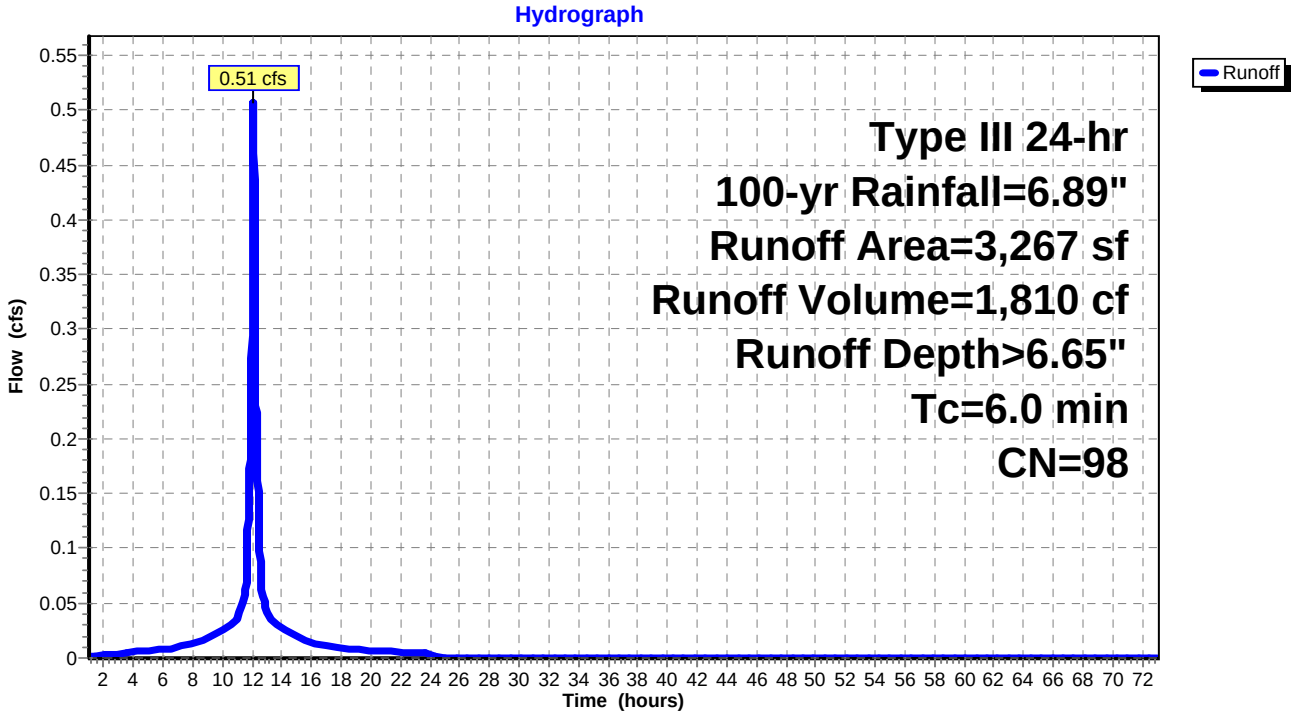
Runoff = 0.51 cfs @ 12.08 hrs, Volume= 1,810 cf, Depth> 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 100-yr Rainfall=6.89"

Area (sf)	CN	Description
3,267	98	Roofs, HSG A
3,267		100.00% Impervious Area

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

Subcatchment RD-3: NE ROOF



Summary for Subcatchment RD1: SW ROOF

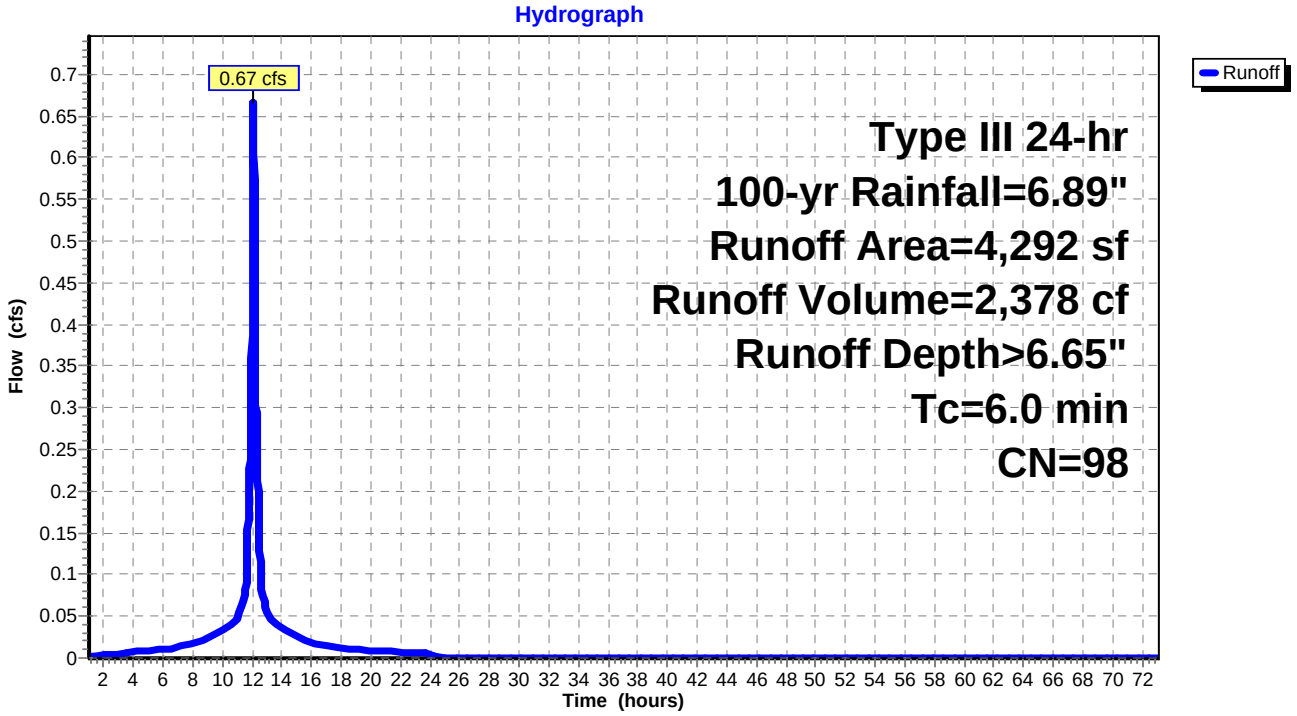
Runoff = 0.67 cfs @ 12.08 hrs, Volume= 2,378 cf, Depth> 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Type III 24-hr 100-yr Rainfall=6.89"

Area (sf)	CN	Description
4,292	98	Roofs, HSG A
4,292		100.00% Impervious Area

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

Subcatchment RD1: SW ROOF



Summary for Pond 1P: INFILTRATION BASIN WITH RISER PIPE

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 4.92" for 100-yr event
Inflow = 5.57 cfs @ 12.09 hrs, Volume= 17,555 cf
Outflow = 2.18 cfs @ 12.32 hrs, Volume= 17,555 cf, Atten= 61%, Lag= 14.1 min
Discarded = 0.51 cfs @ 12.32 hrs, Volume= 15,161 cf
Primary = 1.67 cfs @ 12.32 hrs, Volume= 2,394 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 97.04' @ 12.32 hrs Surf.Area= 2,670 sf Storage= 6,100 cf

Plug-Flow detention time= 111.7 min calculated for 17,553 cf (100% of inflow)
Center-of-Mass det. time= 111.7 min (912.7 - 801.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	9,279 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

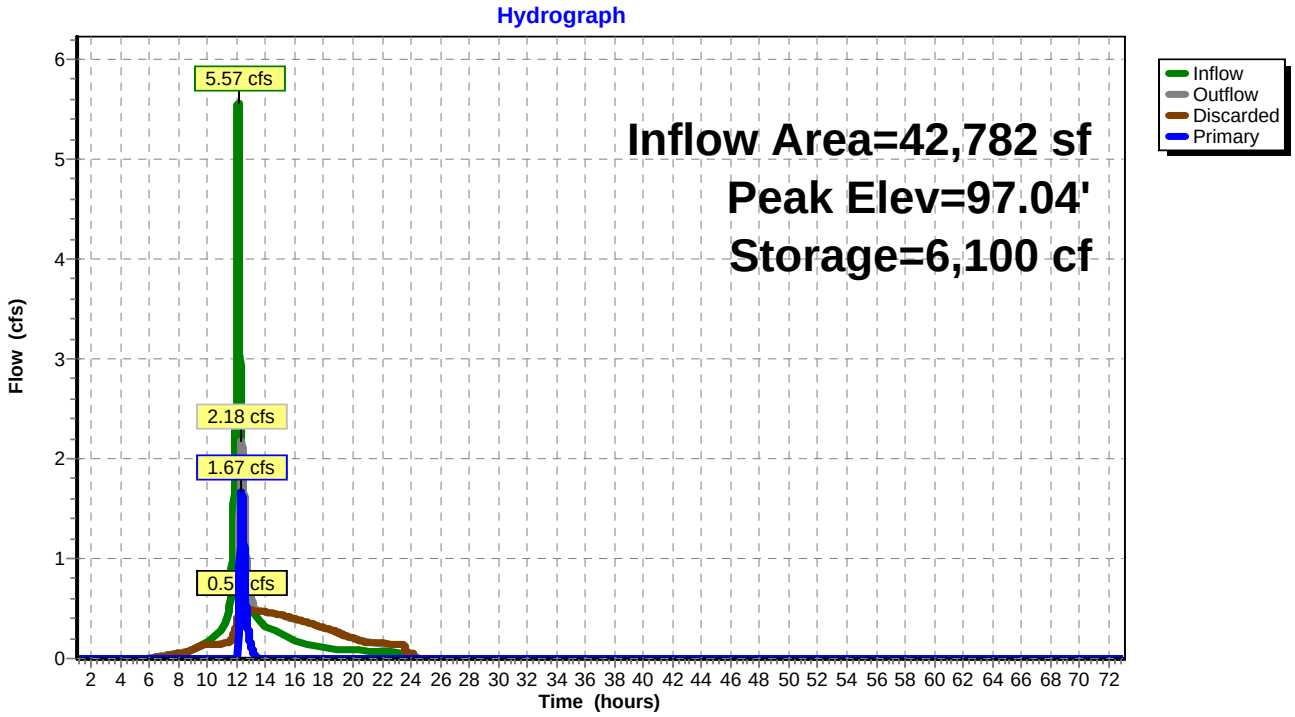
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	699	190.0	0	0	699
94.00	837	146.0	767	767	1,887
95.00	1,489	266.0	1,147	1,914	5,827
96.00	2,038	283.0	1,756	3,671	6,619
97.00	2,620	300.0	2,323	5,994	7,460
98.00	4,000	425.0	3,286	9,279	14,681

Device	Routing	Invert	Outlet Devices
#1	Discarded	93.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	95.00'	**8.0" Round Culvert** L= 12.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.88' S= 0.0096 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf
#3	Device 2	96.80'	**18.0" Horiz. 18" DIA RISER PIPE** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.51 cfs @ 12.32 hrs HW=97.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.51 cfs)

Primary OutFlow Max=1.73 cfs @ 12.32 hrs HW=97.04' (Free Discharge)
└**2=Culvert** (Inlet Controls 1.73 cfs @ 4.97 fps)
└**3=18" DIA RISER PIPE** (Passes 1.73 cfs of 1.82 cfs potential flow)

Pond 1P: INFILTRATION BASIN WITH RISER PIPE



Summary for Pond 2P: Proposed Subsurface System

Inflow Area = 42,782 sf, 74.48% Impervious, Inflow Depth = 0.67" for 100-yr event
Inflow = 1.67 cfs @ 12.32 hrs, Volume= 2,394 cf
Outflow = 0.24 cfs @ 12.81 hrs, Volume= 2,394 cf, Atten= 86%, Lag= 29.5 min
Discarded = 0.24 cfs @ 12.81 hrs, Volume= 2,394 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 95.48' @ 12.81 hrs Surf.Area= 851 sf Storage= 1,741 cf

Plug-Flow detention time= 76.9 min calculated for 2,394 cf (100% of inflow)
Center-of-Mass det. time= 76.9 min (824.4 - 747.5)

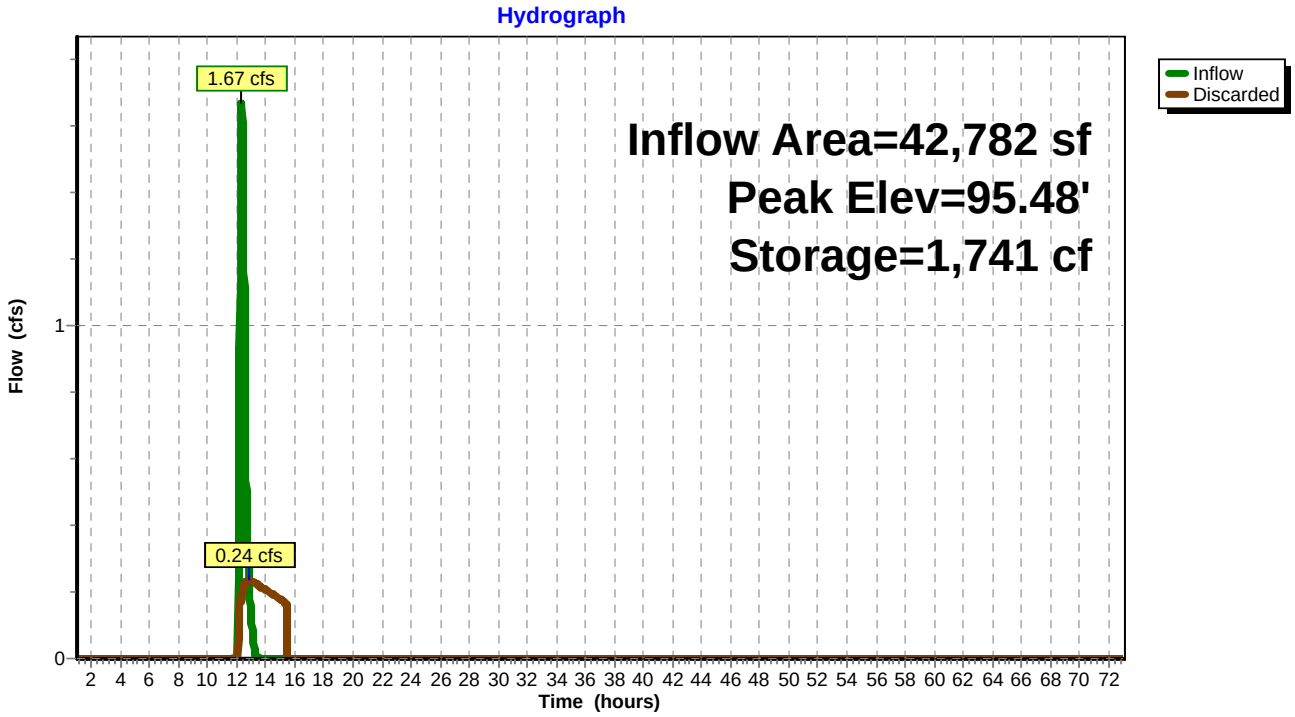
Volume	Invert	Avail.Storage	Storage Description
#1A	92.25'	684 cf	**30.40'W x 28.00'L x 4.50'H Field A** 3,830 cf Overall - 2,120 cf Embedded = 1,711 cf x 40.0% Voids
#2A	92.75'	1,596 cf	**Concrete Galley 4x4x4** x 36 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 36 Chambers in 6 Rows
		2,281 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.25'	**8.270 in/hr Exfiltration over Wetted area** Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 12.81 hrs HW=95.48' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Pond 2P: Proposed Subsurface System



Summary for Pond 3P: Proposed Subsurface System

Inflow Area = 4,292 sf,100.00% Impervious, Inflow Depth > 6.65" for 100-yr event
Inflow = 0.67 cfs @ 12.08 hrs, Volume= 2,378 cf
Outflow = 0.11 cfs @ 12.54 hrs, Volume= 2,378 cf, Atten= 83%, Lag= 27.4 min
Discarded = 0.11 cfs @ 12.54 hrs, Volume= 2,378 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 96.08' @ 12.54 hrs Surf.Area= 346 sf Storage= 672 cf

Plug-Flow detention time= 38.6 min calculated for 2,378 cf (100% of inflow)
Center-of-Mass det. time= 38.6 min (782.0 - 743.4)

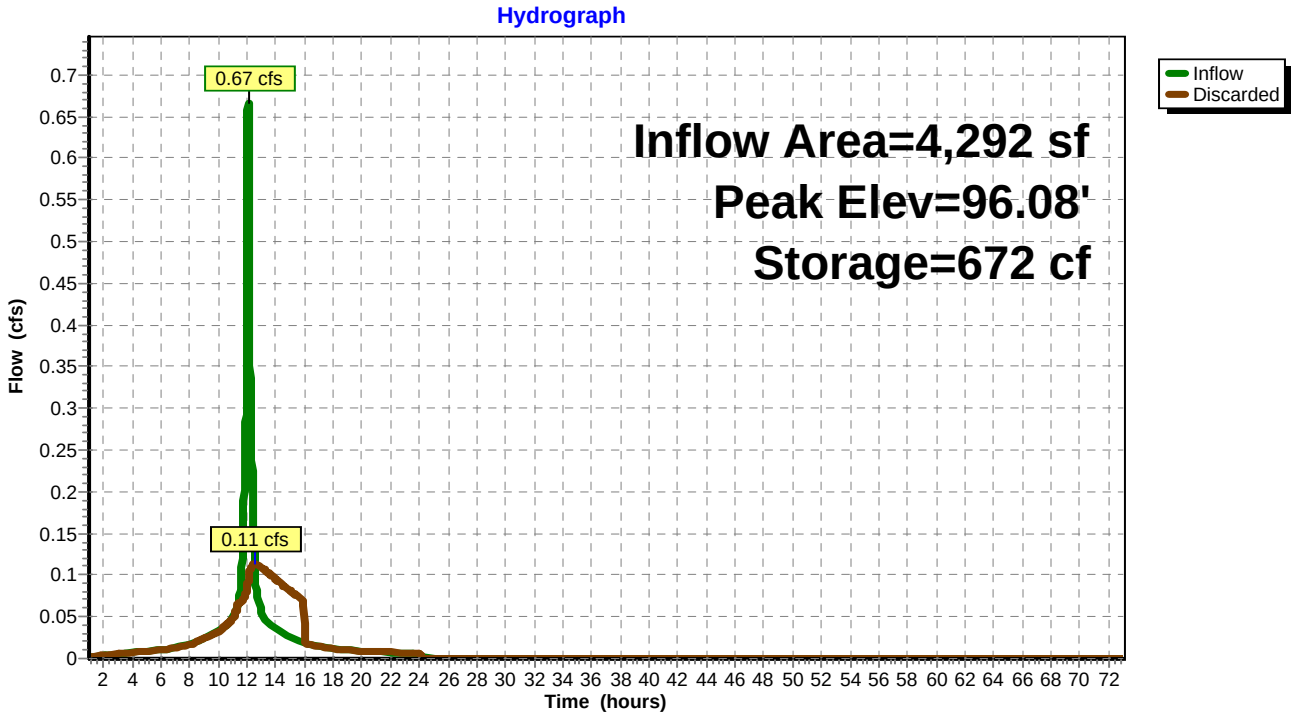
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.11 cfs @ 12.54 hrs HW=96.08' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Pond 3P: Proposed Subsurface System



Summary for Pond 4P: Proposed Subsurface System

Inflow Area = 3,471 sf,100.00% Impervious, Inflow Depth > 6.65" for 100-yr event
Inflow = 0.54 cfs @ 12.08 hrs, Volume= 1,923 cf
Outflow = 0.10 cfs @ 12.52 hrs, Volume= 1,923 cf, Atten= 81%, Lag= 26.1 min
Discarded = 0.10 cfs @ 12.52 hrs, Volume= 1,923 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 95.29' @ 12.52 hrs Surf.Area= 346 sf Storage= 501 cf

Plug-Flow detention time= 29.6 min calculated for 1,923 cf (100% of inflow)
Center-of-Mass det. time= 29.6 min (773.0 - 743.4)

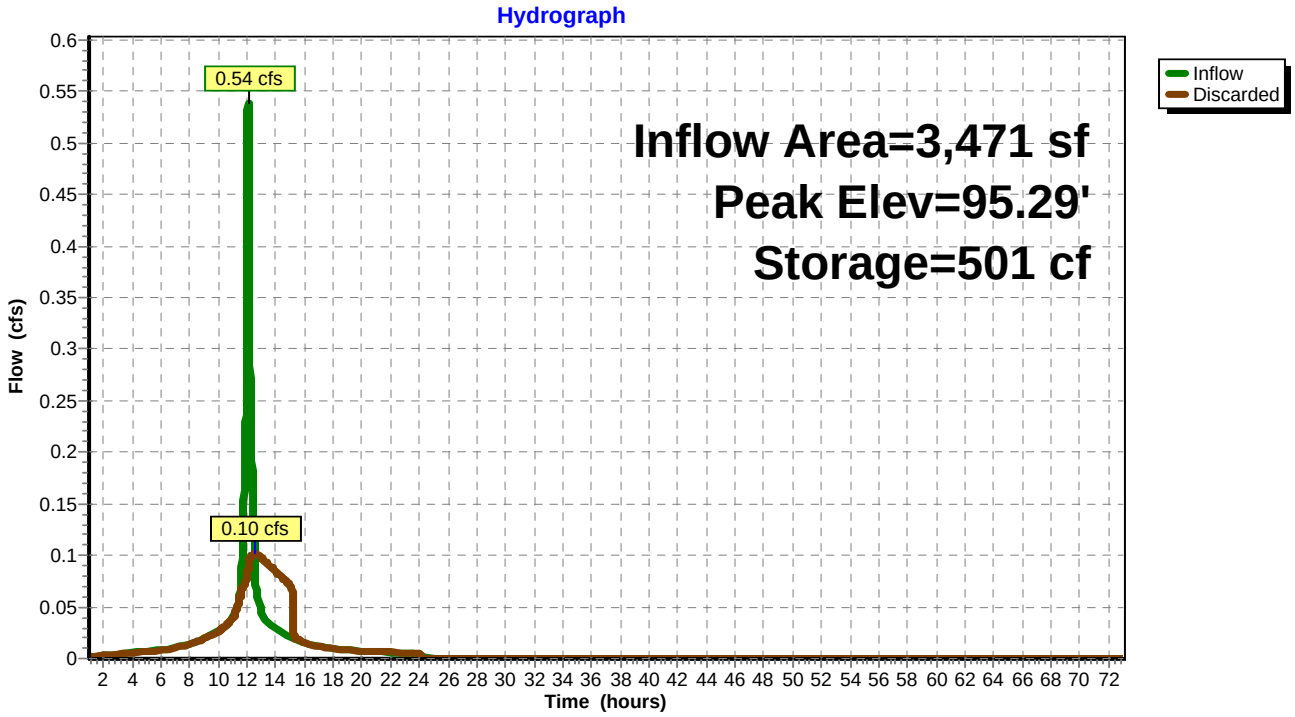
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	339 cf	**21.60'W x 16.00'L x 4.50'H Field A** 1,555 cf Overall - 707 cf Embedded = 849 cf x 40.0% Voids
#2A	93.30'	532 cf	**Concrete Galley 4x4x4** x 12 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 12 Chambers in 4 Rows
		872 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.10 cfs @ 12.52 hrs HW=95.29' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.10 cfs)

Pond 4P: Proposed Subsurface System



Summary for Pond 5P: Proposed Subsurface System

Inflow Area = 3,267 sf,100.00% Impervious, Inflow Depth > 6.65" for 100-yr event
Inflow = 0.51 cfs @ 12.08 hrs, Volume= 1,810 cf
Outflow = 0.09 cfs @ 12.53 hrs, Volume= 1,810 cf, Atten= 82%, Lag= 26.6 min
Discarded = 0.09 cfs @ 12.53 hrs, Volume= 1,810 cf

Routing by Stor-Ind method, Time Span= 1.00-73.00 hrs, dt= 0.010 hrs
Peak Elev= 95.91' @ 12.53 hrs Surf.Area= 275 sf Storage= 496 cf

Plug-Flow detention time= 34.5 min calculated for 1,810 cf (100% of inflow)
Center-of-Mass det. time= 34.5 min (777.9 - 743.4)

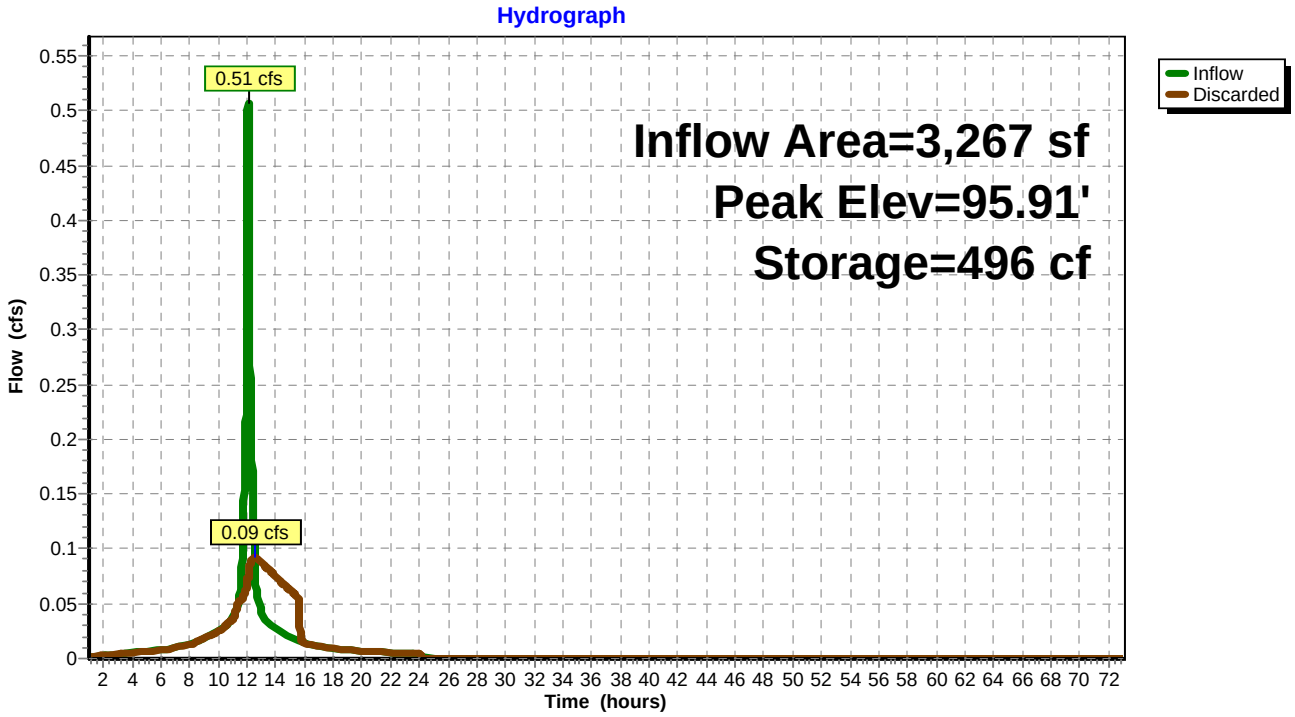
Volume	Invert	Avail.Storage	Storage Description
#1A	92.80'	283 cf	**17.20'W x 16.00'L x 4.50'H Field A** 1,238 cf Overall - 530 cf Embedded = 709 cf x 40.0% Voids
#2A	93.30'	399 cf	**Concrete Galley 4x4x4** x 9 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 9 Chambers in 3 Rows
		683 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.09 cfs @ 12.53 hrs HW=95.91' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 5P: Proposed Subsurface System



APPENDIX B

Post-Development Watershed Plan

APPENDIX C

Miscellaneous Calculations

Required Recharge Volume

Design Engineer:	Atlantic Design Engineers, INC	Job No.:	3110.00
Project Name:	10 Evergreen Circle	Calc'd By:	PMJ
Location:	Mashpee, MA	Date:	1/11/2019

The groundwater recharge volume is required for the proposed **impervious** surfaces.

Rv = (F) (Aimp)
Rv = Required Recharge Volume
Aimp= Impervious Area on site
F = Target Depth Factor: 0.60 inch for A soils

Subcatchment Area: 1S

Impervious Area=	27,893	sf			
Required Recharge Volume (Rv)=	27,893	* 0.60" * (1/12)=	1394.65	cf	
Volume Provided in stormwater BMP=			8275.00	cf	Infiltration Basin and Leaching Field

Total Required Recharge Volume on Site=	**1394.65**	**cf**	
Total Recharge Volume Provided in stormwater BMPs on Site=	**8275.00**	**cf**	**Standard is Met**

Water Quality Calulation Sheet

Design Engineer:	Atlantic Design Engineers, INC	Job No.:	3110.00
Project Name:	10 Evergreen Circle	Calc'd By:	PMJ
Location:	Mashpee, MA	Date:	6/21/2019

The required water quality treatment volume is calculated as follows:

Vwq = (Dwq)*(Aimp)
Vwq =Required Water Quality Volume
Dwq =Water Quality Depth = 1.0" (Per Local Requirements)
Aimp=Area of New Impervious

Subcatchment Area: 1S (Northern)

Total Impervious Area for the Subcatchment=	16,400	sf			
Water Quality Volume Required (Vwq)=	16,400	* 1.0" * (1/12)=	1,367	cf	
Volume Provided=			1,377	cf	in Forebay 1A
Volume Required=	1,366.7	<	1,398		**Water Quality Volume is met**

Subcatchment Area: 1S (Southern)

Total New Impervious Area for the Subcatchment=	11,493	sf			
Water Quality Volume Required (Vwq)=	11,493	* 1.0" * (1/12)=	958	cf	
Volume Provided=			979	cf	in Forebay 2A
Volume Required=	958	<	979		**Water Quality Volume is met**

Total New Impervious Area on the Site=	27,893	sf	
Total Volume Quality Required=	2,324	cf	
Total Volume Provided=	2,377	cf	**Standard is Met**

TSS REMOVAL CALCULATION SHEET (PRE-TREATMENT)

Design Engineer:	Atlantic Design Engineers, LLC	Job No.:	3110.00
Project Name:	10 Evergreen Circle	Calc'd By:	PMJ
Location:	Mashpee, MA	Date:	6/21/2019

BMP	Removal Rate	Starting TSS Load	TSS Removed	Remaining Load
Street Sweeping (Pre-treatment)	10%	100.0%	10%	90.0%
Deep Sump Catch Basins (Pre-treatment)	25%	90.0%	23%	67.5%
Forebay (Pre-Treatment)	25%	67.5%	17%	50.6%
Total Removed			**49%**	

TSS REMOVAL CALCULATION SHEET

Design Engineer:	Atlantic Design Engineers, LLC	Job No.:	3110.00
Project Name:	10 Evergreen Circle	Calc'd By:	PMJ
Location:	Mashpee, MA	Date:	6/20/2019

BMP	Removal Rate	Starting TSS Load	TSS Removed	Remaining Load
Street Sweeping (Pre-treatment)	10%	100.0%	10%	90.0%
Deep Sump Catch Basins (Pre-treatment)	25%	90.0%	23%	67.5%
Forebay (Pre-Treatment)	25%	67.5%	17%	50.6%
Infiltration Basin	80%	50.6%	41%	10.1%
Total Removed			**90%**	

Stage-Area-Storage for Pond 1FB-2: NORTHERN FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
93.00	45	0
93.05	49	2
93.10	54	5
93.15	58	8
93.20	63	11
93.25	68	14
93.30	73	18
93.35	78	21
93.40	84	25
93.45	90	30
93.50	96	34
93.55	102	39
93.60	108	45
93.65	114	50
93.70	121	56
93.75	128	62
93.80	135	69
93.85	142	76
93.90	150	83
93.95	157	91
94.00	165	99
94.05	172	107
94.10	178	116
94.15	185	125
94.20	192	134
94.25	199	144
94.30	206	154
94.35	213	165
94.40	221	176
94.45	228	187
94.50	236	198
94.55	244	210
94.60	252	223
94.65	260	236
94.70	268	249
94.75	276	262
94.80	285	277
94.85	294	291
94.90	302	306
94.95	311	321
95.00	320	337
95.05	329	353
95.10	337	370
95.15	346	387
95.20	355	404
95.25	364	422
95.30	374	441
95.35	383	460
95.40	392	479
95.45	402	499
95.50	412	519
95.55	422	540
95.60	431	562
95.65	441	583
95.70	452	606
95.75	462	629
95.80	472	652
95.85	483	676
95.90	493	700
95.95	504	725
96.00	515	751
96.05	525	777
96.10	536	803
96.15	547	830
96.20	558	858
96.25	569	886
96.30	580	915
96.35	591	944
96.40	602	974
96.45	613	1,004
96.50	625	1,035
96.55	636	1,067
96.60	648	1,099
96.65	660	1,131
96.70	672	1,165
96.75	684	1,199
96.80	696	1,233
96.85	708	1,268
96.90	720	1,304
96.95	732	1,340
97.00	745	1,377
97.05	806	1,416
97.10	869	1,458
97.15	935	1,503
97.20	1,003	1,551
97.25	1,073	1,603
97.30	1,146	1,659
97.35	1,222	1,718
97.40	1,299	1,781
97.45	1,379	1,848
97.50	1,462	1,919
97.55	1,547	1,994
97.60	1,634	2,074
97.65	1,724	2,157
97.70	1,816	2,246
97.75	1,910	2,339
97.80	2,007	2,437
97.85	2,106	2,540
97.90	2,208	2,648
97.95	2,312	2,761
98.00	**2,418**	**2,879**

Stage-Area-Storage for Pond 2FB-1: SOUTHERN FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
94.00	125	0
94.05	130	6
94.10	135	13
94.15	141	20
94.20	146	27
94.25	151	35
94.30	157	42
94.35	163	50
94.40	169	58
94.45	174	67
94.50	180	76
94.55	187	85
94.60	193	95
94.65	199	104
94.70	205	114
94.75	212	125
94.80	219	136
94.85	225	147
94.90	232	158
94.95	239	170
95.00	246	182
95.05	252	195
95.10	258	207
95.15	264	220
95.20	270	234
95.25	276	247
95.30	283	261
95.35	289	276
95.40	295	290
95.45	302	305
95.50	308	320
95.55	315	336
95.60	322	352
95.65	329	368
95.70	335	385
95.75	342	402
95.80	349	419
95.85	356	437
95.90	364	455
95.95	371	473
96.00	378	492
96.05	388	511
96.10	398	531
96.15	409	551
96.20	419	571
96.25	430	593
96.30	441	614
96.35	451	637
96.40	462	660
96.45	474	683
96.50	485	707
96.55	496	731
96.60	508	757
96.65	520	782
96.70	531	809
96.75	543	835
96.80	555	863
96.85	568	891
96.90	580	920
96.95	592	949
97.00	605	979
97.05	669	1,011
97.10	736	1,046
97.15	807	1,084
97.20	881	1,127
97.25	958	1,173
97.30	1,038	1,222
97.35	1,121	1,276
97.40	1,208	1,335
97.45	1,298	1,397
97.50	1,391	1,464
97.55	1,488	1,536
97.60	1,587	1,613
97.65	1,690	1,695
97.70	1,796	1,782
97.75	1,905	1,875
97.80	2,018	1,973
97.85	2,133	2,077
97.90	2,252	2,186
97.95	2,375	2,302
98.00	**2,500**	**2,424**

APPENDIX D

Stormwater Operation and Maintenance Plan

STORMWATER OPERATION & MAINTENANCE PLAN

Cape Cod Coffee
10 Evergreen Circle,
Mashpee, Massachusetts

June 21, 2019

EROSION CONTROL FACILITIES

Erosion Control Barriers:

Erosion Control Barriers (sediment logs, haybales, silt fence, etc.) should be inspected immediately after each run-off producing rainfall event and at least daily during prolonged rainfall. Sediment deposits must be removed when the level of deposition reaches approximately one-half the height of the barrier. Sediment should be disposed of in a suitable area and protected from erosion by either structural or vegetative means.

Construction Entrance/Tracking Pad:

The construction entrance tracking pads should be maintained in a condition that will prevent tracking or flow of sediment onto the public right-of-way. This may require periodic topdressing with additional stone. The entrance pad should be inspected weekly at a minimum, after major storm events (2" or greater) and during periods of heavy use. When mud and soil particles clog the voids in the gravel, the pad should be top dressed with new stone or replaced completely.

Catch Basin Inlet Protection:

All catch basins shall be provided with inlet protection consisting of pre-manufactured "silt-bag" catch basin inlet sediment collection systems until pavement base course is in place and the contributing drainage area to the inlet is stabilized. Inspect the inlet protection device weekly at a minimum, and after major storm events (2" or greater) throughout construction. Repairs are to be made as required and sediment must be removed when the level of deposition reaches approximately one-half the height of the haybale dike or as specified by the "Silt Bag" manufacturer.

STORMWATER BEST MANAGEMENT PRACTICES (BMPs)

Street Sweeping:

All paved areas should be swept twice a month during construction and two times per year during the early spring and late fall seasons after construction.

Deep Sump Hooded Catch Basin:

Inspect Monthly (Minimum), or after major storm events (2" or greater) during and after construction for excessive accumulation of sediments trash. Clean sumps semiannually or when sediment reaches 18", whichever occurs first. All catch basins shall be provided with haybale dikes or pre-manufactured "silt-bag" catch basin inlet sediment collection systems until base course is in place. Inspect weekly and after major storm events (2" or greater) throughout construction.

Forebay:

Inspect monthly at a minimum, or after major storm events (2" or greater) during and after construction for erosion, excessive accumulation of sediment and trash. Repair eroded spots immediately after inspection. Accumulated sediment shall be removed at least four times a year or before it exceeds 0.5' in depth, whichever occurs first. Sediment shall be disposed of in a suitable area and protected from erosion by either structural or vegetative means.

Infiltration Basin:

Inspect after every major storm event (2" or greater) during construction and for the first few months after construction to ensure proper stabilization and function. Thereafter, inspect at least once per year during wet weather to ensure the system is draining properly. Check for accumulation of sediment and ponding water. If ponding water is visible inside the system for several days after a storm event, notify the engineer for possible remedial measures. Remove sediment as necessary during construction, while the system is dry, and at least every five years after construction.

At least two times during the growing season, mow upper-stage, side slopes and embankment. The grass should not be cut lower than 4", remove trash, grass clippings, organic matter and derbris.

Infiltration/Leaching Galleys:

Inspect after every major storm event (2" or greater) during construction and for the first few months after construction to ensure proper stabilization and function thereafter, inspect at least once per year during wet weather to ensure the system is drained properly- check for accumulation of sediment and ponding water. If ponding water is visible inside the system for several days after a storm event, notify the engineer for possible remedial measures. Remove sediment as necessary during construction, while the system is dry, and at least every 5 years after construction.

STORMWATER OPERATIONS AND MAINTENANCE NOTES

1. The contractor shall be responsible for the proper inspection and maintenance of all stormwater and erosion control facilities until the project construction is completed. The contractor shall clean all components of the stormwater management system and sweep all paved areas at the completion of construction, immediately prior to turning over operation and maintenance responsibility to the owner.
2. Upon completion of construction, the operation and maintenance of all components of the stormwater management system will be the responsibility of the developer:

   Modi, LLC.
   348 Main Street
   Mashpee, Massachusetts 02649

3. Disposal of accumulated sediment and hydrocarbons to be in accordance with applicable local, state and federal guidelines and regulations.
4. The contractor shall be responsible for cleaning all components of the stormwater management system and sweeping all paved areas.
5. There shall be no illicit discharge of any waste or waste water into the stormwater management system. The maintenance of the facility shall be undertaken in such a manner as to prevent any discharge of waste or waste water into stormwater management system. Any waste products generated during maintenance shall be properly disposed of off-site.

APPENDIX E

Soil Testing

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Conserv Group LLC
Owner Name

10 Evergreen Circle - Test Pits 1 and 2
Street Address

Map/Lot #

Mashpee
City

MA
State

02649
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: Soil Survey of Barnstable County (Source) EnA (Soil Map Unit)

   Enfield
   Soil Name

   Soil Limitations

3. Surficial Geological Report Available? ☐ Yes ☒ No If yes: Year Published/Source | Publication Scale | Map Unit

   Geologic/Parent Material

   Landform

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☒ Yes ☐ No Within the 100-year flood boundary? ☐ Yes ☒ No

   Within the 500-year flood boundary? ☐ Yes ☒ No Within a velocity zone? ☐ Yes ☒ No

5. Wetland Area: Wetlands Conservancy Program Map Map Unit Name

6. Current Water Resource Conditions (USGS): 5/2019 (Month/Year) Range: ☒ Above Normal ☐ Normal ☐ Below Normal

7. Other references reviewed:

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: 1 | May 30, 2019 (Date) | 11 AM (Time) | Cloudy, 55 F (Weather)

1. Location

   Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | none (Surface Stones) | 0% (Slope (%))

   Pine. Oak, briar (Vegetation) | Proglacial outwash plain (Landform) | _____ (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100+ feet	Drainage Way	50+ feet	Possible Wet Area	100+ feet
Property Line	10+ feet	Drinking Water Well	100+- feet	Other	. feet

4. Parent Material: proglacial outwash — Unsuitable Materials Present: ☐ Yes ☒ No

   If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No — If yes: _____ Depth Weeping from Pit | _____ Depth Standing Water in Hole

   Estimated Depth to High Groundwater: _____ inches | 20 ft + elevation

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-5	O	10 YR 2/2				Wood Loam					Friable
5-12	A	10 YR 3/2				Sandy Loam					Friable
12-24	B	10 YR 4/4				Loamy Sand					Loose
24-48	C1	10 YR 5/4				Medium Sand					Loose
48-65	C2	10 YR 6/2				Sandy Loam					Firm
65-132	C3	10 YR 5/4				Medium Sand					Loose

Additional Notes:

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2 | May 30, 2019 (Date) | 11 AM (Time) | Cloudy, 55 F (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | none (Surface Stones) | 0% (Slope (%))

Pine, Oak, briar (Vegetation) | Proglacial Outwash Plain (Landform) | _____ (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100+ feet	Drainage Way	50+ feet	Possible Wet Area	100+ feet
Property Line	10+ feet	Drinking Water Well	100+ feet	Other	_____ feet

4. Parent Material: proglacial outwash — Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No — If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Estimated Depth to High Groundwater: _____ inches — 20 ft + elevation

C. On-Site Review (continued)

Deep Observation Hole Number: 2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-4	O	10 YR 2/2				Wood Loam					Friable
4-10	A	10 YR 4/2				Sandy Loam					Friable
10-28	B	10 YR 4/4				Loamy Sand					Loose
28-60	C1	10 YR 5/4				Medium Sand					Loose
60-72	C2	10 YR 6/2				Sandy Loam					Firm
72-134	C3	10 YR 5/4				Medium Sand					Loose

Additional Notes:

Commonwealth of Massachusetts
City/Town of Mashpee
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	A.	B.
☐ Depth observed standing water in observation hole	A. ____ inches	B. ____ inches
☐ Depth weeping from side of observation hole	A. ____ inches	B. ____ inches
☒ Depth to soil redoximorphic features (mottles)	A. none at 132 inches	B. none at 134 inches
☐ Groundwater adjustment (USGS methodology)	A. ____ inches	B. ____ inches

2.

Index Well Number	Reading Date	Index Well Level
Adjustment Factor	Adjusted Groundwater Level	

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material
   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?
      ☒ Yes ☐ No
   b. If yes, at what depth was it observed? Upper boundary: 65/72 inches Lower boundary: 132/134 inches

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

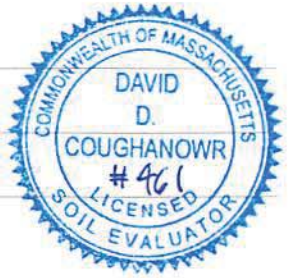
May 30, 2019
Date

David D. Coughanowr
Typed or Printed Name of Soil Evaluator / License #

November, 1995
Date of Soil Evaluator Exam

Veronica Mulligan
Name of Board of Health Witness

Mashpee
Board of Health



Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Conserv Group LLC
Owner Name

10 Evergreen Circle - Test Pits 3 and 4
Street Address

Map/Lot #

Mashpee
City

MA
State

02649
Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: Soil Survey of Barnstable County (Source) EnA (Soil Map Unit)

   Enfield
   Soil Name

   Soil Limitations

3. Surficial Geological Report Available? ☐ Yes ☒ No If yes: Year Published/Source | Publication Scale | Map Unit

   Geologic/Parent Material

   Landform

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☒ Yes ☐ No Within the 100-year flood boundary? ☐ Yes ☒ No

   Within the 500-year flood boundary? ☐ Yes ☒ No Within a velocity zone? ☐ Yes ☒ No

5. Wetland Area: Wetlands Conservancy Program Map

   Map Unit

   Name

6. Current Water Resource Conditions (USGS): 5/2019 (Month/Year) Range: ☒ Above Normal ☐ Normal ☐ Below Normal

7. Other references reviewed:

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserved disposal area)*

Deep Observation Hole Number: 3 | May 30, 2019 (Date) | 11 AM (Time) | Cloudy, 55 F (Weather)

1. Location

   Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | none (Surface Stones) | 0% (Slope (%))

   Pine. Oak, briar (Vegetation) | Proglacial outwash plain (Landform) | _____ (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100+ feet	Drainage Way	50+ feet	Possible Wet Area	100+ feet
Property Line	10+ feet	Drinking Water Well	100+- feet	Other	_____ feet

4. Parent Material: proglacial outwash — Unsuitable Materials Present: ☐ Yes ☒ No

   If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No — If yes: _____ Depth Weeping from Pit | _____ Depth Standing Water in Hole

   Estimated Depth to High Groundwater: _____ inches | 20 ft + elevation

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 3

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-8	Ap	10 YR 3/2				Loam					Friable
8-28	Bw	10 YR 5/6				Loamy Sand					Friable
28-42	C1	10 YR 6/2				Sandy Loam					Firm
42-120	C2	10 YR 5/4				Medium Sand					Loose

Additional Notes:

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 4 | May 30, 2019 (Date) | 11 AM (Time) | Cloudy, 55 F (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ Location (identify on plan): _____

2. Land Use: Commercial (e.g., woodland, agricultural field, vacant lot, etc.) | none (Surface Stones) | 0% (Slope (%))

Pine, Oak, briar (Vegetation) | Proglacial Outwash Plain (Landform) | _____ (Position on Landscape (attach sheet))

3. Distances from:

Open Water Body	100+ feet	Drainage Way	50+ feet	Possible Wet Area	100+ feet
Property Line	10+ feet	Drinking Water Well	100+ feet	Other	_____ feet

4. Parent Material: proglacial outwash Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Estimated Depth to High Groundwater: _____ inches 20 ft + elevation

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 4

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features (mottles)			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-6	Ap	10 YR 2/2				Wood Loam					Friable
6-26	Bw	10 YR 5/6				Sandy Loam					Friable
26-40	C1	10 YR 6/2				Loamy Sand					Loose
40-126	C2	10 YR 6/4				Medium Sand					Loose

Additional Notes:

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	A.	B.
☐ Depth observed standing water in observation hole	A. ____ inches	B. ____ inches
☐ Depth weeping from side of observation hole	A. ____ inches	B. ____ inches
☒ Depth to soil redoximorphic features (mottles)	A. none at 120 inches	B. none at 126 inches
☐ Groundwater adjustment (USGS methodology)	A. ____ inches	B. ____ inches

2. ____ Index Well Number ____ Reading Date ____ Index Well Level

____ Adjustment Factor ____ Adjusted Groundwater Level

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material
   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?
      ☒ Yes ☐ No
   b. If yes, at what depth was it observed? Upper boundary: 42/40 inches Lower boundary: 120/126 inches

Commonwealth of Massachusetts
City/Town of Mashpee

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

May 30, 2019
Date

David D. Coughanowr
Typed or Printed Name of Soil Evaluator / License #

November, 1995
Date of Soil Evaluator Exam

Veronica Mulligan
Name of Board of Health Witness

Mashpee
Board of Health

COMMONWEALTH OF MASSACHUSETTS
DAVID
D.
COUGHANOWR
#461
LICENSED
SOIL EVALUATOR

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of Mashpee
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

Commonwealth of Massachusetts
City/Town of Mashpee
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Site Information

Conserv Group LLC
Owner Name

10 Evergreen Circle
Street Address or Lot #

Mashpee	MA	02649
City/Town	State	Zip Code

David D. Coughanowr, ASE #461	508 364-0894
Contact Person (if different from Owner)	Telephone Number

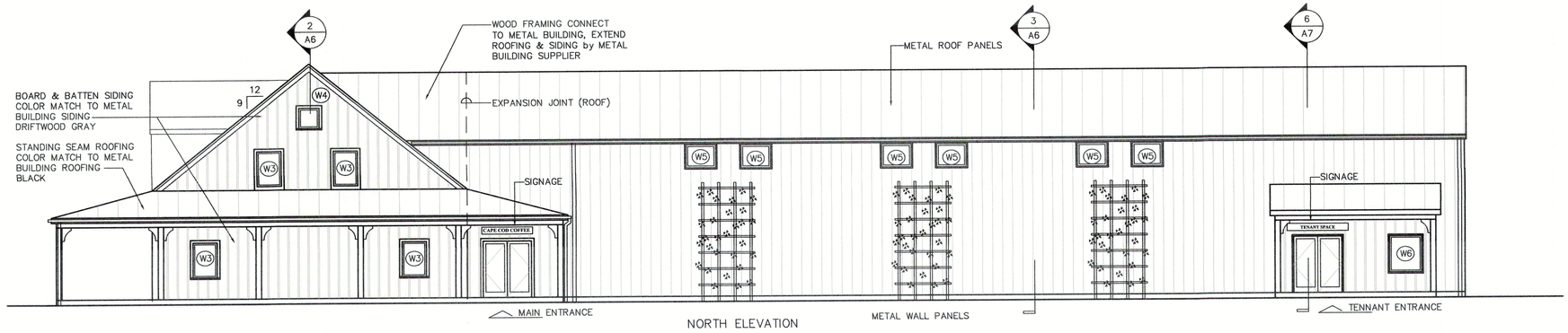
B. Test Results

	5/30/2019 Date	11 AM Time	5/30/2019 Date	12 PM Time
Observation Hole #	1		3	
Depth of Perc	74 in		64 in	
Start Pre-Soak	11:17		12:12	
End Pre-Soak	11:23		12:22	
Time at 12"	n/a		n/a	
Time at 9"	n/a		n/a	
Time at 6"	n/a		n/a	
Time (9"-6")	n/a		n/a	
Rate (Min./Inch)	2 mpi in C3 soils		2 mpi in C2 soils	
	Test Passed: ☒ Test Failed: ☐		Test Passed: ☒ Test Failed: ☐	

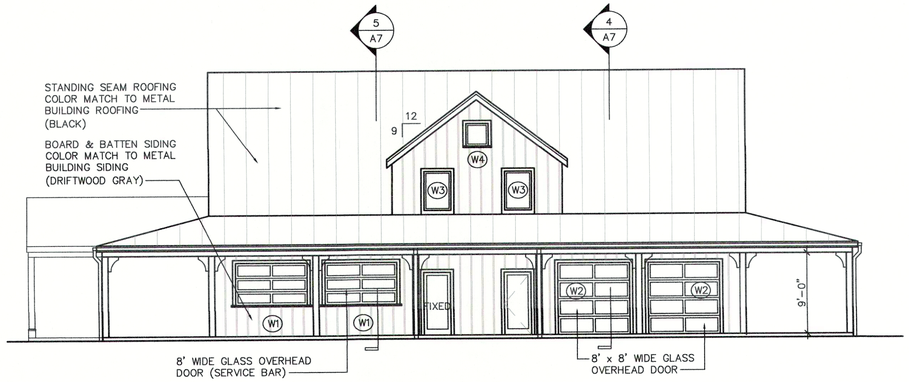
David D. Coughanowr
Test Performed By:

Veronica Mulligan, Health Dept.
Witnessed By:

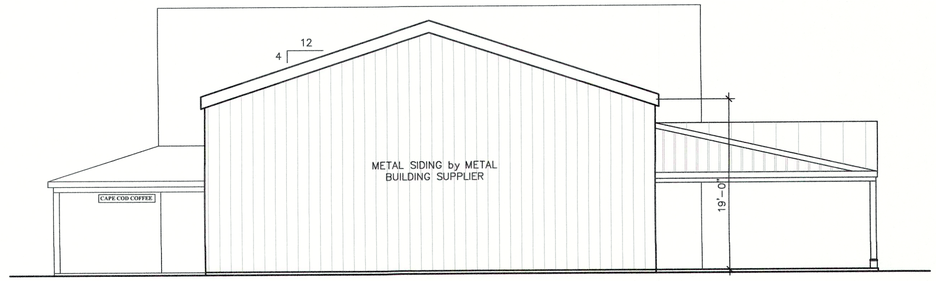
Comments:



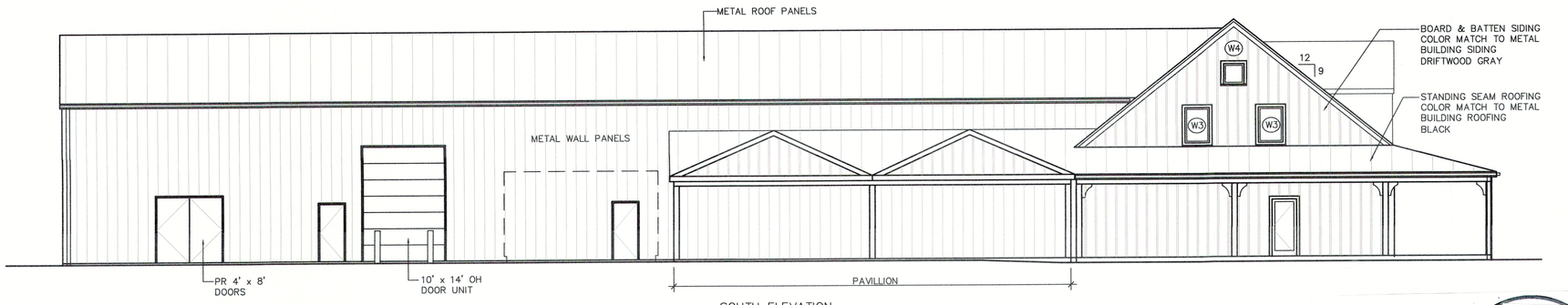
NORTH ELEVATION



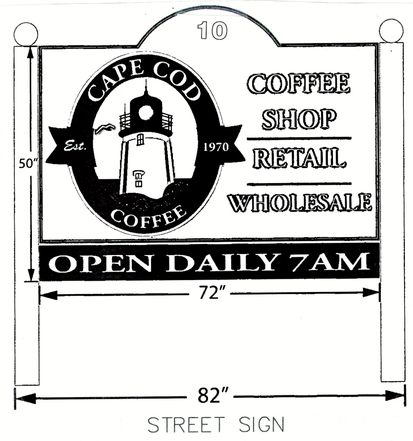
EAST ELEVATION RTE 130



WEST ELEVATION



SOUTH ELEVATION



STREET SIGN

ConServ Group Incorporated
110 State Road, Suite 7
Sagamore Beach, MA 02562
Tel: 508-888-6555

PROPOSED NEW FACILITY
FOR
CAPE COD COFFEE
10 EVERGREEN CIRCLE
MASHPEE, MASSACHUSETTS

REVISIONS

1	SPECIAL PERMIT	6-20-19

DWG. INFO.

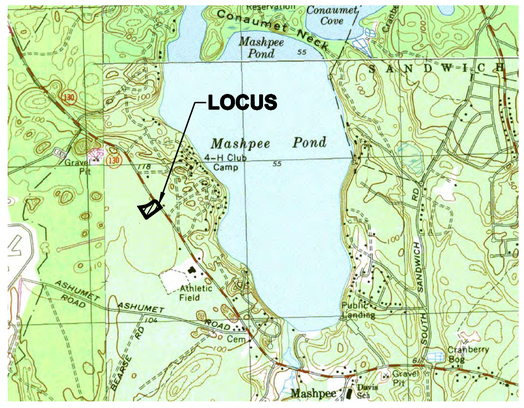
DATE	6-21-19
SCALE	1/8"=1'-0"
DRAWN	CADD
CHKD	
APPRVD	

SHEET TITLE:
EXTERIOR ELEVATIONS

SHEET & JOB #:
A-4
#876

SITE PLANS
FOR
CAPE COD COFFEE
LOCATED AT

LOT B/#10 EVERGREEN CIRCLE
MASHPEE, MASSACHUSETTS 02601
DATE: JUNE 21, 2019



VICINITY MAP
SCALE: 1" = 1,500'

LOCUS MAP
SCALE: 1" = 1,500'

OVERALL LOCATION PLAN
SCALE: 1" = 100'

INDEX OF PLANS		
SHEET NO.	TITLE	SCALE
1	COVER SHEET	1" = 100'
2	EXISTING CONDITIONS PLAN	1" = 20'
3	SITE LAYOUT PLAN	1" = 20'
4	UTILITY, GRADING, DRAINAGE & EROSION CONTROL PLAN	1" = 20'
5	SEPTIC DESIGN PLAN	1" = 20'
6	DETAILS PLAN	N.T.S.

OWNER:

EVERGREEN ENERGY LLC
81 ECHO ROAD
MASHPEE, MASSACHUSETTS 02649

APPLICANT:

MODI, LLC
348 MAIN STREET
MASHPEE, MASSACHUSETTS 02649

ENGINEER:

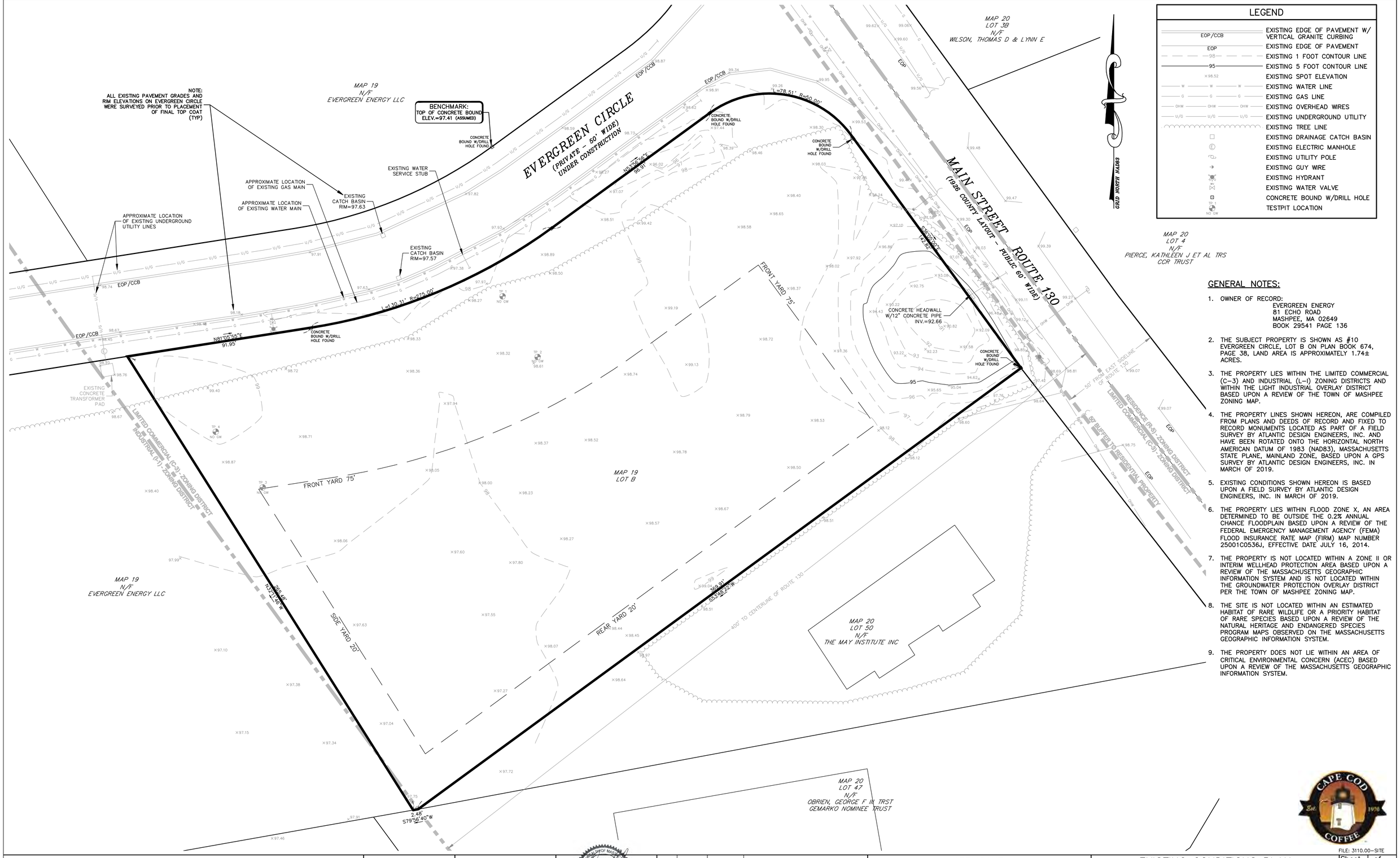
Atlantic®
DESIGN ENGINEERS, INC.
P.O. Box 1051, Sandwich, MA 02563
(508) 888 – 9282

CAPE COD COFFEE Est. 1970

FILE: 3110.00-SITE

Sheet	of
1	6

JOB NUMBER 3110.00



LEGEND

- EOP/CCB — EXISTING EDGE OF PAVEMENT W/ VERTICAL GRANITE CURBING
- EOP — EXISTING EDGE OF PAVEMENT
- 98 — EXISTING 1 FOOT CONTOUR LINE
- 95 — EXISTING 5 FOOT CONTOUR LINE
- ×98.52 — EXISTING SPOT ELEVATION
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- OHW — EXISTING OVERHEAD WIRES
- U/G — EXISTING UNDERGROUND UTILITY
- EXISTING TREE LINE
- EXISTING DRAINAGE CATCH BASIN
- E — EXISTING ELECTRIC MANHOLE
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- CONCRETE BOUND W/DRILL HOLE
- TP 1 NO GW — TESTPIT LOCATION

GENERAL NOTES:

1. OWNER OF RECORD:
   EVERGREEN ENERGY
   81 ECHO ROAD
   MASHPEE, MA 02649
   BOOK 29541 PAGE 136
2. THE SUBJECT PROPERTY IS SHOWN AS #10 EVERGREEN CIRCLE, LOT B ON PLAN BOOK 674, PAGE 38, LAND AREA IS APPROXIMATELY 1.74± ACRES.
3. THE PROPERTY LIES WITHIN THE LIMITED COMMERCIAL (C-3) AND INDUSTRIAL (L-I) ZONING DISTRICTS AND WITHIN THE LIGHT INDUSTRIAL OVERLAY DISTRICT BASED UPON A REVIEW OF THE TOWN OF MASHPEE ZONING MAP.
4. THE PROPERTY LINES SHOWN HEREON, ARE COMPILED FROM PLANS AND DEEDS OF RECORD AND FIXED TO RECORD MONUMENTS LOCATED AS PART OF A FIELD SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. AND HAVE BEEN ROTATED ONTO THE HORIZONTAL NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE, MAINLAND ZONE, BASED UPON A GPS SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. IN MARCH OF 2019.
5. EXISTING CONDITIONS SHOWN HEREON IS BASED UPON A FIELD SURVEY BY ATLANTIC DESIGN ENGINEERS, INC. IN MARCH OF 2019.
6. THE PROPERTY LIES WITHIN FLOOD ZONE X, AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN BASED UPON A REVIEW OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 25001C0536J, EFFECTIVE DATE JULY 16, 2014.
7. THE PROPERTY IS NOT LOCATED WITHIN A ZONE II OR INTERIM WELLHEAD PROTECTION AREA BASED UPON A REVIEW OF THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM AND IS NOT LOCATED WITHIN THE GROUNDWATER PROTECTION OVERLAY DISTRICT PER THE TOWN OF MASHPEE ZONING MAP.
8. THE SITE IS NOT LOCATED WITHIN AN ESTIMATED HABITAT OF RARE WILDLIFE OR A PRIORITY HABITAT OF RARE SPECIES BASED UPON A REVIEW OF THE NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM MAPS OBSERVED ON THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM.
9. THE PROPERTY DOES NOT LIE WITHIN AN AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) BASED UPON A REVIEW OF THE MASSACHUSETTS GEOGRAPHIC INFORMATION SYSTEM.

FILE: 3110.00-SITE

Atlantic® DESIGN ENGINEERS, INC.
P.O. Box 1051, Sandwich, MA 02563 (508) 888 - 9282

Designed by :
Drawn by :
Checked by :
Survey chk. by :
Approved by :

SCALE
SCALE 1" = 20'
0 5 10 20 40

RICHARD J. TARKOWSKI CIVIL No. 33744 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

DATE

NO.	BY	DATE	REVISION

APPLICANT:
MODI, LLC
348 MAIN STREET
MASHPEE, MASSACHUSETTS 02649

EXISTING CONDITIONS PLAN
FOR
CAPE COD COFFEE
LOT B/#10 EVERGREEN CIRCLE - MASHPEE, MA
JUNE 21, 2019

Sheet 2 of 6
JOB NUMBER 3110.00

ZONING DISTRICT: C–3
(LIMITED COMMERCIAL)
(PER TOWN OF MASHPEE ZONING BYLAWS UPDATED AS OF OCTOBER 15, 2018)

	REQUIRED	PROVIDED
MINIMUM LOT SIZE:	40,000 S.F.	75,731± S.F./1.74± AC.
MINIMUM LOT FRONTAGE:	200'	540.50'
MINIMUM BUILDING SETBACK TO LOT LINES:		
FRONT	75'	78.1'
REAR	20'	22.0'
SIDE	20'	104.1'
MAXIMUM BUILDING HEIGHT:	2½ STORIES/35'	<2½ STORIES/35'
MAXIMUM OF LOT COVERAGE (STRUCTURES):	20%	16.0%
MINIMUM NATURAL AREA:	40%	45.2%±
MINIMUM SETBACK – ACCESSORY STRUCTURE: (FROM REAR OR SIDE PROPERTY LINES)	5'	N/A

PARKING REQUIREMENTS

	AMOUNT	REQUIRED	PROVIDED
SERVICE BUSINESS: (1 SPACE/150 S.F. GROSS FLOOR AREA)	3,133± S.F.	21.0 SPACES	–
MANUFACTURING: (1½ SPACES/1000 S.F. GROSS FLOOR AREA)	5,407± S.F.	8.0 SPACES	–
GENERAL OFFICE: (1 SPACE/300 S.F. GROSS FLOOR AREA)	1,398± S.F.	5.0 SPACES	–
	TOTAL:	34.0 SPACES	50.0 SPACES

SEE SHEET 4 LEGEND AND CONSTRUCTION NOTES

FILE: 3110.00–SITE

Designed by :	
Drawn by :	
Checked by :	
Survey chk. by :	
Approved by :	

SCALE 1" = 20'

NO.	BY	DATE	REVISION

APPLICANT:
MODI, LLC
348 MAIN STREET
MASHPEE, MASSACHUSETTS 02649

SITE LAYOUT PLAN
FOR
CAPE COD COFFEE
LOT B/#10 EVERGREEN CIRCLE – MASHPEE, MA
JUNE 21, 2019

Sheet 3 of 6
JOB NUMBER 3110.00

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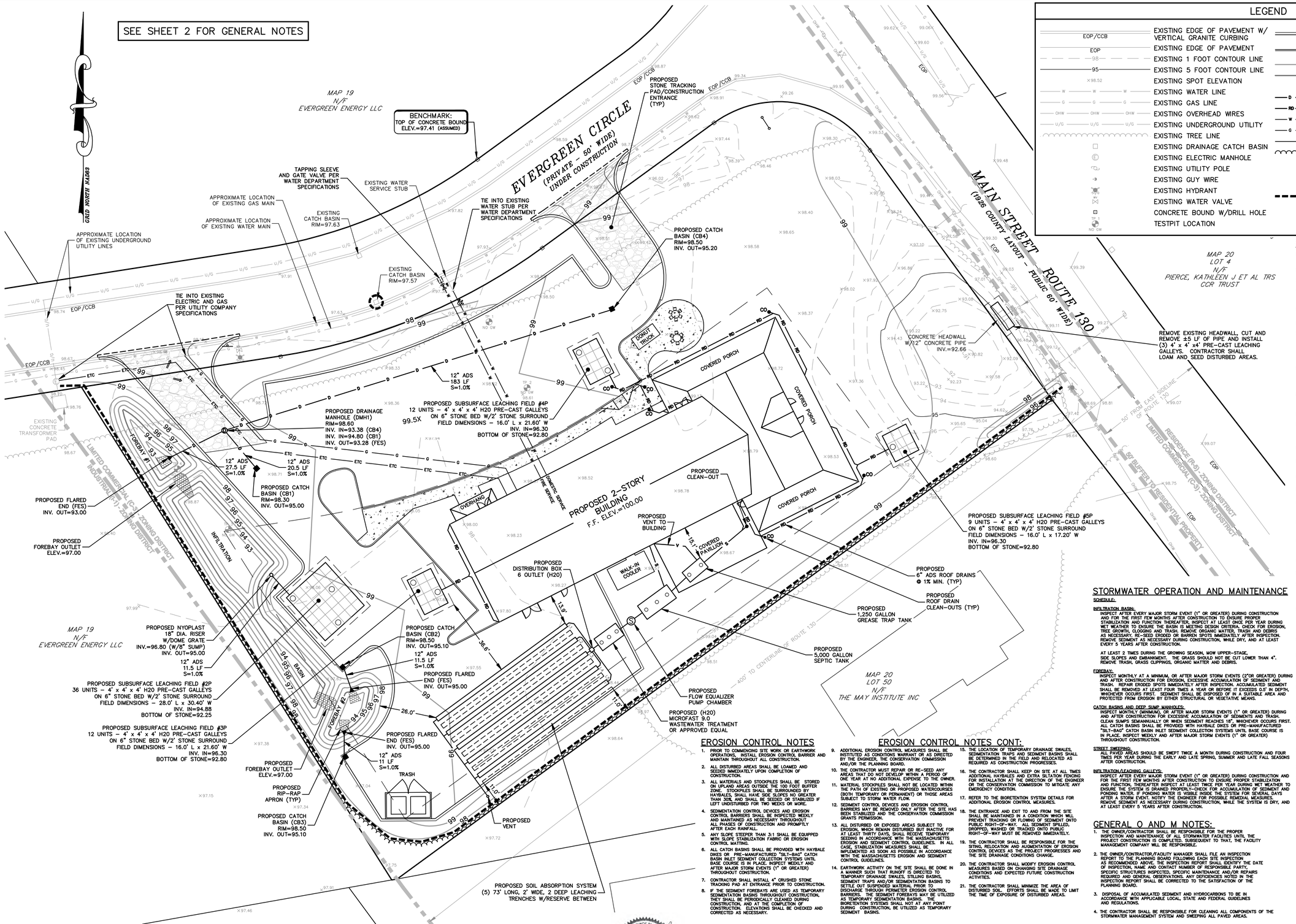


LEGEND

EOP/CCB — EOP/CCB	EXISTING EDGE OF PAVEMENT W/ VERTICAL GRANITE CURBING
EOP — EOP	EXISTING EDGE OF PAVEMENT
98	EXISTING 1 FOOT CONTOUR LINE
95	EXISTING 5 FOOT CONTOUR LINE
×98.52	EXISTING SPOT ELEVATION
W — W — W	EXISTING WATER LINE
G — G — G	EXISTING GAS LINE
OHW — OHW — OHW	EXISTING OVERHEAD WIRES
U/G — U/G — U/G	EXISTING UNDERGROUND UTILITY
	EXISTING TREE LINE
	EXISTING DRAINAGE CATCH BASIN
E	EXISTING ELECTRIC MANHOLE
	EXISTING UTILITY POLE
	EXISTING GUY WIRE
	EXISTING HYDRANT
	EXISTING WATER VALVE
	CONCRETE BOUND W/DRILL HOLE
TP-1 NO GW	TESTPIT LOCATION
CO — CO — CO	PROPOSED EDGE OF PAVEMENT W/ CAPE COD BERM
CO — CO — CO	PROPOSED EDGE OF PAVEMENT W/ VERTICAL CONCRETE CURBING
96	PROPOSED 1 FOOT CONTOUR LINE
95	PROPOSED 5 FOOT CONTOUR LINE
99.5X	PROPOSED SPOT ELEVATION
D — D — D	PROPOSED DRAINAGE LINE
RD — RD — RD	PROPOSED ROOF DRAIN LINE
W — W — W	PROPOSED WATER LINE
G — G — G	PROPOSED GAS LINE
ETC — ETC — ETC	PROPOSED UNDERGROUND UTILITY
	PROPOSED TREE LINE
	PROPOSED DRAINAGE FLOW ARROW
	PROPOSED WATER GATE VALVE
	PROPOSED WATER SHUT-OFF VALVE
	PROPOSED EROSION CONTROL
	PROPOSED SILTSACK SEDIMENT TRAP

CONSTRUCTION NOTES:

1. ALL PROPOSED DRAINAGE PIPING SHALL BE 12" ADS UNLESS OTHERWISE NOTED AND ALL WATER MAINS, SERVICES AND APPURTENANCES SHALL BE INSTALLED PER THE WATER DISTRICT SPECIFICATIONS AND OR REGULATIONS.
2. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO BIDDING.
3. CONTRACTOR SHALL VERIFY ALL CRITICAL ELEVATIONS AND INVERTS PRIOR TO CONSTRUCTION.
4. WHERE AN EXISTING PUBLIC UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED AND THE INFORMATION FURNISHED TO THE TOWN FOR RESOLUTION OF THE CONFLICT.
5. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT.
6. ALL BUILDINGS, AND SURFACE AND SUBSURFACE IMPROVEMENTS ON AREAS ADJACENT TO THE SITE ARE NOT NECESSARILY SHOWN HEREON.
7. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UTILITIES AND RIM AND INVERTS BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT MIGHT OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY DIGSAFE, THE TOWN OF MASHPEE HIGHWAY DEPARTMENT, AND ALL UTILITY COMPANIES A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION ACTIVITIES FOR LOCATION OF ALL UNDERGROUND UTILITIES AND UTILITY COMPANY AND DPW APPROVALS.
9. ELECTRIC, TELEPHONE, AND CABLE SHALL BE PLACED UNDERGROUND IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANIES. REFER TO PLANS BY OTHERS IN CONJUNCTION WITH THE UTILITY COMPANIES FOR LAYOUT OF RESPECTIVE UTILITY SYSTEMS.
10. SLOPES ON ALL PIPES ARE APPROXIMATE. CONTRACTOR TO HOLD INVERTS FOR CONSTRUCTION.
11. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENTS OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES WITH THE UTILITY COMPANY, IF NECESSARY. IF ANY INTERRUPTIONS IN SERVICE ARE NECESSARY TO ABUTTING PROPERTY OWNERS, A MINIMUM OF 48 HOURS NOTICE SHALL BE GIVEN.
12. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR ALL WORK WITHIN PUBLIC STREETS.
13. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATION SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
14. ALL SEPTIC SYSTEM COMPONENTS AND DRAINAGE STRUCTURES SHALL BE REQUIRED TO WITHSTAND HEAVY DUTY H-20 LOADINGS.
15. ALL DISTURBED AREA SHALL BE PAVED, LANDSCAPED, OR REVEGETATED WITH 4" (MIN) LOAM AND SEED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
16. CONTRACTOR SHALL IMPLEMENT DUST CONTROL MEASURES, INCLUDING WATER TRUCKS THROUGHOUT CONSTRUCTION UNTIL PAVING IS COMPLETED AND ALL SURFACES ARE STABILIZED. DUST CONTROL ADDITIVES SUCH AS CALCIUM CHLORIDE OR SODIUM CHLORIDE SHALL BE USED ONLY WITH PERMISSION FROM THE TOWN.
17. CONTRACTOR IS FULLY RESPONSIBLE FOR COORDINATING WITH AND OBTAINING ALL APPROVALS FROM APPROPRIATE GOVERNING AGENCIES AND UTILITY COMPANIES PRIOR TO, DURING AND AFTER INSTALLATION OF ALL WATER, SEWER, DRAINAGE AND SITE UTILITIES.
18. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL REQUIRED INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY COMPANIES ARE COMPLETED PRIOR TO INSTALLATION, BACKFILLING, ANNOUNCED BUILDING POSSESSION, AND THE FINAL CONNECTION OF SERVICES.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SURVEY CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE PROPOSED WORK.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED.
21. THE CONTRACTOR SHALL INSTITUTE AND MAINTAIN ALL SAFETY MEASURES NECESSARY TO PROTECT THE PUBLIC DURING CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO BARRICADES, SIGNS, FENCES, LIGHTING, POLICE DETAIL, AND ANY OTHER MEANS AS DIRECTED BY THE TOWN. NO TRENCHES ARE TO REMAIN OPEN OVERNIGHT.
22. THE CONTRACTOR SHALL KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL AND OTHER DEBRIS RESULTING FROM THE WORK. AT THE END OF CONSTRUCTION THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS, BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED AND REMOVED FROM THE SITE.
23. THE CONTRACTOR SHALL REMOVE ALL VEGETATION, TREES, STUMPS, GRASSES, ORGANIC SOILS, DEBRIS AND DELETERIOUS MATERIALS WITHIN THE AREAS SLATED FOR CONSTRUCTION.
24. THESE PLANS SHOULD NOT BE USED FOR CONSTRUCTION UNTIL ALL REQUIRED APPROVALS HAVE BEEN RECEIVED.
25. ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPROVED PERMITS AND WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES, STANDARDS, ORDINANCES, RULES AND REGULATIONS.
26. BUILDING FOOTPRINTS SHOWN HEREON WERE PROVIDED BY ARCHITECT.
27. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS, DESIGN AND DIMENSIONS OF ROOF DRAINS, SEWER, DOMESTIC WATER SERVICE, FIRE SERVICE, GAS, ELECTRIC, TELEPHONE, CABLE UTILITIES, CANOPY DRAINS, FLOOR DRAINS, ENTRANCE/EXITS, STEPS/STAIRWAYS, DECKS, PATIOS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
28. ALL DIMENSIONS ARE PERPENDICULAR TO THE PROPERTY LINES.
29. ALL PARKING LOT CURBS ADJACENT TO BUILDING AND ENTRANCES SHALL BE PRECAST OR CAST IN PLACE CONCRETE CURBING AND MINIMUM CURB RADIUS IS 5' UNLESS OTHERWISE NOTED.
30. SEWER, WATER, AND UTILITY BUILDING SERVICES SHOWN ARE APPROXIMATE. REFER TO ARCHITECTURAL PLANS FOR EXACT TIE-IN LOCATIONS. SITE CONTRACTOR IS RESPONSIBLE FOR UTILITY SERVICES TO WITHIN 5' OF THE BUILDINGS.
31. ALL PROPOSED UTILITIES AND APPURTENANCES TO BE CONSTRUCTED TO WITHIN 5' OF THE BUILDING AND IN COMPLIANCE WITH LOCAL MUNICIPALITIES CODES AND REGULATIONS GOVERNING THE INSTALLATION OF SUCH UTILITIES.
32. MINIMUM SIDEWALK GRADES ARE TO BE 1/8" PER FT. SLOPED AWAY FROM THE BUILDING.
33. FINAL DESIGN AND LAYOUT OF GAS AND UNDERGROUND UTILITIES TO BE DESIGNED BY OTHERS IN CONJUNCTION WITH THE UTILITY COMPANIES. SITE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH UTILITY COMPANIES AND ALL UTILITY INSTALLATIONS ARE TO BE IN FULL COMPLIANCE WITH ALL THE UTILITY COMPANIES' DESIGN AND SPECIFICATIONS.
34. ALL WATER PIPE AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MASHPEE WATER DEPARTMENT.
35. ALL UNSUITABLE SOIL MATERIALS UNDER ALL INFILTRATION STRUCTURES SHALL BE REMOVED AND REPLACED WITH CLEAN, COARSE, 2 MM/INCH SAND DOWN TO EXISTING SANDY SOIL LAYER.

EROSION CONTROL NOTES

1. PRIOR TO COMMENCING SITE WORK OR EARTHWORK OPERATIONS, INSTALL EROSION CONTROL BARRIER AND MAINTAIN THROUGHOUT ALL CONSTRUCTION.
2. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
3. ALL HAYBALES AND STOCKPILES SHALL BE STORED ON UPLAND AREAS OUTSIDE THE 100 FOOT BUFFER ZONE. STOCKPILES SHALL BE PROTECTED BY HAYBALES, SHALL HAVE SIDE SLOPES NO GREATER THAN 3:1, AND SHALL BE SEEDED OR STABILIZED IF LEFT UNDISTURBED FOR TWO WEEKS OR MORE.
4. SEDIMENTATION CONTROL DEVICES AND EROSION CONTROL BARRIERS SHALL BE INSPECTED WEEKLY AND MAINTAINED AS NECESSARY THROUGHOUT ALL PHASES OF CONSTRUCTION AND PROMPTLY AFTER EACH RAINFALL.
5. ANY SLOPE STEEPER THAN 3:1 SHALL BE EQUIPPED WITH SLOPE STABILIZATION FABRIC OR EROSION CONTROL MATTING.
6. ALL CATCH BASINS SHALL BE PROVIDED WITH HAYBALE DIKES OR PRE-MANUFACTURED "SILT-SAC" CATCH BASIN INLET SEDIMENT COLLECTION SYSTEMS UNTIL BASE COURSE IS IN PLACE. INSPECT WEEKLY AND AFTER MAJOR STORM EVENTS (1" OR GREATER) THROUGHOUT CONSTRUCTION.
7. CONTRACTOR SHALL INSTALL 4" CRUSHED STONE TRACKING PAD AT ENTRANCE PRIOR TO CONSTRUCTION.
8. IF THE SEDIMENT FOREBAYS ARE USED AS TEMPORARY SEDIMENTATION BASINS THROUGHOUT CONSTRUCTION, THEY SHALL BE PERIODICALLY CLEANED DURING CONSTRUCTION, AND AT THE COMPLETION OF CONSTRUCTION. ELEVATIONS SHALL BE CHECKED AND CORRECTED AS NECESSARY.
9. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTITUTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER, THE CONSERVATION COMMISSION AND/OR THE PLANNING BOARD.
10. THE CONTRACTOR MUST REPAIR OR RE-SEED ANY AREAS THAT DO NOT DEVELOP WITHIN A PERIOD OF ONE YEAR AT NO ADDITIONAL EXPENSE TO THE OWNER.
11. MATERIAL STOCKPILES SHALL NOT BE LOCATED WITHIN THE PATH OF DRAINAGE OR PROPOSED WATERCOURSES (BOTH TEMPORARY OR PERMANENT) OR THOSE AREAS SUBJECT TO EXISTING OR FUTURE FLOW.
12. SEDIMENT CONTROL DEVICES AND EROSION CONTROL BARRIERS MAY BE REMOVED ONLY AFTER THE SITE HAS BEEN STABILIZED AND THE CONSERVATION COMMISSION GRANTS PERMISSION.
13. ALL DISTURBED OR EXPOSED AREAS SUBJECT TO EROSION, WHICH REMAIN DISTURBED BUT INACTIVE FOR AT LEAST THIRTY DAYS, SHALL RECEIVE TEMPORARY SEEDING IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES. IN ALL CASES, STABILIZATION MEASURES SHALL BE IMPLEMENTED AS SOON AS POSSIBLE IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES.
14. EARTHWORK ACTIVITY ON THE SITE SHALL BE DONE IN A MANNER SUCH THAT RUNOFF IS DIRECTED TO TEMPORARY DRAINAGE SWALES, STILLING BASINS, SEDIMENT TRAPS AND/OR SEDIMENTATION BASINS TO SETTLE OUT SUSPENDED MATERIALS PRIOR TO DISCHARGE THROUGH PERIMETER EROSION CONTROL BARRIERS. THE SEDIMENT FOREBAYS MAY BE UTILIZED AS TEMPORARY SEDIMENTATION BASINS. THE BIORETENTION SYSTEMS SHALL NOT AT ANY POINT DURING CONSTRUCTION, BE UTILIZED AS TEMPORARY SEDIMENT BASINS.
15. THE LOCATION OF TEMPORARY DRAINAGE SWALES, SEDIMENTATION TRAPS AND SEDIMENT BASINS SHALL BE DETERMINED IN THE FIELD AND RELOCATED AS REQUIRED AS CONSTRUCTION PROGRESSES.
16. THE CONTRACTOR SHALL KEEP ON SITE AT ALL TIMES ADDITIONAL HAYBALES AND EXTRA SILTATION FENCING FOR INSTALLATION AT THE DIRECTION OF THE ENGINEER OR THE CONSERVATION COMMISSION TO MITIGATE ANY EMERGENCY CONDITION.
17. REFER TO THE BIORETENTION SYSTEM DETAILS FOR ADDITIONAL EROSION CONTROL MEASURES.
18. THE ENTRANCE AND EXIT TO AND FROM THE SITE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITING, RELOCATION AND AUGMENTATION OF EROSION CONTROL DEVICES AS THE PROJECT PROGRESSES AND THE SITE DRAINAGE CONDITIONS CHANGE.
20. THE CONTRACTOR SHALL MODIFY EROSION CONTROL MEASURES BASED ON CHANGING SITE DRAINAGE CONDITIONS AND EXPECTED FUTURE CONSTRUCTION ACTIVITIES.
21. THE CONTRACTOR SHALL MINIMIZE THE AREA OF DISTURBED SOIL. EFFORTS SHALL BE MADE TO LIMIT THE TIME OF EXPOSURE OF DISTURBED AREAS.

STORMWATER OPERATION AND MAINTENANCE

SCHEDULE:

INFILTRATION BASIN:
INSPECT AFTER EVERY MAJOR STORM EVENT (1" OR GREATER) DURING CONSTRUCTION AND FOR THE FIRST FEW MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND FUNCTION THEREAFTER, INSPECT AT LEAST ONCE PER YEAR DURING WET WEATHER TO ENSURE THE BASIN IS MEETING DESIGN CRITERIA, CHECK FOR EROSION, TREE GROWTH, CLOGGING AND TRASH. REMOVE ORGANIC MATTER, TRASH AND DEBRIS AS NECESSARY. RE-SEED ERODED OR BARREN SPOTS IMMEDIATELY AFTER INSPECTION. REMOVE SEDIMENT AS NECESSARY DURING CONSTRUCTION, WHILE DRY, AND AT LEAST EVERY 5 YEARS AFTER CONSTRUCTION.

AT LEAST 2 TIMES DURING THE GROWING SEASON, MOW UPPER-STAGE, SIDE SLOPES AND EMBANKMENT. THE GRASS SHOULD NOT BE CUT LOWER THAN 4". REMOVE TRASH, GRASS CLIPPINGS, ORGANIC MATTER AND DEBRIS.

FOREBAY:
INSPECT MONTHLY AT A MINIMUM, OR AFTER MAJOR STORM EVENTS (2"OR GREATER) DURING AND AFTER CONSTRUCTION FOR EROSION, EXCESSIVE ACCUMULATION OF SEDIMENT AND TRASH. REPAIR ERODED SPOTS IMMEDIATELY AFTER INSPECTION. ACCUMULATED SEDIMENT SHALL BE REMOVED AT LEAST FOUR TIMES A YEAR OR BEFORE IT EXCEEDS 0.5' IN DEPTH, WHICHEVER OCCURS FIRST. SEDIMENT SHALL BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS.

CATCH BASINS AND DEEP SUMP MANHOLES:
INSPECT MONTHLY (MINIMUM), OR AFTER MAJOR STORM EVENTS (1" OR GREATER) DURING AND AFTER CONSTRUCTION FOR EXCESSIVE ACCUMULATION OF SEDIMENTS AND TRASH. CLEAN SUMPS SEMIANNUALLY OR WHEN SEDIMENT REACHES 18", WHICHEVER OCCURS FIRST. ALL CATCH BASINS SHALL BE PROVIDED WITH HAYBALE DIKES OR PRE-MANUFACTURED "SILT-SAC" CATCH BASIN INLET SEDIMENT COLLECTION SYSTEMS UNTIL BASE COURSE IS IN PLACE. INSPECT WEEKLY AND AFTER MAJOR STORM EVENTS (1" OR GREATER) THROUGHOUT CONSTRUCTION.

STREET SWEEPING:
ALL PAVED AREAS SHOULD BE SWEPT TWICE A MONTH DURING CONSTRUCTION AND FOUR TIMES PER YEAR DURING THE EARLY AND LATE SPRING, SUMMER AND LATE FALL SEASONS AFTER CONSTRUCTION.

INFILTRATION/LEACHING GALLEYS:
INSPECT AFTER EVERY MAJOR STORM EVENT (1" OR GREATER) DURING CONSTRUCTION AND FOR THE FIRST FEW MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND FUNCTION, THEREAFTER INSPECT AT LEAST TWICE PER YEAR DURING WET WEATHER TO ENSURE THE SYSTEM IS DRAINED PROPERLY, CHECK FOR ACCUMULATION OF SEDIMENT AND PONDING WATER. IF PONDING WATER IS VISIBLE INSIDE THE SYSTEM FOR SEVERAL DAYS AFTER A STORM EVENT, NOTIFY THE ENGINEER FOR POSSIBLE REMEDIAL MEASURES. REMOVE SEDIMENT AS NECESSARY DURING CONSTRUCTION, WHILE THE SYSTEM IS DRY, AND AT LEAST EVERY 5 YEARS AFTER CONSTRUCTION.

GENERAL O AND M NOTES:

1. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER FACILITIES UNTIL THE PROJECT CONSTRUCTION IS COMPLETED. SUBSEQUENT TO THAT, THE FACILITY MANAGEMENT COMPANY WILL BE RESPONSIBLE.
2. THE OWNER/CONTRACTOR/FACILITY MANAGER SHALL FILE AN INSPECTION REPORT TO THE PLANNING BOARD FOLLOWING EACH SITE INSPECTION AS RECOMMENDED ABOVE. THE INSPECTION REPORT SHALL IDENTIFY THE DATE OF INSPECTION, NAME AND CONTACT NUMBER OF RESPONSIBLE PARTY, SPECIFIC STRUCTURES INSPECTED, SPECIFIC MAINTENANCE AND/OR REPAIRS REQUIRED AND GENERAL OBSERVATIONS. ANY DEFICIENCIES NOTED IN THE INSPECTION REPORT SHALL BE CORRECTED TO THE SATISFACTION OF THE PLANNING BOARD.
3. DISPOSAL OF ACCUMULATED SEDIMENT AND HYDROCARBONS TO BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL GUIDELINES AND REGULATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING ALL COMPONENTS OF THE STORMWATER MANAGEMENT SYSTEM AND SWEEPING ALL PAVED AREAS.

FILE: 3110.00-SITE

Atlantic® DESIGN ENGINEERS, INC.
P.O. Box 1051, Sandwich, MA 02563 (508) 888 - 9282

Designed by : _____
Drawn by : _____
Checked by : _____
Survey chk. by : _____
Approved by : _____

SCALE
SCALE 1" = 20'
0 5 10 20 40

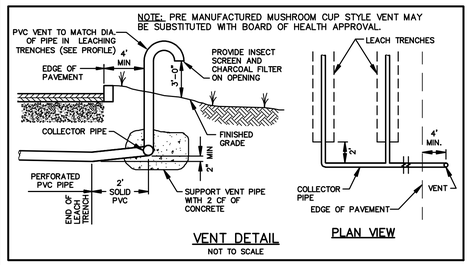
COMMONWEALTH OF MASSACHUSETTS RICHARD T. ZANCZYNSKI CIVIL No. 33748 REGISTERED PROFESSIONAL ENGINEER
DATE

NO.	BY	DATE	REVISION

APPLICANT:
MODI, LLC
348 MAIN STREET
MASHPEE, MASSACHUSETTS 02649

UTILITY, GRADING, DRAINAGE & EROSION CONTROL PLAN
FOR
CAPE COD COFFEE
LOT B/#10 EVERGREEN CIRCLE - MASHPEE, MA
JUNE 21, 2019

Sheet 4 of 6
JOB NUMBER 3110.00



SEE SHEET 4 LEGEND AND CONSTRUCTION NOTES

MAP 19
N/F
EVERGREEN ENERGY LLC

BENCHMARK:
TOP OF CONCRETE BOUND
ELEV.=97.41 (ASSUMED)

CONCRETE BOUND W/DRILL HOLE FOUND

EVERGREEN CIRCLE
(PRIVATE - 50' WIDE)
UNDER CONSTRUCTION

EXISTING WATER SERVICE STUB

APPROXIMATE LOCATION OF EXISTING GAS MAIN

APPROXIMATE LOCATION OF EXISTING WATER MAIN

EXISTING CATCH BASIN RIM=97.63

APPROXIMATE LOCATION OF EXISTING UNDERGROUND UTILITY LINES

EXISTING CATCH BASIN RIM=97.57

EOP/CCB

STOP

CONCRETE BOUND W/DRILL HOLE FOUND

EXISTING CONCRETE TRANSFORMER PAD

LIMITED COMMERCIAL (C-3) - ZONING DISTRICT
INDUSTRIAL (I-1) - ZONING DISTRICT

INFILTRATION

FRONT YARD 75'

DONUT TRUCK

COVERED PORCH

PROPOSED 2-STORY BUILDING
F.F. ELEV.=100.00

OVERHANG

PROPOSED CLEAN-OUT

PROPOSED VENT TO BUILDING

15'x15' COVERED PAVILION

WALK-IN COOLER

PROPOSED DISTRIBUTION BOX
6 OUTLET (H20)

SIDE YARD 20'

REAR YARD 20'

PROPOSED 1,250 GALLON GREASE TRAP TANK

PROPOSED 5,000 GALLON SEPTIC TANK

PROPOSED FLOW EQUALIZER PUMP CHAMBER

PROPOSED (H20) MICROFAST 9.0 WASTEWATER TREATMENT OR APPROVED EQUAL

TRASH

PROPOSED VENT

PROPOSED SOIL ABSORPTION SYSTEM
(5) 73' LONG, 2' WIDE, 2 DEEP LEACHING TRENCHES W/RESERVE BETWEEN

MAP 19
N/F
EVERGREEN ENERGY LLC

MAP 20
LOT 3B
N/F
WILSON, THOMAS D & LYNN E

MAIN STREET ROUTE 130
(1936 COUNTY LAYOUT - PUBLIC 60' WIDE)

CONCRETE HEADWALL W/12" CONCRETE PIPE INV.=92.66

CONCRETE BOUND W/DRILL HOLE FOUND

400' TO CENTERLINE OF ROUTE 130

50' FROM EAST SIDELINE OF ROUTE 130

50' BUFFER TO RESIDENTIAL PROPERTY

RESIDENCE (R-5) - ZONING DISTRICT
LIMITED COMMERCIAL (C-3) - ZONING DISTRICT

GRID NORTH NAD83

MAP 20
LOT 4
N/F
PIERCE, KATHLEEN J ET AL TRS
CCR TRUST

GREASE TRAP SIZING

REQUIRED:
15 GPD/SEAT

AMOUNT:
67 SEATS x 15 GPD/SEAT = 1005 GPD

PROVIDED:
1,250 GALLONS

DESIGN FORMULA:

NO GARBAGE GRINDER ALLOWED WITH THIS DESIGN

SYSTEM	REQUIRED	PROVIDED
DAILY FLOW:		
67 SEATS @ 20 GPD/SEAT	1,340 GPD	
1,398 SF OFFICE @ 75 GPD/1000 SF	105 GPD	
12 PERSON FACILITY/IND. PLANT @ 15 GPD/PERSON	180 GPD	
TOTAL:	1,625 GPD	
LEACHING AREA:		
(5) 73' x 2' LEACHING TRENCHES		
2' EFFECTIVE DEPTH		
SIDEWALL: (2 x (2' x (73' + 2'))) x 5		1,500 SF
BOTTOM: (73' x 2') x 5		730 SF
TOTAL:		2,230 SF
LEACHING CAPACITY:		
2,230 SF x 0.74 GAL/SF		1,650.2 GAL
TOTAL:		1,650.2 GAL
SEPTIC TANK (2 COMPARTMENT):		
1ST COMPARTMENT = 2 x DAILY FLOW	3,250 GAL	
2ND COMPARTMENT = 1 x DAILY FLOW	1,625 GAL	
TOTAL:	4,875 GAL	5,000 GAL

SEPTIC DESIGN NOTES:

1. ALL DIMENSIONS ARE PERPENDICULAR TO THE PROPERTY LINES.
2. ALL SYSTEM COMPONENTS SHALL BE INSTALLED IN COMPLIANCE WITH THE STATE SANITARY CODE TITLE V AND THE BOARD OF HEALTH REQUIREMENTS.
3. ANY CHANGE TO THE SEPTIC SYSTEMS SHOWN ON THIS PLAN MUST BE APPROVED BY THE BOARD OF HEALTH AND ATLANTIC DESIGN ENGINEERS.
4. BEFORE BACKFILLING THE SEPTIC SYSTEMS, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER AND THE BOARD OF HEALTH FOR INSPECTION.
5. HEAVY EQUIPMENT SHALL NOT TRAVEL OVER DISPOSAL SYSTEM DURING OF AFTER CONSTRUCTION.
6. TIGHT JOINT (T.J.) PIPING SHALL CONSIST OF POLYVINYL CHLORIDE (PVC) SCHEDULE 40. ALL PIPES TO BE LAID ON FIRM BASE AND TO BE WATERTIGHT. ALL CONNECTIONS AND JOINTS SHALL BE MECHANICALLY SOUND AND TIGHT. SLOPES ON ALL SEWER AND DRAIN LINES ARE APPROXIMATE. CONTRACTOR TO HOLD INVERTS FOR CONSTRUCTION.
7. ALL SEPTIC SYSTEM COMPONENTS AND DRAINAGE STRUCTURES SHALL BE REQUIRED TO WITHSTAND HEAVY DUTY H-20 LOADINGS.
8. SEWER MANHOLE SHALL HAVE AN INLET TEE EXTENDING TO ONE INCH ABOVE THE OUTLET INVERT ELEVATION.
9. REFER TO ARCHITECTURAL PLANS BY BUILDING ARCHITECT FOR BUILDING PLANS AND ELEVATIONS AND EXACT UTILITY TIE-IN LOCATIONS.
10. ALL WATER PIPE AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MASHPEE WATER DEPARTMENT.
11. ALL EXISTING UTILITIES, WATER, AND DRAINAGE STRUCTURES SHOWN ARE APPROXIMATE ONLY AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL LOCATIONS AND RIM AND INVERT ELEVATIONS. UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE ONLY, IS NOT WARRANTED BY THE OWNER AND ENGINEER TO BE CORRECT, NOR DOES THE OWNER AND ENGINEER WARRANT THAT ALL UNDERGROUND UTILITIES ARE SHOWN.
12. SITE CONTRACTOR TO VERIFY EXISTING SITE CONDITIONS AS SHOWN AND BRING ANY INCONSISTENCY TO THE ATTENTION OF THE OWNER PRIOR TO BIDDING.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY DIGSAFE, THE TOWN OF MASHPEE HIGHWAY DEPT., AND ALL UTILITY COMPANIES A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION ACTIVITIES FOR LOCATION OF ALL UNDERGROUND UTILITIES AND UTILITY COMPANY AND DPW APPROVALS.
14. ALL DISTURBED AREA SHALL BE PAVED, LANDSCAPED, OR REVEGETATED WITH 4"(MIN) LOAM AND SEED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
15. SEWER, WATER, AND UTILITY BUILDING SERVICES SHOWN ARE APPROXIMATE. REFER TO ARCHITECTURAL PLANS FOR EXACT TIE-IN LOCATIONS. SITE CONTRACTOR IS RESPONSIBLE FOR UTILITY SERVICES TO WITHIN 5' OF THE BUILDINGS.

TEST PIT #1 – ELEVATION=98.37'±

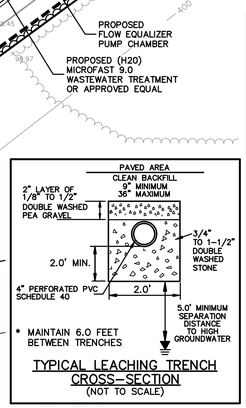
DEPTH FROM SURFACE (INCHES)	BOTTOM OF LAYER ELEV. (FEET)	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	REDOXIMORPHIC FEATURES (MOTTLES)	OTHER
0-5	97.95	O	WOOD LOAM	10 YR 2/2	–	FRIABLE
5-12	97.37	A	SANDY LOAM	10 YR 3/2	–	FRIABLE
12-24	96.37	B	LOAMY SAND	10 YR 4/4	–	LOOSE
24-48	94.37	C1	MED. SAND	10 YR 5/4	–	LOOSE
48-65	92.95	C2	SANDY LOAM	10 YR 6/2	–	FIRM
65-132	87.37	C3	MED. SAND	10 YR 5/4	–	LOOSE

PERCOLATION TEST BY: DAVID D. COUGHANOWR, SOIL EVALUATOR #461, ECO-TECH CONTRACTOR FOR ATLANTIC DESIGN ENGINEERS, INC.
WITNESSED BY: VERONICA MULLIGAN, MASHPEE BOARD OF HEALTH
DATE: MAY 30, 2019
PERCOLATION RATE: LESS THAN 2 MIN/INCH IN C3 SOIL
DEPTH TO GROUNDWATER: NO GROUNDWATER OBSERVED

TEST PIT #3 – ELEVATION=98.60'±

DEPTH FROM SURFACE (INCHES)	BOTTOM OF LAYER ELEV. (FEET)	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	REDOXIMORPHIC FEATURES (MOTTLES)	OTHER
0-8	97.93	Ap	LOAM	10 YR 3/2	–	FRIABLE
8-28	96.26	Bw	LOAMY SAND	10 YR 5/6	–	FRIABLE
28-42	95.09	C1	SANDY LOAM	10 YR 6/2	–	FIRM
42-120	88.59	C2	MED. SAND	10 YR 5/4	–	LOOSE

PERCOLATION TEST BY: DAVID D. COUGHANOWR, SOIL EVALUATOR #461, ECO-TECH CONTRACTOR FOR ATLANTIC DESIGN ENGINEERS, INC.
WITNESSED BY: VERONICA MULLIGAN, MASHPEE BOARD OF HEALTH
DATE: MAY 30, 2019
PERCOLATION RATE: LESS THAN 2 MIN/INCH IN C2 SOIL
DEPTH TO GROUNDWATER: NO GROUNDWATER OBSERVED



TYPICAL LEACHING TRENCH CROSS-SECTION
(NOT TO SCALE)

REQUESTED BOARD OF HEALTH WAIVERS:

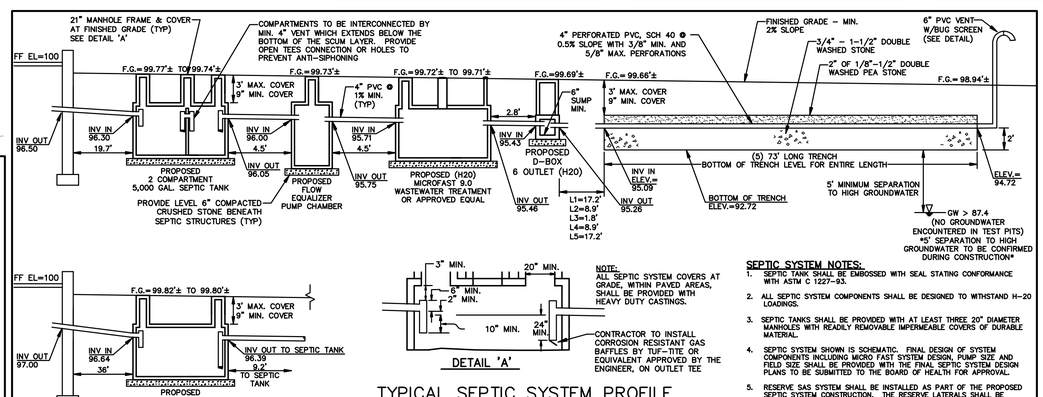
REQUESTING A WAIVER FROM INSTALLING THE RESERVE LEACHING AREA AT THE SAME TIME AS THE PRIMARY LEACHING AREA FROM SECTION 6.4 OF THE TOWN OF MASHPEE BOARD OF HEALTH RULES AND REGULATIONS.

SEPTIC SYSTEM MINIMUM SETBACKS

LEACHING FACILITY	SEPTIC TANK
10' PROPERTY LINES	10' PROPERTY LINES
20' CELLAR WALL	10' CELLAR WALL
10' SLAB FOUNDATION	10' SLAB FOUNDATION
10' WATER SUPPLY LINE	10' WATER SUPPLY LINE
150' PRIVATE WELL	150' PRIVATE WELL
100' WETLAND	100' WETLAND
25' LEACHING STRUCTURES	10' LEACHING STRUCTURES

INSPECTION SCHEDULE:

A. EXCAVATION INSPECTION
EXCAVATION OF SOIL ABSORPTION SYSTEM IN ORDER TO CONFIRM 5'OF NATURALLY OCCURRING PERVIOUS MATERIAL AND 5' SEPARATION TO HIGH GROUNDWATER.
B. PREBED
PRIOR TO INSTALLATION OF THE SYSTEM.
C. FINAL INSPECTION
PRIOR TO BACKFILLING OF SYSTEM.
D. FINISH GRADE INSPECTION
FOLLOWING BACKFILLING OF SYSTEM.



NOTE:
ALL SEPTIC SYSTEM COVERS AT GRADE, WITHIN PAVED AREAS, SHALL BE PROVIDED WITH HEAVY DUTY CASTINGS.

CONTRACTOR TO INSTALL CORROSION RESISTANT GAS BAFFLES BY TUF-TITE OR EQUIVALENT APPROVED BY THE ENGINEER, ON OUTLET TEE

TYPICAL SEPTIC SYSTEM PROFILE
(NOT TO SCALE)

SEPTIC SYSTEM NOTES:

1. SEPTIC TANK SHALL BE EMBOSSED WITH SEAL STATING CONFORMANCE WITH ASTM C 1227-93.
2. ALL SEPTIC SYSTEM COMPONENTS SHALL BE DESIGNED TO WITHSTAND H-20 LOADINGS.
3. SEPTIC TANKS SHALL BE PROVIDED WITH AT LEAST THREE 20" DIAMETER MANHOLES WITH READILY REMOVABLE IMPERMEABLE COVERS OF DURABLE MATERIAL.
4. SEPTIC SYSTEM SHOWN IS SCHEMATIC. FINAL DESIGN OF SYSTEM COMPONENTS INCLUDING MICRO FAST SYSTEM DESIGN, PUMP SIZE AND FIELD SIZE SHALL BE PROVIDED WITH THE FINAL SEPTIC SYSTEM DESIGN PLANS TO BE SUBMITTED TO THE BOARD OF HEALTH FOR APPROVAL.
5. RESERVE SAS SYSTEM SHALL BE INSTALLED AS PART OF THE PROPOSED SEPTIC SYSTEM CONSTRUCTION. THE RESERVE LATERALS SHALL BE CONNECTED TO A RESERVE MANIFOLD THAT IS CAPPED WITHIN THE DISTRIBUTION BOX AS SHOWN ON THE PLANS AND DETAILS.

FILE: 3110.00-SITE

Atlantic® DESIGN ENGINEERS, INC.
P.O. Box 1051, Sandwich, MA 02563 (508) 888 – 9282

Designed by :
Drawn by :
Checked by :
Survey chk. by :
Approved by :

SCALE
SCALE 1" = 20'
0 5 10 20 40

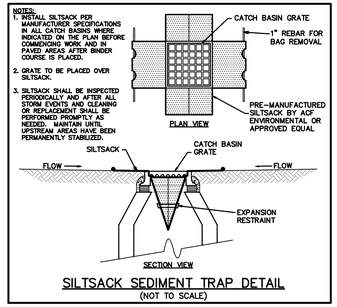
RICHARD J. TABACZYNSKI CIVIL No. 33748 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

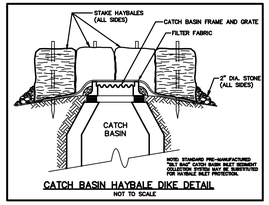
NO.	BY	DATE	REVISION

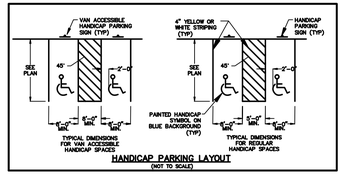
APPLICANT:
MODI, LLC
348 MAIN STREET
MASHPEE, MASSACHUSETTS 02649

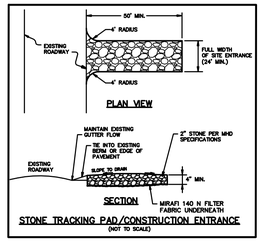
SEPTIC DESIGN PLAN
FOR
CAPE COD COFFEE
LOT B/#10 EVERGREEN CIRCLE – MASHPEE, MA
JUNE 21, 2019

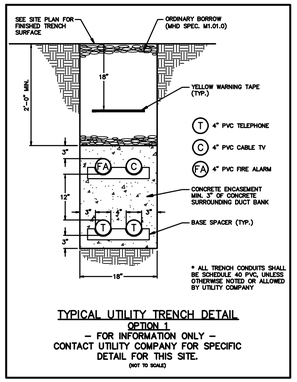
Sheet 5 of 6
JOB NUMBER 3110.00

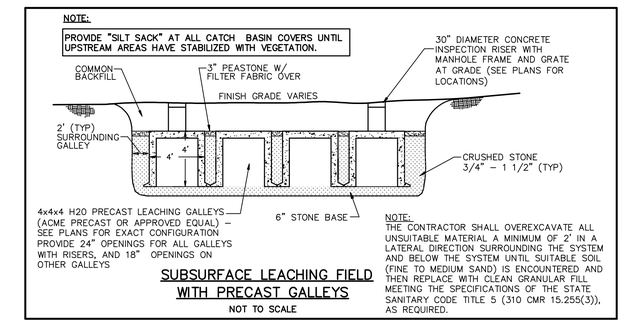


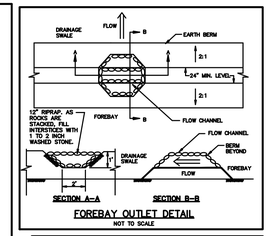


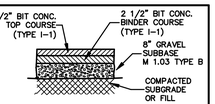


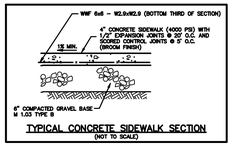


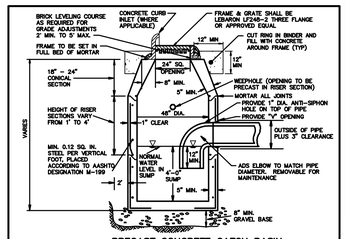


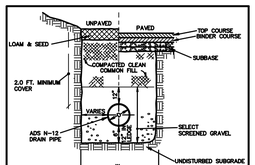


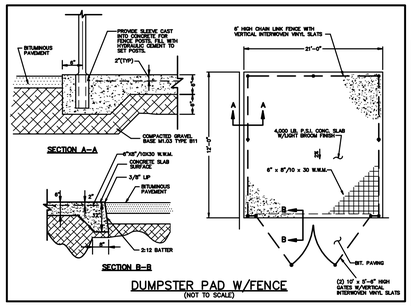


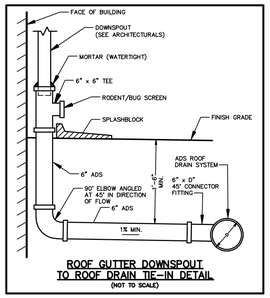


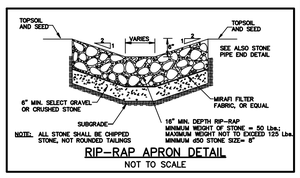


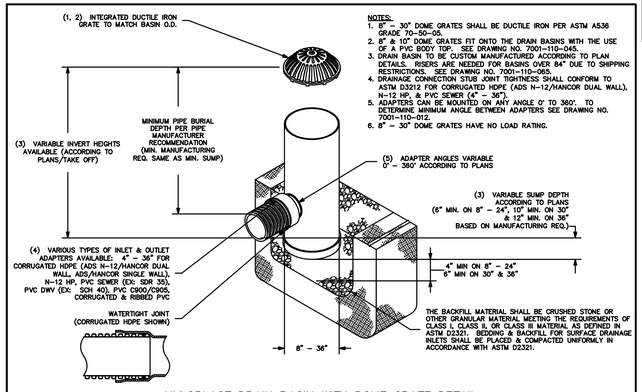


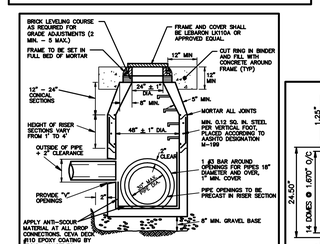


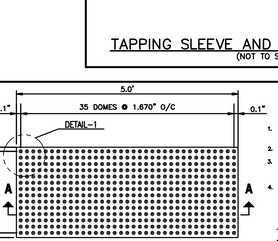


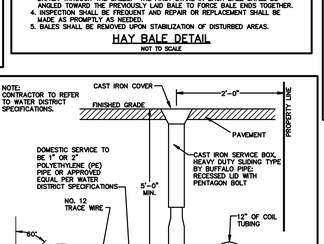


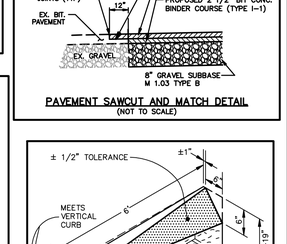


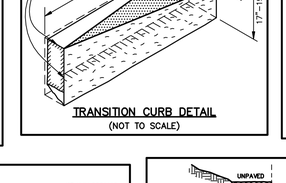


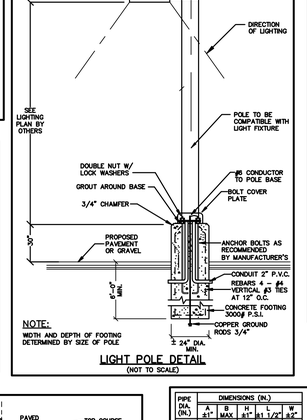


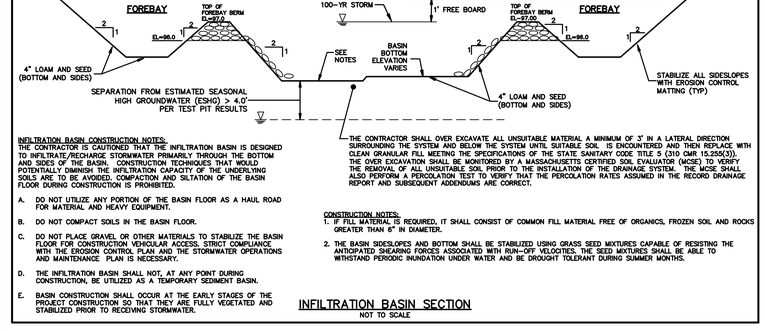


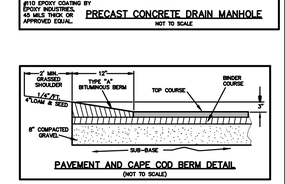


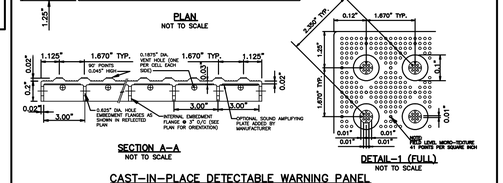


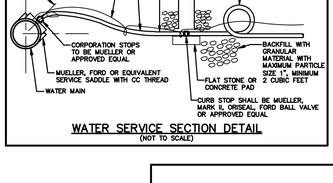


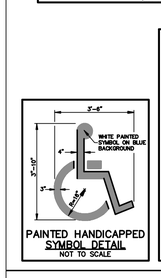


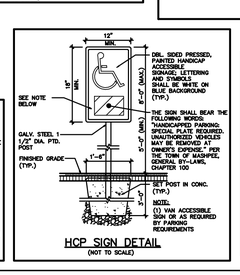


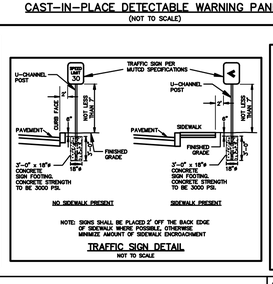


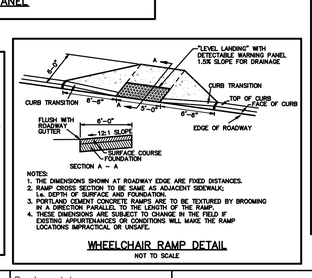


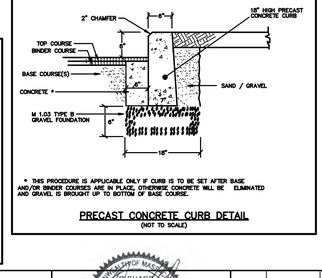


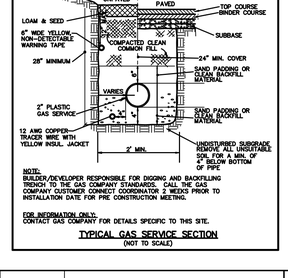


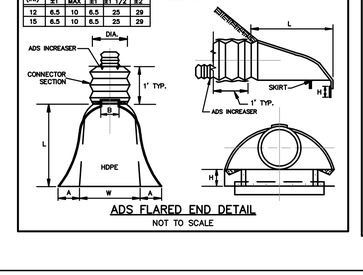


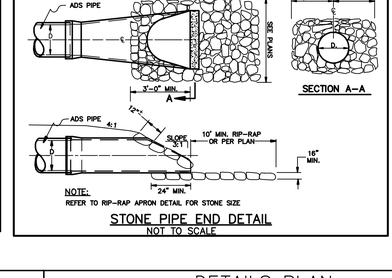












NOTES:
1. INSTALL SILTSACK PER MANUFACTURER SPECIFICATIONS IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK AND IN PAVED AREAS AFTER BINDER COURSE IS PLACED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED.

SILTSACK SEDIMENT TRAP DETAIL
(NOT TO SCALE)

CATCH BASIN HAYBALE DIKE DETAIL
NOT TO SCALE

HANDICAP PARKING LAYOUT
(NOT TO SCALE)

STONE TRACKING PAD/CONSTRUCTION ENTRANCE
(NOT TO SCALE)

* ALL TRENCH CONDUITS SHALL BE SCHEDULE 40 PVC, UNLESS OTHERWISE NOTED OR ALLOWED BY UTILITY COMPANY

TYPICAL UTILITY TRENCH DETAIL
OPTION 1
- FOR INFORMATION ONLY -
CONTACT UTILITY COMPANY FOR SPECIFIC DETAIL FOR THIS SITE.

NOTE:

PROVIDE "SILT SACK" AT ALL CATCH BASIN COVERS UNTIL UPSTREAM AREAS HAVE STABILIZED WITH VEGETATION.

4x4x4 H20 PRECAST LEACHING GALLEYS (ACME PRECAST OR APPROVED EQUAL) – SEE PLANS FOR EXACT CONFIGURATION PROVIDE 24" OPENINGS FOR ALL GALLEYS WITH RISERS, AND 18" OPENINGS ON OTHER GALLEYS

SUBSURFACE LEACHING FIELD WITH PRECAST GALLEYS
NOT TO SCALE

NOTE:
THE CONTRACTOR SHALL OVEREXCAVATE ALL UNSUITABLE MATERIAL A MINIMUM OF 2' IN A LATERAL DIRECTION SURROUNDING THE SYSTEM AND BELOW THE SYSTEM UNTIL SUITABLE SOIL (FINE TO MEDIUM SAND) IS ENCOUNTERED AND THEN REPLACE WITH CLEAN GRANULAR FILL MEETING THE SPECIFICATIONS OF THE STATE SANITARY CODE TITLE 5 (310 CMR 15.255(3)), AS REQUIRED.

FOREBAY OUTLET DETAIL
NOT TO SCALE

PAVEMENT CROSS SECTION
NOT TO SCALE

PRECAST CONCRETE CATCH BASIN WITH GAS TRAP AND CLEANOUT
NOT TO SCALE

TRENCH WIDTH, W	
DIAMETER OF PIPE, D	W
12" TO 18"	D+16"
OVER 18"	D+24"

TYPICAL DRAINAGE TRENCH SECTION
NOT TO SCALE

DUMPSTER PAD W/FENCE
(NOT TO SCALE)

ROOF GUTTER DOWNSPOUT TO ROOF DRAIN TIE-IN DETAIL
(NOT TO SCALE)

NOTE: ALL STONE SHALL BE CHIPPED STONE, NOT ROUNDED TAILINGS

RIP-RAP APRON DETAIL
NOT TO SCALE

NOTES:
1. 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" – 36").
5. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6. 8" – 30" DOME GRATES HAVE NO LOAD RATING.

THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

NYLOPLAST DRAIN BASIN WITH DOME GRATE DETAIL
(NOT TO SCALE)

TYPICAL CONCRETE SIDEWALK SECTION
(NOT TO SCALE)

PAINTED "STOP" DETAIL
NOT TO SCALE

TRENCH WIDTH, W	
DIAMETER OF PIPE	W
LESS THAN 12"	2'
12"	3'
15" TO 24"	4'

TYPICAL WATER TRENCH SECTION
NOT TO SCALE

NOTES:
1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
2. USE RESTRAINED JOINT FITTINGS (MEGALUG/STAINLESS STEEL WRAP AROUND OR APPROVED EQUAL) WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.
3. ALL MATERIALS AND INSTALLATION TO BE IN ACCORDANCE WITH WATER DIVISION SPECIFICATIONS.

TAPPING SLEEVE AND GATE VALVE DETAIL
(NOT TO SCALE)

NOTES:
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MIN. OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD THE PREVIOUSLY LAID BALE TO FORCE BALE ENDS TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE AS PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED UPON STABILIZATION OF DISTURBED AREAS.

HAY BALE DETAIL
NOT TO SCALE

TYPICAL SIDEWALK FACE CURB
(NOT TO SCALE)

PAVEMENT SAWCUT AND MATCH DETAIL
(NOT TO SCALE)

NOTE:
WIDTH AND DEPTH OF FOOTING DETERMINED BY SIZE OF POLE

LIGHT POLE DETAIL
(NOT TO SCALE)

THE CONTRACTOR SHALL OVER EXCAVATE ALL UNSUITABLE MATERIAL A MINIMUM OF 3' IN A LATERAL DIRECTION SURROUNDING THE SYSTEM AND BELOW THE SYSTEM UNTIL SUITABLE SOIL IS ENCOUNTERED AND THEN REPLACE WITH CLEAN GRANULAR FILL MEETING THE SPECIFICATIONS OF THE STATE SANITARY CODE TITLE 5 (310 CMR 15.255(3)). THE OVER EXCAVATION SHALL BE MONITORED BY A MASSACHUSETTS CERTIFIED SOIL EVALUATOR (MCSE) TO VERIFY THE REMOVAL OF ALL UNSUITABLE SOIL PRIOR TO THE INSTALLATION OF THE DRAINAGE SYSTEM. THE MCSE SHALL ALSO PERFORM A PERCOLATION TEST TO VERIFY THAT THE PERCOLATION RATES ASSUMED IN THE RECORD DRAINAGE REPORT AND SUBSEQUENT ADDENDUMS ARE CORRECT.

INFILTRATION BASIN CONSTRUCTION NOTES:
THE CONTRACTOR IS CAUTIONED THAT THE INFILTRATION BASIN IS DESIGNED TO INFILTRATE/RECHARGE STORMWATER PRIMARILY THROUGH THE BOTTOM AND SIDES OF THE BASIN. CONSTRUCTION TECHNIQUES THAT WOULD POTENTIALLY DIMINISH THE INFILTRATION CAPACITY OF THE UNDERLYING SOILS ARE TO BE AVOIDED. COMPACTION AND SILTATION OF THE BASIN FLOOR DURING CONSTRUCTION IS PROHIBITED.

A. DO NOT UTILIZE ANY PORTION OF THE BASIN FLOOR AS A HAUL ROAD FOR MATERIAL AND HEAVY EQUIPMENT.
B. DO NOT COMPACT SOILS IN THE BASIN FLOOR.
C. DO NOT PLACE GRAVEL OR OTHER MATERIALS TO STABILIZE THE BASIN FLOOR FOR CONSTRUCTION VEHICULAR ACCESS. STRICT COMPLIANCE WITH THE EROSION CONTROL PLAN AND THE STORMWATER OPERATIONS AND MAINTENANCE PLAN IS NECESSARY.
D. THE INFILTRATION BASIN SHALL NOT, AT ANY POINT DURING CONSTRUCTION, BE UTILIZED AS A TEMPORARY SEDIMENT BASIN.
E. BASIN CONSTRUCTION SHALL OCCUR AT THE EARLY STAGES OF THE PROJECT CONSTRUCTION SO THAT THEY ARE FULLY VEGETATED AND STABILIZED PRIOR TO RECEIVING STORMWATER.

CONSTRUCTION NOTES:
1. IF FILL MATERIAL IS REQUIRED, IT SHALL CONSIST OF COMMON FILL MATERIAL FREE OF ORGANICS, FROZEN SOIL AND ROCKS GREATER THAN 6" IN DIAMETER.
2. THE BASIN SIDESLOPES AND BOTTOM SHALL BE STABILIZED USING GRASS SEED MIXTURES CAPABLE OF RESISTING THE ANTICIPATED SHEARING FORCES ASSOCIATED WITH RUN-OFF VELOCITIES. THE SEED MIXTURES SHALL BE ABLE TO WITHSTAND PERIODIC INUNDATION UNDER WATER AND BE DROUGHT TOLERANT DURING SUMMER MONTHS.

INFILTRATION BASIN SECTION
NOT TO SCALE

PRECAST CONCRETE DRAIN MANHOLE

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. FOR CUSTOM SIZING CONTACT MANUFACTURER.
3. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDETAILS.COM/INFO REFERENCE NUMBER 681-001E
4. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

CAST-IN-PLACE DETECTABLE WARNING PANEL
(NOT TO SCALE)

NOTE:
CONTRACTOR TO REFER TO WATER DISTRICT SPECIFICATIONS.

WATER SERVICE SECTION DETAIL
(NOT TO SCALE)

TRANSITION CURB DETAIL
(NOT TO SCALE)

PAVEMENT AND CAPE COD BERM DETAIL
NOT TO SCALE

PAINTED HANDICAPPED SYMBOL DETAIL
NOT TO SCALE

HCP SIGN DETAIL
(NOT TO SCALE)

NOTE: SIGNS SHALL BE PLACED 2' OFF THE BACK EDGE OF SIDEWALK WHERE POSSIBLE, OTHERWISE MINIMIZE AMOUNT OF SIDEWALK ENCROACHMENT

TRAFFIC SIGN DETAIL
NOT TO SCALE

NOTES:
1. THE DIMENSIONS SHOWN AT ROADWAY EDGE ARE FIXED DISTANCES.
2. RAMP CROSS SECTION TO BE SAME AS ADJACENT SIDEWALK; i.e. DEPTH OF SURFACE AND FOUNDATION.
3. PORTLAND CEMENT CONCRETE RAMPS ARE TO BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL TO THE LENGTH OF THE RAMP.
4. THESE DIMENSIONS ARE SUBJECT TO CHANGE IN THE FIELD IF EXISTING APPURTENANCES OR CONDITIONS WILL MAKE THE RAMP LOCATIONS IMPRACTICAL OR UNSAFE.

WHEELCHAIR RAMP DETAIL
NOT TO SCALE

* THIS PROCEDURE IS APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE AND/OR BINDER COURSES ARE IN PLACE, OTHERWISE CONCRETE WILL BE ELIMINATED AND GRAVEL IS BROUGHT UP TO BOTTOM OF BASE COURSE.

PRECAST CONCRETE CURB DETAIL
(NOT TO SCALE)

NOTE:
BUILDER/DEVELOPER RESPONSIBLE FOR DIGGING AND BACKFILLING TRENCH TO THE GAS COMPANY STANDARDS. CALL THE GAS COMPANY CUSTOMER CONNECT COORDINATOR 2 WEEKS PRIOR TO INSTALLATION DATE FOR PRE CONSTRUCTION MEETING.

FOR INFORMATION ONLY:
CONTACT GAS COMPANY FOR DETAILS SPECIFIC TO THIS SITE.

TYPICAL GAS SERVICE SECTION
(NOT TO SCALE)

PIPE DIA. (IN.)	A ±1"	B MAX	H ±1"	L ±1 1/2"	W ±2"
12	6.5	10	6.5	25	29
15	6.5	10	6.5	25	29

NOTE:
CONSULT MANUFACTURER FOR PIPE DIAMETER SIZES LESS THAN 12"

ADS FLARED END DETAIL
NOT TO SCALE

NOTE:
REFER TO RIP-RAP APRON DETAIL FOR STONE SIZE

STONE PIPE END DETAIL
NOT TO SCALE

FILE: 3110.00-DET

Atlantic® DESIGN ENGINEERS, INC
P.O. Box 1051, Sandwich, MA 02563 (508) 888 – 9282

Designed by :	
Drawn by :	
Checked by :	
Survey chk. by :	
Approved by :	

SCALE
AS NOTED

RICHARD J. TABACZYNSKI
CIVIL
No. 33748

DATE

NO.	BY	DATE	REVISION

APPLICANT:
MODI, LLC
348 MAIN STREET
MASHPEE, MASSACHUSETTS 02649

DETAILS PLAN
FOR
CAPE COD COFFEE
LOT B/#10 EVERGREEN CIRCLE – MASHPEE, MA
JUNE 21, 2019

Sheet 6 of 6
JOB NUMBER
3110.00

DESIGN ENGINEERS, INC.

June 21, 2019

Mr. Evan R. Lehrer, MPA
Town Planner
Town of Mashpee
Planning Board
16 Great Neck Road, North
Mashpee, MA 02649

RE: Application for Special Permit
Modi, LLC – Cape Cod Coffee
10 Evergreen Circle
Mashpee, MA
ADE Project #3110.00

Dear Mr. Lehrer:

On behalf of the Applicant, Modi, LLC, enclosed, please find documents relative to a Special Permit Application for the Cape Cod Coffee Project located at 10 Evergreen Circle. The project proposes a 2-story building, paved parking with curbing/berm, landscaping, recreational amenities, septic system, water, utilities, and stormwater facilities on a 1.74-acre lot within the Evergreen Circle subdivision, a newly built commercial/industrial subdivision off of Rte. 130. The use of the building will be a coffee shop that will include the processing, distribution and packaging of coffee as well as a shared industrial use tenant.

The Application for Special Permit form, fees, and abutter list with envelopes have been submitted previously and we are providing hard copies of the following items to the Planning Board to complete the application package:

1. Five (5) full size and eight (8) 11 X 17 size copies of Site Development Plans dated 6/21/19, prepared by Atlantic Design Engineers, Inc. (Sheets 1-6)
2. Five (5) full size and eight (8) 11 X 17 size copies of Landscape Plan dated 6/21/19, prepared by M.L. Curadossi Landscape Design
3. Two (2) copies of the Stormwater Report dated 6/21/19 by Atlantic Design Engineers, Inc.
4. One (1) copy of the Deed for the property
5. Five (5) full size and eight (8) 11 X 17 size Lighting Plans dated 6/21/19 by RAB Lighting, Inc.
6. Five (5) full size and eight (8) 11 X 17 size Building Elevations and Sign Details dated 6/21/19 by ConServ, Inc.

We believe the above-listed information demonstrates the project's compliance with the Town's Zoning Bylaws, specifically Section 174-25.1 Standards for Development in C-3 Districts and Section 174-45.6 Light Industrial Overlay District.

P.O. Box 1051
Sandwich, MA 02563
(508) 888-9282 · FAX 888-5859
email: ade@atlanticcompanies.com
www.atlanticcompanies.com

The following addresses specifically how the project and application complies with Section IV "Form and Content of Applications" from the Town of Mashpee. Planning Board Special Permit Regulations:

SECTION IV FORM AND CONTENT OF APPLICATIONS

B. The application shall also include:

1. the required fees as specified in Section VII;
   The application fee has been paid by the applicant.

2. a copy of the latest recorded deed or deeds to all property included within the proposed site, along with a copy of any currently valid recorded subdivision plan or special permit applicable to the site;
   A copy of the current deed is attached.

3. a site plan showing existing conditions, including at least all existing property and street layout lines, showing distances, as well as bearings referred to the Massachusetts State Plane coordinates using the North American Datum of 1983 (NAD83), zoning district, the names and addresses of all abutters, the location of buildings on the site (meaning the entire tract on which the proposed use or development is located) and within 300 feet of the site, existing wells and septic systems, existing roadways, existing utilities, any existing roadway, access, utility or drainage easements, wetlands, specimen trees, any other existing trees over ten (10) inches in diameter at breast height, water-courses and significant slope or other natural features, at a scale of 1 inch = 40 feet;
   The above information is shown on the site plans submitted with this application.

4. a plan of the site and all land within 300 feet of the site, showing existing elevations and topography using the North American Vertical Datum of 1988 (NAVD88) at a maximum of two-foot contour interval, as well as any wetlands protected under 310 CMR 10.02 (1) (a-d) or under Chapter 172 of the Code of the Town of Mashpee as flagged by a qualified expert, mean high and lowest low water for any adjacent water bodies and flood zones (with base flood elevation data) based on the most recent Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency, at a scale of 1 inch = 40 feet (may be included in the existing conditions site plan described above or as a separate sheet);
   The above is information is shown on the site plans submitted with this application.

5. a natural resource map or maps, on a copy or copies of the topographic plan, indicating all wetlands as defined by MGL C. 131,§40, or otherwise referenced in this section, active or abandoned cranberry bogs or agricultural areas, generalized vegetation types and location, tree line of any wooded areas, soil types based on the latest information available from the United States Department of Agriculture Soil Conservation Service or on more detailed information obtained by the applicant and depth to groundwater table based on exploration by the developer or on other reliable data acceptable to the Board of Health;

Topography is shown on the site plans. There are no wetlands on, or in the vicinity, of the site. Soil test results are provided on the site plan and in the stormwater report submitted with this application.

6. in order to evaluate the impact of the proposed development to Town services and the welfare of the community, an impact statement in two parts as follows (in addition to the Water Quality Report required by the Zoning By-law):

   Part 1 – shall describe the impact of the proposed development on:

   a) all applicable Town services including, but not limited to, schools, water systems, parks, fire and police protection;
   b) at a minimum, all roads and intersections in the immediate vicinity (within one quarter mile) of the proposed development (including an estimate of summer peak hour, summer average daily, annual average peak hour and annual average daily traffic counts as well as level of service for summer and annual average peak hour);
   c) the ecology of the site and any significant off-site impacts.

   Part 2 – shall describe what actions have been taken to mitigate the impacts described in Part 1
   The impacts and mitigation measures of the project were addressed during the approval of the Evergreen Circle Definitive Subdivision, which was reviewed and approved by the Planning Board and the Cape Cod Commission.

7. for cluster subdivisions, a definitive subdivision plan and roadway designs conforming with the Board's *Rules and Regulations Governing the Subdivision of Land* or, for other projects, a site plan, prepared by a registered civil engineer and registered land surveyor, showing the proposed project, including:

   a) property lines and street layout lines showing distances and bearings referred to the Massachusetts State Plane coordinates using the North American Datum of 1983 (NAD83),
   b) location of all permanent survey monuments properly identified as to whether existing or proposed and with their coordinates under the NAD83 Massachusetts Coordinate System,
   c) buildings, showing location, dimensions and distances to all lot lines, streets and street rights-of-way,
   d) roadways, sidewalks and bikeways,
   e) parking facilities,
   f) existing and proposed NAVD88 elevations and topography at a maximum of two-foot contour interval, with proposed one foot intervals required for parking areas, stormwater management systems and within 50 feet of any proposed buildings, along with sufficient spot grades to adequately show the direction of stormwater runoff,

including at transition points, top and bottom of vertical curves, entrances, high points, low points and gutter lines,

g) types of ground cover and any other precautions to stabilize slopes,
h) existing trees over ten (10) inches in diameter at breast height and whether they are proposed to be retained or removed,
i) water-courses,
j) drainage,
k) utilities,
l) landscaping,
m) trash collection facilities and
n) other proposed features

at a scale of 1 inch = 40 feet, with a 24" x 36" index sheet at 1 inch = 100 feet or at another appropriate scale if the entire site can not be shown on one sheet at the 1 inch = 100 feet scale;
Not applicable

8. when a project is proposed to be built in phases (phasing of development is recommended, and will be required for projects involving a developed area in excess of 25 acres), a phasing plan overlaid on the site plan, along with proposed start and completion dates of each phase, showing proposed phasing of buildings, of site infrastructure and of land clearing;
Not applicable

9. a locus plan showing the site in relation to all major roadways and other significant landmarks within one mile of the site;
The above is information is shown on the site plans submitted with this application.

10. detailed roadway, sidewalk, bikeway and parking area plans at a scale of 1 inch = 40 feet, with roadways shown on plan and profile sheets as described in the Board's *Rules and Regulations Governing the Subdivision of Land*, prepared by a registered civil engineer, in addition to typical roadway cross-sections;
Parking areas and details for construction are shown on the site plans submitted with this application.

11. detailed landscaping plans at a scale of 1 inch = 20 feet;
Landscape/planting plans are provided with this application.

12. plans and documents illustrating proposed utilities, including the proposed water supply system showing proposed fire hydrant locations, and any proposed sewer, electric, telephone, gas and cable television utilities, at a scale of 1 inch = 40 feet;
The water, septic and utility systems are shown on the site plans submitted with this application.

13. plans and documents illustrating the proposed system of wastewater collection, treatment and disposal, at an appropriate scale, along with documentation regarding the proposed treatment technology, data demonstrating removal rates for BOD, total nitrogen and phosphorous and a description of proposed ownership, management and funding of the system;
The septic system with advanced de-nitrification technology is shown on the site plans.

14. plans and documents illustrating the proposed system of stormwater collection, treatment and disposal, including manholes, catch basins, pipes, drainage ditches, roof drainage systems, headwalls, surface and subsurface discharge areas, retention ponds and any other system elements, along with a stormwater management plan consistent with the provisions of Subsection 174.82.A.(4) of the Mashpee Zoning By-law, with plan drawings at a scale of 1 inch = 40 feet;
The drainage system design is shown on the site plans and a stormwater report is included with this application.

15. proposed building elevation drawings (side, front and back) at a scale of ¼ inch = 1 foot, (for large or phased projects, "typical" elevations may be submitted at the discretion of the Board), showing any proposed wall signs, along with any design standards or codes to be applied to structures within the project;
Building elevations are provided with this application.

16. proposed signage designs at an appropriate scale, including location and dimensions of any freestanding signs;
Proposed signage design plans are provided with this application.

17. plans and documents illustrating the proposed system of site lighting, at an appropriate scale showing, at a minimum:

    a. the location and type of any outdoor lighting fixtures, on a 24" x 36" sheet, including lighting of buildings and structures, parking lots, recreation areas, landscaping and other outdoor lighting, including lighting of any signage, and showing the height of any freestanding outdoor light fixtures;

    b. the fixture manufacturer's specification data, including lumen output and photometric data showing cutoff angles;

    c. the type of lamp such as: metal halide, compact fluorescent, high pressure sodium with color temperature (Kelvin) and CRI indicated;

    d. a photometric plan, on a 24" x 36" sheet, showing the intensity of illumination at ground level, expressed in foot candles; and

    e. that light trespass onto any street or abutting lot will not occur. This may be demonstrated by manufacturer's data, cross section drawings, or other means.

A site lighting and illumination plan is included with this application.

18. accurate calculations of the area within the site of wetlands, of any open space to be preserved or transferred to the town or to a nonprofit organization and of areas proposed for roadways and other development, along with the applicant's calculation of allowed dwelling units for residential projects, or square footage of non-residential structures, based on the provisions of the applicable section of the Zoning By-Law;
Open space was addressed during the approval of the Evergreen Circle Definitive Subdivision, which was reviewed and approved by the Planning Board and the Cape Cod Commission.

19. a Water Quality Report prepared in conformance with the requirements of Section 174-27 of the Zoning By-law, including a plan showing the location of all water quality monitoring wells at a scale of 1 inch = 100 feet;
A Water Quality Report, along with Nitrate Loading Calculations, was completed for the Evergreen Circle Definitive Subdivision, which was reviewed and approved by the Planning Board and the Cape Cod Commission.

20. where the Zoning By-law requires the provision of open space, the developer's declaration of his choice of method or methods of dedicating the required open space of the three (3) methods described in the Zoning By-law, along with proposed covenants and restrictions to secure the permanent legal existence of the preserved open space and the proposed wording of any deed for transfer in fee to the Town or to a nonprofit organization and
Open space was addressed during the approval of the Evergreen Circle Definitive Subdivision, which was reviewed and approved by the Planning Board and the Cape Cod Commission.

21. any additional items required by Article IX of the Zoning By-law for special permits issued under the terms of applicable sections of that article.
Not applicable

If you have any questions or require further information, please do not hesitate to contact me at (508) 888-9282.

Sincerely,

ATLANTIC DESIGN ENGINEERS, INC.

Richard J. Tabaczynski, P.E.
Vice President

cc: Jan Aggerbeck – Cape Cod Coffee/Modi, LLC
ConServ, Inc.

OR REGISTRY USE ONE

ONE: R-3

RCEL ID: 104-10A-0

AN REFERENCE: BOOK 630 PAGE 10
ED REFERENCE: BOOK 28378 PAGE 174

AT A MEETING OF THE
MASHPEE PLANNING BOARD

HELD: _____

IT WAS VOTED: "APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED"

_____

_____

_____

_____

_____

NO DETERMINATION AS TO COMPLIANCE WITH ZONING REQUIREMENTS HAS BEEN MADE OR INTENDED BY THIS ENDORSEMENT UNDER MGL CHAPTER 41 SECTION 81L

" I CERTIFY THAT THIS PLAN AND SURVEY WERE ARED IN ACCORDANCE TO THE PROCEDURAL AND NICAL STANDARDS FOR THE PRACTICE OF LAND EYING IN THE COMMONWEALTH OF MASSACHUSETTS. "

6/5/2019

GARY S. LABRIE, P.L.S.

" I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN LIANCE WITH THE RULES AND REGULATIONS OF THE TRARS OF DEEDS FOR THE COMMONWEALTH OF ACHUSETTS. "

6/5/2019

GARY S. LABRIE, P.L.S.

COMMONWEALTH OF MASSACHUSETTS
GARY S. LABRIE
NO. 40039
REGISTERED PROFESSIONAL LAND SURVEYOR

REBAR

BLUE CASTLE (40' WIDE - PRIVATE) DRIVE

N71°59'54"E
165.02'

PARCEL 11
N/F
DUCO ASSOCIATES, INC.

N18°01'11"W
200.01'

PARCEL 10A
29,738 s.f.

131.97'
S71°59'54"W

PARCEL 102
N/F
MASHPEE COMMONS LP

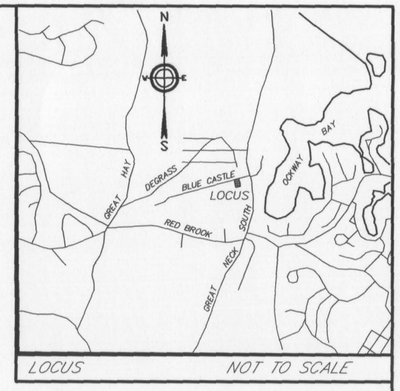
OLD GREAT NECK ROAD
45.80'
S09°30'00"E
60.00'
S05°30'00"E

EXISTING CHAINLINK FENCE BY CENTERLINE
74.60'
S15°17'00"E
23.50'
S09°10'00"E
6.29'
S86°49'50"W

PARCEL 10
N/F
MARGAUX BARNES THOMANN
ET AL

PLAN 630-10

N
W E
S



LOCUS NOT TO SCALE

RECORD OWNER

ELLEN C. BRADY
56 SUMMERSEA ROAD
MASHPEE, MA 02649

20 0 10 20 40
SCALE: 1 INCH = 20 FEET

PLAN OF LAND IN MASHPEE, MA

prepared for:
ELLEN C. BRADY
20 BLUE CASTLE DRIVE, MASHPEE

D. H. MARTIN ENGINEERING, INC.
ENVIRONMENTAL - CIVIL - GEOTECHNICAL

14 QUISSETT AVENUE, BOX 741
WOODS HOLE, MA 02543
tel. 774-836-0693
dhmartineng@gmail.com

SCALE: 1"=20'		DATE: MAY 9, 2019
DES./DRAWN.: GSL		DWG.NAME: PARCEL 10A
APPROVED: D.H.M.		SHEET 1 OF 1

Town of Mashpee

Planning Board

16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM A

APPLICATION FOR ENDORSEMENT OF PLAN BELIEVED NOT TO REQUIRE APPROVAL

Date: June 18, 2019

To the Planning Board: The undersigned, believing that the accompanying plan of his or her property in the Town of Mashpee does not constitute a subdivision within the meaning of the Subdivision Control law, herewith submits said plan for a determination and endorsement that Planning board approval under the Subdivision Control Law is not required.

Name of Applicant Jonathan M. Polloni, Esq. Phone (508) 221-0358

Address P.O. Box 311, Woods Hole, MA 02543

Owner, if different Ellen Brady Phone (617) 512-8581

Address 20 Blue Castle Drive, Mashpee, MA 02649

Attach copies of (a) most recent recorded deed and (b) tax bill or Assessors' certification.

Engineer or Surveyor David H. Martin, Engineering Phone (774) 836-0693

Address P.O. Box 741, Woods Hole, MA 02543

Deed of property recorded in Barnstable County Registry Book 28378 Page 174

Or Land Court Certificate of Title No. _____

Location and description of property

Mashpee Assessors map(s) and Block(s) 104-10A-0

Signature of Owner or Quthorized Representative _____

Attach written authorization signed by owner.

Town of Mashpee

Planning Board

16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM N

NOTICE OF APPLICATION FILING WITH THE MASHPEE PLANNING BOARD

To the Mashpee Town Clerk:

This is to notify you that on June 18, 2019 an application for

X endorsement of a plan believed not to require approval

____ approval of preliminary plan

____ approval of definitive plan

was submitted to the Mashpee Planning Board at its public meeting by

Jonathan M. Polloni, Esq., P.O. Box 311, Woods Hole, MA 02543.

Applicant name | Applicant address

The land to which the application relates appears on the current Mashpee Assessors Maps as 104-10A-0

and is generally described as located

at 20 Blue Castle Drive, Mashpee, MA 02649

This notice must be submitted to the Town Clerk by delivery or by registered or certified mail, postage prepaid, along with a copy of the application and submitted plans.

Received by Planning Board on _____, 20____.

_____

for Mashpee Planning Board

AUTHORIZATION FORM

The undersigned hereby authorizes Mackey & Foster, PA to turn over to Jonathan M. Polloni, Esq., any original papers and records of the undersigned which are currently in the possession of Mackey & Foster, PA, and to make available to Attorney Polloni any files and word processing materials of Mackey & Foster, PA which may relate to the undersigned so that Attorney Polloni, and not Mackey & Foster, PA, will henceforth have responsibility for all matters relating to these materials.

Signature: Ellen C Brady

Printed name: Ellen C Brady

Dated: 9/10/18

Bill Information

My File Edit Tools Help

History
Detail
Orig Bill
Apply Pmt
Scan Bill
Quick Entry
Effective Date
Customer
Name
Parcel
Prop ID
Misc Receipt
View-Rev
Validator

Year/Type/Bill No.

2019 | RE-R | 1057

Property Information

Parcel ID: 104-010A-0000
Alt Parc:
Prop Loc: 20 BLUE CASTLE DR

Customer Account Information

229550

BRADY, ELLEN C
56 SUMMERSEA ROAD
MASHPEE, MA 02649

Special Conditions/Notes

Installment Information

Int Dt	Billed	Abt/Adj	Pmt/Crd	Interest	Unpaid bal
08/02/18	292.10	0.00	292.10	0.00	0.00
11/02/18	292.09	0.00	292.09	0.00	0.00
02/04/19	293.98	0.00	293.98	0.00	0.00
05/02/19	293.98	0.00	293.98	0.00	0.00
Fees/Pen	0.00	0.00	0.00	0.00	0.00
Totals	1,172.15	0.00	1,172.15	0.00	0.00

Notes/Alerts

JAN 1 Owner: BRADY, ELLEN C

View prior unpaid bills
View ancestor prior unpaid bills

Due 06/18/2019	0.00
Per Diem	0.00
Int Paid	0.00
Total Paid	1,172.15

Apply a payment to the current bill.

Key: 20107 **Town of Mashpee - Fiscal Year 2019** 6/18/2019 3:00 pm SEQ # 1

LEGAL

CURRENT OWNER	PARCEL ID	LOCATION
BRADY, ELLEN C 56 SUMMERSEA ROAD MASHPEE, MA 02649	104-10A-0	20 BLUE CASTLE DR

TRANSFER HISTORY	DOS	T	SALE PRICE	BK-PG (Cert)
BRADY, ELLEN C	09/12/2014	QS	115,000	28378-174
HAWLEY, WILLIAM L & ELEAN	09/05/1980	XX	250	3149-193
GREENE, DAVID H	03/15/1949	XX		792-412

CLASS	CLASS%	DESCRIPTION	BN ID	BN	CARD
1300	100	DEV LAND			1 of 1

PMT NO	PMT DT	TY	DESC	AMOUNT	INSP	BY	1st	%
		7	CYCLICAL REV		10/28/2013	MRB	100	100
		7	CYCLICAL REV		05/08/2009	TWM	100	100
		6	SPLIT/SUB/LA				100	100

LAND

CD	T	AC/SF/UN	Area	Infl-1	Infl-2	ADJ BASE	SAF	Topo	Lpi	VC	CREDIT AMT	ADJ VALUE
100	S	29,738	RSN 1.00	100 1.00	100 1.00	145,800	1.26	100 1.00	R02 1.00			125,760

TOTAL	29,738 SF	ZONING	R3	FRNT	0
Area	RES STND	NOTE			
Infl-1	NO ADJUST				
Infl-2	NO ADJUST				

ASSESSED	CURRENT	PREVIOUS
LAND	125,800	125,800
BUILDING	0	0
DETACHED	0	0
OTHER	0	0
TOTAL	**125,800**	**125,800**

A TRUE COPY ATTEST:

AUTHORIZED SIGNATURE 6/18/19 DATE

DETACHED

TY	QUAL	COND	DIM/NOTE	YB	UNITS	ADJ PRICE	RCNLD

PHOTO 05/08/2009

BLDG COMMENTS

BUILDING

BUILDING	CD	ADJ	DESC
MODEL			
STYLE			
QUALITY			
FRAME			

MEASURE	
LIST	
REVIEW	

YEAR BLT		SIZE ADJ	
NET AREA		DETAIL ADJ	
$NLA(RCN)		OVERALL	

CAPACITY	UNITS	ADJ

ELEMENT	CD	DESCRIPTION	ADJ

S	BAT	T	DESCRIPTION	UNITS	YB	ADJ PRICE	RCN

TOTAL RCN	
CONDITION ELEM	CD
EFF.YR/AGE	
COND	
FUNC	
ECON	
DEPR	% GD
RCNLD	

Bk 28378 Pg174 #41229
09-12-2014 @ 12:17p

MASSACHUSETTS STATE EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 09-12-2014 @ 12:17pm
Ctl#: 627 Doc#: 41229
Fee: $393.30 Cons: $115,000.00

QUITCLAIM DEED

We, WILLIAM L. HAWLEY and ELEANOR T. HAWLEY, husband and wife, of Worcester, Worcester County, Massachusetts,

for consideration paid, and in full consideration of ONE HUNDRED AND FIFTEEN THOUSAND AND NO/100 DOLLARS ($115,000.00),

grant to ELLEN C. BRADY, individually, of 56 Summersea Road, Mashpee, Massachusetts,

with **Quitclaim Covenants**,

The land in Mashpee, Barnstable County, Massachusetts, together with any buildings thereon, more particularly bounded and described as follows:

On the North by a forty-foot private way, there measuring 150 feet, more or less;

On the East by Old Great Neck Road, so-called, there measuring 200 feet more or less;

On the South by land now or formerly of Aaron Keeter, there measuring 150 feet more or less;

On the West by land now or formerly of the present grantor, there measuring 200 feet more or less;

Containing 30,000 square feet of land, more or less.

Being the same premises conveyed to the grantors by deed dated September 6, 1957, and recorded in the Barnstable District Registry of Deeds in Book 3149, Page 193.

Subject to and with the benefit of any and all rights, easements, and restrictions of record, insofar as the same are in force and applicable.

The Grantors hereby release and waive any and all rights of Homestead in this property, created by declaration or operation of law.

BARNSTABLE COUNTY EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 09-12-2014 @ 12:17pm
Ctl#: 627 Doc#: 41229
Fee: $310.50 Cons: $115,000.00

Property Address: 20 Blue Castle Drive, Mashpee, MA 02649

Executed as a sealed instrument this 10th day of September, 2014.

John J. Barron, Witness

William L. Hawley

Eleanor T. Hawley

COMMONWEALTH OF MASSACHUSETTS

Barnstable, SS.

On this the 10th day of September 2014, before me, the undersigned notary public, personally appeared the above-named, William L. Hawley and Eleanor T. Hawley, proved to me through satisfactory evidence of identification, which was a driver's license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

JOHN J. BARRON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
March 12, 2021

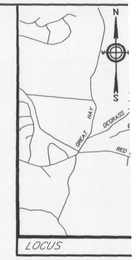
John J. Barron, Notary Public
My commission expires: March 12, 2021

ZONE: R-3

PARCEL ID: 104-11-0

PLAN REFERENCE: BOOK 630 PAGE 10
DEED REFERENCE: BOOK 27925 PAGE 93

FOR REGISTRY USE ONLY



BLUE CASTLE (40' WIDE - PRIVATE) DRIVE

C.B. fnd.

200.00'

N71°59'54"E
300.00'

N18°00'04"W

200.00'

S18°01'11"E

200.01'

S71°59'54"W

300.06'

PARCEL 12
N/F
VICTOR & CHRISTIAN P. HARRIOTT

PARCEL 11
60,009 s.f.

PARCEL 10A
N/F
ELLEN C. BRADY

PARCEL 2
TOWN OF MASHPEE

PARCEL 102
N/F
MASHPEE COMMONS LP

AT A MEETING OF THE
MASHPEE PLANNING BOARD

HELD: _____

IT WAS VOTED: "APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED"

_____

_____

_____

_____

_____

NO DETERMINATION AS TO COMPLIANCE WITH ZONING REQUIREMENTS HAS BEEN MADE OR INTENDED BY THIS ENDORSEMENT UNDER MGL CHAPTER 41 SECTION 81L

" I CERTIFY THAT THIS PLAN AND SURVEY WERE PREPARED IN ACCORDANCE TO THE PROCEDURAL AND TECHNICAL STANDARDS FOR THE PRACTICE OF LAND SURVEYING IN THE COMMONWEALTH OF MASSACHUSETTS. "

DATE: 6/5/2019

GARY S. LABRIE, P.L.S.

" I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN COMPLIANCE WITH THE RULES AND REGULATIONS OF THE REGISTRARS OF DEEDS FOR THE COMMONWEALTH OF MASSACHUSETTS. "

DATE: 6/5/2019

GARY S. LABRIE, P.L.S.

20 0 10 20 40

SCALE: 1 INCH = 20 FEET

RECORD OWNER

DUCO ASSOCIATES, INC.
1172 BEACON STREET- SUITE 202
NEWTON, MA 02461

PLAN OF LAND IN MASHPEE, MA

prepared for:
DUCO ASSOCIATES, INC.
28 BLUE CASTLE DRIVE, MASHPEE

D. H. MARTIN ENGINEERING, INC.
ENVIRONMENTAL - CIVIL - GEOTECHNICAL

14 QUISSETT AVENUE, BOX 741
WOODS HOLE, MA 02543
tel. 774-836-0693
dhmartineng@gmail.com

SCALE: 1"=20'	DATE: M
DES./DRAWN.: GSL	DWG.NAM
APPROVED: D.H.M.	

Town of Mashpee

Planning Board

16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM A

APPLICATION FOR ENDORSEMENT OF PLAN BELIEVED NOT TO REQUIRE APPROVAL

Date: June 18, 2019

To the Planning Board: The undersigned, believing that the accompanying plan of his or her property in the Town of Mashpee does not constitute a subdivision within the meaning of the Subdivision Control law, herewith submits said plan for a determination and endorsement that Planning board approval under the Subdivision Control Law is not required.

Name of Applicant Jonathan M. Polloni, Esq. Phone (508) 221-0358

Address P.O. Box 311, Woods Hole, MA 02543

Owner, if different Duco Associates, Inc. Phone (617) 969-1381

Address 28 Blue Castle Drive, Mashpee, MA 02649

Attach copies of (a) most recent recorded deed and (b) tax bill or Assessors' certification.

Engineer or Surveyor David H. Martin, Engineering Phone (774) 836-0693

Address P.O. Box 741, Woods Hole, MA 02543

Deed of property recorded in Barnstable County Registry Book 27925 Page 93

Or Land Court Certificate of Title No. _____

Location and description of property

_____

_____

Mashpee Assessors map(s) and Block(s) 104-11-0

Signature of Owner or Quthorized Representative _____

Attach written authorization signed by owner.

Town of Mashpee
Planning Board
16 Great Neck Road North
Mashpee, Massachusetts 02649

FORM N

NOTICE OF APPLICATION FILING WITH THE MASHPEE PLANNING BOARD

To the Mashpee Town Clerk:

This is to notify you that on June 18, 2019 an application for

X endorsement of a plan believed not to require approval

___ approval of preliminary plan

___ approval of definitive plan

was submitted to the Mashpee Planning Board at its public meeting by

Jonathan M. Polloni, Esq., P.O. Box 311, Woods Hole, MA 02543.

Applicant name | Applicant address

The land to which the application relates appears on the current Mashpee Assessors Maps

as 104-11-0

and is generally described as located

at 20 Blue Castle Drive, Mashpee, MA 02649

This notice must be submitted to the Town Clerk by delivery or by registered or certified mail, postage prepaid, along with a copy of the application and submitted plans.

Received by Planning Board on _____, 20____.

_____

for Mashpee Planning Board

AUTHORIZATION FORM

I, Duco Associates, Inc. by Henry L. Barr, President/Treasurer, hereby authorize Jonathan M. Polloni, Esq. to be my/our authorized representative in all matters relating to zoning approval, access determination, and representation before the Mashpee Planning Board for 28 Blue Castle Drive.

Signature: Henry L. Barr
President + Treasurer

Dated: 6/18/19

Bk 27925 Ps93 #779
01-08-2014 @ 02:55p

FORECLOSURE DEED

Duco Associates, Inc., having its usual place of business at 1172 Beacon Street, Newton, Massachusetts, holder of a mortgage from M & F Construction, Inc., dated September 9, 2005, recorded with the Barnstable County Registry of Deeds in Book 20261, Page 69, by the power conferred by said mortgage and every other power, for one-hundred and forty thousand and 00/100 dollars ($140,000.00) paid, grants to Duco Associates, Inc., having its usual place of business at 1172 Beacon Street, Newton, Massachusetts, the premises conveyed by said mortgage.

Witness my hand and seal this 31st day of December, 2013

Duco Associates, Inc.

By: _____

Henry L. Barr, President & Treasurer

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss

On this 31st day of December, 2013, before me, the undersigned notary public, personally appeared Henry L. Barr, proved to me through satisfactory evidence of identification, which was a [ ] Massachusetts Driver's License or [X] personally known to me, to be the person(s) whose name(s) is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purposes as President & Treasurer of Duco Associates, Inc.

WITNESS my hand and official seal.

_____
Notary Public
My Commission Expires:

TAYLOR J. ORTON
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
MY COMM. EXPIRES AUGUST 21, 2020

AFFIDAVIT OF SALE

I, Henry L. Barr, the President and Treasurer of Duco Associates, Inc. named in the foregoing deed, make oath and say that the principal and interest obligations mentioned in the mortgage above referred to were not paid or tendered, or performed when due or prior to the sale, and that I caused to be published on the 14th, 21st, and 28th days of October, 2013 in the Cape Cod Times, a newspaper published by or by its title page purporting to be published in Hyannis, Massachusetts, having a general circulation in Mashpee, a notice of which the following is a true copy:

(See attached Exhibit A – Legal Advertisment)

I also complied with Chapter 244, Section 14 of the Massachusetts General Laws, as amended, by mailing the required notices by certified or registered mail, return receipt requested.

Pursuant to said notice, at the time and place appointed, Duco Associates, Inc. sold the mortgaged premises at public auction by Michael L. Katzeff, a licensed auctioneer, to Duco Associates, Inc., above-named, for ONE HUNDRED FORTY THOUSAND DOLLARS ($140,000.00) bid by Duco Associates, Inc., being the highest bid made therefore at said auction.

Henry L. Barr, President & Treasurer
Duco Associates, Inc.

Signed and sworn to before me this 31st day of December, 2013

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss

On this 31st day of December, 2013, before me, the undersigned notary public, personally appeared Henry L. Barr, proved to me through satisfactory evidence of identification, which was a [ ] Massachusetts Driver's License, or [X] personally known to me, to be the person(s) whose name(s) is signed on the preceding or attached document, and acknowledges to me that he signed it voluntarily for its stated purposes, as President & Treasurer of Duco Associates, Inc.

WITNESS my hand and official seal.

Taylor J. Orton
Notary Public
My Commission Expires: August 21, 2020

TAYLOR J. ORTON
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
MY COMM. EXPIRES AUGUST 21, 2020

BARNSTABLE COUNTY EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 01-08-2014 @ 02:55pm
Ctl#: 821 Doc#: 779
Fee: $478.80 Cons: $140,000.00

BARNSTABLE COUNTY EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 01-08-2014 @ 02:55pm
Ctl#: 821 Doc#: 779
Fee: $378.00 Cons: $140,000.00

EXHIBIT A

ATTACHED TO AND FORMING PART OF THE FORECLOSURE DEED AND AFFIDAVIT FOR THE PROPERTY LOCATED AT **28 BLUE CASTLE DRIVE, MASHPEE, MA.**

MORTGAGEE'S NOTICE OF SALE OF REAL ESTATE

By virtue and in execution of the Power of Sale contained in a certain Mortgage given by M & F Construction, Inc., dated September 9th, 2005 and recorded with the Barnstable County Registry of Deeds in Book 20261, Page 69 to Duco Associates, Inc., of which Mortgage the undersigned is the present holder, for breach of the conditions of said Mortgage and for the purpose of foreclosing same, the mortgaged premises will be sold at Public Auction at 11:00 AM on the 21st day of November, 2013 on the mortgaged premises hereinafter described namely:

28 Blue Castle Drive, Mashpee, Massachusetts, 02649

TO WIT:

A certain parcel of real property known as 28 Blue Castle Drive, Mashpee, Barnstable County, MA. 02649, more particularly described as follows:

The land in Mashpee, Barnstable County, Massachusetts, with the buildings thereon, bounded and described as follows:

Beginning at a point on the northwest corner of land now of William L. Hawley thence

SOUTHERLY by land of said William Hawley, two hundred (200) feet;

WESTERLY by land now or formerly of the Estate of Aaron Foster, three hundred (300) feet;

NORTHERLY by land of David H. Greene, two hundred (200) feet; and

EASTERLY by the southerly sideline of a forty (40) foot private way, three hundred (300) feet to the point of beginning, with all rights to pass and repass over said private road.

Containing 60,000 square feet, be the same more or less.

Being the same premises conveyed to M & F Construction, Inc. by foreclosure deed dated August 9th, 2005 and recorded with the Barnstable County Registry of Deeds in Book 20251, Page 64.

The Premises to be sold and conveyed subject to and with the benefit of all rights, rights of way, restrictions, easements, covenants, liens or claims in the nature of liens, improvements, public assessments, any and all unpaid taxes, tax titles, tax liens, water and sewer liens and any other municipal assessments or liens or existing encumbrances of record which are in force and are applicable, having priority over said mortgage, whether or not reference to such restrictions, easements, improvements, liens or encumbrances is made in the deed.

Terms of Sale: Ten Thousand Dollars ($10,000.00) will be required to be paid by bank or certified check at the time and place of sale. The successful bidder shall be required to sign a Memorandum of Sale containing the above terms at the Auction Sale. The balance is to be paid by bank or certified check at the Law Offices of Barr and Cole, 1172 Beacon Street, Suite 202, Newton, MA 02461 within 30 days from the date of sale. Deed will be provided to the purchaser for recording upon receipt in full of the purchase price. Time is of the essence.

The Mortgagee reserves the right to postpone the sale to a later time and/or date by public proclamation at the time and date appointed for the sale and to further postpone the sale at any adjourned sale date by public proclamation at the time and date appointed for the adjourned sale date.

Other terms and conditions to be announced at the time and place of sale and will be incorporated in the Memorandum of Sale signed at the sale.

In the event of an error in this publication, the description of the premises contained in said mortgage shall control.

Duco Associates, Inc.
Present Holder of said Mortgage,
By its Attorney,
Stuart N.Cole
Barr & Cole
1172 Beacon Street
Newton, MA 02461
617-969-1381

10/14, 10/21, 10/28/13

Bill Information

My File Edit Tools Help

History
Detail
Orig Bill
Apply Pmt
Scan Bill
Quick Entry
Effective Date
Customer
Name
Parcel
Prop ID
Misc Receipt
View-Rev
Validator

Year/Type/Bill No.

2019 | RE-R | 2853

Property Information

Parcel ID: 104-0011-0000
Alt Parc: 104- 11 -0
Prop Loc: 28 BLUE CASTLE DR

Customer Account Information

229773

DUCO ASSOCIATES INC
1172 BEACON ST - SUITE 202
NEWTON, MA 02461

Special Conditions/Notes

Installment Information

Int Dt	Billed	Abt/Adj	Pmt/Crd	Interest	Unpaid bal
08/02/18	427.37	0.00	427.37	0.00	0.00
11/02/18	427.36	0.00	427.36	0.00	0.00
02/04/19	421.03	0.00	421.03	0.00	0.00
05/02/19	421.03	0.00	421.03	0.00	0.00
Fees/Pen	0.00	0.00	0.00	0.00	0.00
Totals	1,696.79	0.00	1,696.79	0.00	0.00

Notes/Alerts

JAN 1 Owner: DUCO ASSOCIATES INC

View prior unpaid bills
View ancestor prior unpaid bills

Due 06/18/2019	0.00
Per Diem	0.00
Int Paid	10.66
Total Paid	1,707.45

Apply a payment to the current bill.

Key: 7579 — Town of Mashpee - Fiscal Year 2019

6/18/2019 3:01 pm SEQ # 1

LEGAL

CURRENT OWNER	PARCEL ID	LOCATION
DUCO ASSOCIATES INC 1172 BEACON ST - SUITE 202 NEWTON, MA 02461	104-11-0	28 BLUE CASTLE DR

TRANSFER HISTORY	DOS	T	SALE PRICE	BK-PG (Cert)
DUCO ASSOCIATES INC	01/08/2014	L	140,000	27925-93
M & F CONSTRUCTION INC	09/15/2005	L	125,000	20261-64
MESSAM LEROY A	08/15/1961	F		1125-72

CLASS	CLASS%	DESCRIPTION	BN ID	BN	CARD
1300	100	DEV LAND			1 of 1

PMT NO	PMT DT	TY	DESC	AMOUNT	INSP	BY	1st	%
		43	SALES Q'S		02/10/2014	SLD	100	100
		7	CYCLICAL REV		05/08/2009	TWM	100	100

LAND

CD	T	AC/SF/UN	Area	Infl-1	Infl-2	ADJ BASE	SAF	Topo	Lpi	VC	CREDIT AMT	ADJ VALUE
100	S	40,000	RSN 1.00	100 1.00	100 1.00	145,800	1.00	100 1.00	R02 1.00			133,880
300	A	0.482	RSN 1.00	100 1.00	100 1.00	8,800	1.00	100 1.00	R02 1.00			4,240

TOTAL	1.400 Acres	ZONING	R3	FRNT	0
Area	RES STND	NOTE			
Infl-1	NO ADJUST				
Infl-2	NO ADJUST				

ASSESSED	CURRENT	PREVIOUS
LAND	138,100	138,100
BUILDING	0	0
DETACHED	0	0
OTHER	0	0
TOTAL	**138,100**	**138,100**

A TRUE COPY ATTEST:

AUTHORIZED SIGNATURE 6/18/19 DATE

DETACHED

TY	QUAL	COND	DIM/NOTE	YB	UNITS	ADJ PRICE	RCNLD

PHOTO 05/08/2009

BLDG COMMENTS

BUILDING

BUILDING	CD	ADJ	DESC
MODEL			
STYLE			
QUALITY			
FRAME			

MEASURE
LIST
REVIEW

YEAR BLT		SIZE ADJ	
NET AREA		DETAIL ADJ	
$NLA(RCN)		OVERALL	

CAPACITY	UNITS	ADJ

ELEMENT	CD	DESCRIPTION	ADJ

S	BAT	T	DESCRIPTION	UNITS	YB	ADJ PRICE	RCN

TOTAL RCN

CONDITION ELEM	CD

EFF.YR/AGE
COND
FUNC
ECON
DEPR % GD
RCNLD

Town of Mashpee

Planning Board

16 Great Neck Road North
Mashpee, Massachusetts 02649

APPLICATION FOR SPECIAL PERMIT

Date July 1, 2019

The undersigned hereby applies for a Special Permit from the Planning Board.

Name of Applicant Kevin Andrade Phone 508-477-7272

Address P.O. Box 956, East Falmouth, MA 02536

Owner, if different Evergreen Energy, LLC. Phone 508-477-7272

Address 81 Echo Road, Mashpee, MA 02649

Attach copies of (a) most recent recorded deed and (b) tax bill or Assessors' certification.

Deed of property recorded in Barnstable County Registry Book 29541 Page 136 or Land Court Certificate of Title No. _____

Location and description of property Lot A, 11 Evergreen Circle, Mashpee (aka 588 Main Street) C-3 Zoning.

Vacant commercial lot consisting of 82,120 +/- square feet

Mashpee Assessors Map(s) and Block(s) Map 19 Parcel 10 Ext 12

Zoning District(s) in which property is located C-3

How long have you owned the property March 29, 2016

Section(s) of the Zoning Bylaw which require the permit you seek 174 - 24 C. 1.

Present use of property Vacant land

Proposed use of property Proposed new building and site construction to provide retail use with office space facility.

Check one: x Applicant will send notice to abutters via certified mail, with return receipt to Mashpee Planning Board, and will provide certified abutters list.

_____ Applicant requests that Planning Department send notice to parties in interest via certified mail, and will provide labels and certified abutters list.

Signature of Owner or Authorized Representative

Attach written authorization signed by owner.

MASHPEE TOWN CLERK

JUL - 2 2019

RECEIVED BY

June 19, 2019

Mr. Evan Lehrer
Mashpee Town Planner
16 Great Neck Road North
Mashpee, MA 02649

RE: Application for Special Permit, 11 Evergreen Circle, Mashpee, MA

Dear Mr. Lehrer:

This letter is in regard the above referenced application.

Please accept this letter as my written authorization to allow Matthew C. Costa, P.L.S., R.S. of Cape & Islands Engineering, Inc. and/or his Associates to represent this property on my behalf.

If you have any questions, please feel free to contact me.

Sincerely,

M S PdJ

Evergreen Energy, LLC.
81 Echo Road
Mashpee, MA 02649

CAPE & ISLANDS ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING - ENVIRONMENTAL PERMITTING
INCORPORATED
SUMMERFIELD PARK
800 FALMOUTH ROAD, SUITE 301C
MASHPEE, MA 02649
(508) 477-7272 FAX (508) 477-9072
email: info@CapeEng.com

July 1, 2019

Mr. Evan Lehrer
Town Planner
Mashpee Planning Board
16 Great Neck Road North
Mashpee, MA 02649

RE: 11 Evergreen Circle, Mashpee, MA – Map 19 ~ Parcel 10-12

Dear Mr. Lehrer and Mashpee Planning Board:

On behalf of the Applicant, Kevin Andrade, a request of waivers is being sought after for the above referenced property.

The purpose of this request is to approve the proposed commercial building and site construction to provide retail use with redemption center and office space facility at 11 Evergreen Circle, Mashpee, MA. Under the Town of Mashpee Zoning Bylaws section §174-24 C. 1. Special Permit Use *"Any other uses denoted in §174-25 by the letters "SP," or by the letters "PR/SP" where construction of a building or addition containing more than one thousand (1,000') square feet of gross floor area is involved, shall be permitted as a special exception only if the Planning Board so determines and grants a Special Permit therefor…"* are allowed if the Planning Board issues a Special Permit for such use.

The new building and site construction will be located on 11 Evergreen Circle Road. This property is one parcel identified as Lot A of the Definitive Subdivision Plan, Evergreen Circle, Prepared for Evergreen Industrial Park, #588 Main Street (Route 130) in Mashpee, MA approved on 11-20-17 by Mashpee Planning Board and recorded at the Barnstable Registry of Deeds under Plan Book 674 Page 38. The Applicant will construct one building for a retail use (liquor store with redemption center) and office space use. The office use is allowed under section 174-25 C. (1) under the symbol PR/SP and the retail use is allowed under section 174-25 E. (12) under the symbol SP, both by special exemption if the Planning Board grants a Special Permit.

Based on a drawing by our firm, dated April 23, 2019, revised June 13, 2019 and entitled "Site Plan" waivers will be needed in order to proceed.

Under Town of Mashpee Planning Board Special Permit Regulations Section IV B, the following Waivers will be needed.

CAPE & ISLANDS ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING - ENVIRONMENTAL PERMITTING
INCORPORATED
SUMMERFIELD PARK
800 FALMOUTH ROAD, SUITE 301C
MASHPEE, MA 02649
(508) 477-7272 FAX (508) 477-9072
email: info@CapeEng.com

The waivers required are as follows:

NO.	DESCRIPTION
4.	A plan of the site and all land within 300 feet of the site.
5.	Natural Resource Map indicating general vegetation type, soil types and groundwater levels. – Refer to Site Plan sheet C-121 for soil information
6.	Impact statement of Town Services and Welfare of the Community.
7.	Cluster Subdivision – Not Applicable
8.	Phased project – Not Applicable
10.	Detailed Roadway Plans – Not Applicable
13.	Detail wastewater treatment removal rate analysis – Not Applicable, typical on-site Title 5 septic system proposed. Site Plan includes septic system design criteria and construction details.
19.	Water Quality Report, Section 174-27
20.	Open Space requirements – Not Applicable

If you have any questions please feel free to call.

Sincerely,

Raúl Lizardi-Rivera, P.E.
Director of Engineering

Encl. Application for Special Permit
Full size plans
Reduced size plans
Owner authorization for representation
Certified Abutters List
Deed

Bk 29541 Pg136 #14890
03-29-2016 @ 01:54p

MASSACHUSETTS STATE EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 03-29-2016 @ 01:54pm
Ctl#: 1011 Doc#: 14890
Fee: $5,728.50 Cons: $1,675,000.00

QUITCLAIM DEED

CAPE COD COOPERATIVE BANK, a Massachusetts banking corporation with an address of 25 Benjamin Franklin Way, Hyannis, MA 02601,

For consideration paid in the full amount of One Million Six Hundred Seventy-five Thousand and no/100 dollars ($1,675,000.00),

Grant to **EVERGREEN ENERGY LLC**, a Massachusetts limited liability company with an address of 81 Echo Road, Mashpee, MA 02649,

with QUITCLAIM COVENANTS,

588 Main Street, Mashpee

The property in Mashpee, Barnstable County, Massachusetts, at **588 Route 130 (Forestdale Road)**, shown on the plan entitled "Plan of Land in Mashpee, Massachusetts, Route 130", dated August 22, 2001, prepared by David C. Thulin, PE, PLS, recorded in Barnstable County Registry of Deeds Plan Book 567, Page 75, bounded and described as follows:

NORTHERLY	by land shown on the Plan as of Boston Sand and Gravel and Land Court Plan 39332A, by four lines measuring 5.26, 617.69, 746.51, and 572.45 feet;
EASTERLY	by land shown on the Plan as Lot 3, 277.25 feet;
NORTHERLY	by said Lot 3, 846.09 feet;
NORTHEASTERLY	by Route 130, by two lines measuring 163,87 and 246.46 feet;
SOUTHEASTERLY	by land shown on the Plan as Lot 5, 370.00 feet;
NORTHEASTERLY	by said Lot 5, 0.68 feet;
SOUTHERLY	by land shown on the Plan as of Pamela M. Gangemi, Trustee, 2293.76 feet;
WESTERLY	by land shown on the Plan as of the USA, 115.36 feet;
SOUTHWESTERLY	by said USA land, 380.00 feet;
SOUTHERLY	by said USA land, 74.41 feet;
WESTERLY	by land shown on Plan as of the Massachusetts Military Reservation, in two lines, measuring 494.22 feet and 19.62 feet.

Containing 48.09 acres (2,094,989 sq. ft.) according to said plan.

BARNSTABLE COUNTY EXCISE TAX
BARNSTABLE COUNTY REGISTRY OF DEEDS
Date: 03-29-2016 @ 01:54pm
Ctl#: 1011 Doc#: 14890
Fee: $4,522.50 Cons: $1,675,000.00

8

CASH ONLY IF ALL *CheckLock*™ SECURITY FEATURES LISTED ON BACK INDICATE NO TAMPERING OR COPYING

Shreeji Krupa LLC
DBA Best Buy Beverage
16 Echo Rd
Mashpee MA 02649

EASTERN BANK
53-179/113

13927

08-02-19

PAY TO THE ORDER OF TOWN OF MASHPEE $ 2294.00

TWO THOUSAND TWO HONDRED NINTY FOUR ONLY DOLLARS

PROTECTED AGAINST FRAUD

PINK ICON DISAPPEARS WITH HEAT

PINK ICON DISAPPEARS WITH HEAT

M-S Patel

MEMO

⑈013927⑈ ⑆011301798⑆ 06 00458657⑈

CAPE & ISLANDS ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING - ENVIRONMENTAL PERMITTING
INCORPORATED

STORMWATER MANAGEMENT REPORT AND DESIGN CALCULATIONS

Project:

Commercial Site Development
11 Evergreen Circle
Mashpee, MA 02649

Property Owner:

Evergreen Energy, LLC
81 Echo Road,
Mashpee, MA 02649

Applicant:

Kevin Andrade
P.O. Box 956
East Falmouth, MA 02536

May 6, 2019
Revised May 24, 2019

800 Falmouth Road, Suite 301C
Mashpee, MA 02649
(508) 477-7272

TABLE OF CONTENTS

1.0 OVERVIEW

1.1 Introduction

Cape & Islands Engineering, Inc. submits this Stormwater Report, on behalf of the applicant, Kevin Andrade who propose to develop a commercial facility located at 11 Evergreen Circle, Mashpee, MA. The project includes construction of a 9,500 square feet building, bituminous pavement parking and driveways, with the associated clearing, grading, utilities and landscaping at the property. Among the proposed utilities for this development is the stormwater management system designed to intercept and dispose of storm runoff generated within the developed areas in accordance with local requirements.

This report describes the hydrologic and hydraulic analysis for the proposed stormwater treatment process and the operation and maintenance requirements associated with stormwater runoff for the proposed development. This report accompanies a set of drawings (Site Plan) that represent the proposed site development and stormwater treatment system, and a set of calculations (enclosed) that identify the stormwater runoff flows and capacity analysis of the receiving facilities.

The applicant proposes to develop the existing vacant parcel to construct a commercial building with paved driveways and parking lot amounting to approximately 39,200 square feet of impervious surfaces. Stormwater systems are proposed to manage surface runoff from four (4) contributing drainage areas and are designed as above grade drain basins with subsurface leaching systems. The surface drain basin areas vary in footprint and are approximately 15 to 22-inches in depth. These systems will collect surface runoff and will provide soil infiltration for the most frequent and less intense rainstorm events. Additional storm flow volume capacity is designed within a subsurface leaching system where runoff volume that exceeds the depth of the drain basin system infiltrates through the sand texture soil stratum. This drainage system has been designed to control up to the 100-year 24-hour design storm event (see enclosed HydroCAD analysis) which exceeds regulatory standards.

The proposed system provides peak runoff attenuation, total suspended solids (TSS) removal, pollutant removal, and groundwater recharge within the development as required by the Town of Mashpee Bylaws. The system is properly sized to accommodate the first flush of stormwater runoff calculated as one inch (1") of runoff volume over the impervious surfaces infiltrating into the ground in less than 72-hours following the storm event (refer to calculations below). The proposed stormwater systems shall be maintained and inspected in accordance to the Operation and Management Plan (O&M) provided in this report for the proper operation of the stormwater

1.2 Applicable Regulations

As an commercial development within the Town of Mashpee the applicable regulation is found under the Mashpee Zoning Code "*Article VI §174-27.2 Stormwater Management.*" The regulation established minimum designed and sizing requirements and recommendations. This same regulation allows for the use of the Massachusetts Department of Environmental Protection Stormwater Management Standards (MassDEP Standards) through the use of the Stormwater Management Handbook to serve as guidance for the design of the stormwater management system. The design and system size for this proposed development is based on the MassDEP Standards. The DEP Standards require storm runoff to meet certain qualities and quantities criteria prior to final discharge in proximity to wetland resource areas. However, the application for this development is not to be reviewed for impacts to wetland resource area given that none exist on the property or within 100-feet of the project. The MassDEP Standards are incorporated to this design by omitting any reference related to wetland resource areas or discharges to wetland resource areas. In combination with the requirements from the Mashpee regulations the following sections, and in particular section 4 describe compliance of the proposed stormwater treatment system with applicable regulations.

2.0 BACKGROUND

2.1 Existing Conditions

The property is a vacant and naturally vegetated parcel of land containing approximately 81,243 square feet in area. The property is located within the Mashpee Commercial C3 Zoning District along the north side of Evergreen Circle. Properties abutting the parcel are designated the same zoning district except for properties to the west which is designated Industrial I1 district. As is typical of undeveloped properties the subject parcel contains no form of stormwater management system and given its naturally vegetated state there is very little impact from surface storm runoff generated on the property. Surface runoff is not considered a nuisance to adjacent developments. Alterations to the existing conditions will inevitable alter this existing scenario and to mitigate the increase in surface runoff within the property the proposed development will provide adequate on-site stormwater management.

2.2 Property History

The vacant property is currently a wooded parcel that is one of the parcels from a recently approved commercial/industrial subdivision of land. No impervious surfaces exist that generate surface runoff. Storm runoff is naturally managed by existing topography (depressions and existing drainage systems) and vegetation and does not contribute to offsite runoff patterns.

2.3 Site Characteristics

As mentioned above the site is a naturally vegetated parcel with no wetland resource areas within one hundred feet (100'). Existing natural vegetation is dominated with pine and oak trees. Surface elevations range from approximately 112-feet to elevation 115-feet as shown and referenced on the construction drawings and based on the 1988 North American Vertical Datum (NAVD 1988). The topography of the land is fairly leveled with a couple of depressed areas.

Geologically the land has been mapped as being part of a glacial outwash. The Soil Survey of Barnstable County, Massachusetts issued by the United States Department of Agriculture in March 1993 classifies the soils as Merimac Sandy Loam. The mapping of the soil corresponds to the composition of upper soil horizons, which indicates a predominant textural class of sandy loam soils. Soil tests performed on the property and on adjacent properties confirm that the existing surface soils correspond to textural class of sandy loam upper soils and at a depth of approximately 32 inches the natural soils encountered are sand texture. Substratum sand texture soils found on-site typically have a hydraulic conductivity of over 30-inches per hour (in./hr.) and permeameter tests performed in the sand texture soils for the designed of the subdivision road (Evergreen Circle) measured infiltration rates of 31 and 56 inches per hour. The Groundwater Contour Maps published for Cape Cod approximate the water table at an elevation of 55-feet which is nearly 60-feet below grade. These findings are taken into consideration for the designed of the stormwater management system.

3.0 PROPOSED PROJECT

3.1 Scope of Work

The proposed development consists of building a 9,500 square feet commercial facility with a parking lot to meet the use demands. Approximately 39,200 square feet of impervious surfaces are proposed with the project. Storm runoff generated within the development will be captured and managed within the property in compliance with local requirements.

The stormwater systems is designed and sized to manage surface runoff. The surface runoff patterns will consist of four (4) contributing areas. Surface storm runoff is designed by grading and by edge of pavement gutters to discharge into four (4) drainage basin areas. These basins vary in footprint and are approximately 15 or 22-inches in depth. These systems will collect surface runoff and provide soil infiltration for the most frequent and less intense rainstorm events. The basin systems have been sized to manage the volume equivalent to one-inch (1") of surface runoff over impervious surfaces (refer to calculations). The volume capacity of the drain basins ensures that the majority of storm events, which are of lower rainfall intensity, are properly managed with a system that provides a vegetative filtration to storm runoff that frequently washes impurities from paved surfaces.

Additional storm flow volume capacity is designed within a subsurface leaching system. This added system provides the capacity needed for runoff volume that exceeds the depth of the drain basin. High intensity and less frequent storm events cause a condition where the size of the drain basin is not enough to manage the storm runoff volume. For those events the runoff volume is conveyed from the drain basin system through an inlet grate and into the subsurface system to be infiltrated through the sand texture soil stratum. There will be no outfalls to water bodies or wetland resource areas. This drainage system has been designed to control up to the 100-year 24-hour design storm event (see enclosed HydroCAD analysis) which exceeds regulatory standards.

The proposed system provides peak runoff attenuation, total suspended solids (TSS) removal, pollutant removal, and groundwater recharge within the development as required by the Town of Mashpee Bylaws. The system is properly sized to accommodate the first flush of stormwater runoff calculated as one inch (1") of runoff volume over the impervious surfaces infiltrating into the ground in less than 72-hours following the storm event (refer to calculations below). The proposed stormwater systems shall be maintained and inspected in accordance to the Operation and Management Plan (O&M) provided in this report for the proper operation of the stormwater system

3.2 Construction Methodology

Once a contractor for the project is retained a well-defined construction methodology will be established. In general, the construction phase for the site will follow typical industry methods. The work area will be accessed through the proposed driveway opening off Evergreen Circle where an entrance gravel protection pad is proposed. The site will be prepared for construction by clearing the necessary area of existing vegetation to be occupied by the proposed improvement. Limits of work will be established and protection to drainage inlets will be provided. Work will be done by different contractors, often, at different times. Efforts will be coordinated to minimize construction time and disturbance within and around the area.

During construction the contractor shall provide adequate erosion and sedimentation control to protect the construction site and adjacent properties. The majority of the cleared areas will be built on with the new building addition and pavement structures. Other areas will be stabilized with adequate landscape and planting and/or erosion control measures. Overtime the proposed landscape will mature providing proper screening and natural erosion protection for the development. The proposed drainage system will be installed at some point during the grading stages of the construction and properly protected from other construction activities on the site. The construction erosion and control measures should be properly maintained and inspected throughout the duration of the work to ensure adequate protection. Once the site reaches stability of the disturbed areas the temporary protection installed throughout the site and within the drainage systems shall be removed.

3.3. Proposed Drainage

Four (4) surface runoff patterns are being analyzed to be managed by the stormwater management system. Correspondingly, there are four (4) drainage systems to manage storm runoff generated from these areas. First, the entrance driveway and front right side of the development delivery (Drain Area 'A') will be graded to discharge a proposed drain basin. This area also includes

runoff from one quarter of the building roof area. Stormwater runoff enters the basin areas through paved waterways and a stone splash apron and by roof runoff drain pipes. A proposed subsurface leaching system will be installed to manage high intensity storm events. Similarly a second system is proposed to collect surface runoff from the front left side of the development (Drain Area 'B'). The rear left portion of the development (Drain Area 'C'), which includes the delivery and loading zone area, will be serviced by the third drainage system. The fourth drainage area (Drain Area 'D') is relatively the smallest and correspondingly includes the smallest drainage system. Roof runoff is proposed to be conveyed to drainage system through 6" HDPE roof drains contributing to all four drainage systems. The proposed paved swale and drainage basin side slopes will be protected with erosion control blankets and seeded with a erosion control seed mixture. Once established, the proposed vegetation provides natural filtration to storm runoff. Large runoff volume enter a series of grate inlets that convey the runoff volume to subsurface leaching system. The subsurface leaching system consists of pre-cast chambers surrounded with crushed stone installed within the existing sand texture subsoil for rapid infiltration and for groundwater recharge. The proposed stormwater management system follows best management practice (BMPs) and conforms to requirements adopted by the appropriate regulatory agency.

4.0 MASSDEP STANDARD COMPLIANCE

4.1 Standard #1: No untreated discharge or erosion to wetlands

The proposed project provides a drainage system as means of treatment to storm runoff generated from the development to maintain storm runoff within the property and infiltrate into the ground. There are no wetlands within the property nor within 100 feet of the property, therefore there will be no untreated discharge directed to wetlands.

4.2 Standard #2: Peak rate attenuation

Post-development storm peak runoff discharge is required to be kept at levels that do not exceed pre-development values at the point of discharge or down-gradient property boundary. Currently, the site is undeveloped and contains surface runoff within. The undeveloped stage of the property produces very little storm runoff except for extreme events of high intensity rainstorms. Storm runoff eventually filters into the ground due to the existing high permeable soils, existing depressions and drain systems. The area within the subject property that do not flow into existing depressions and produce surface runoff to offsite area will not be altered with the proposed development.

The proposed development as designed provides control and stormwater management up to the 100-year 24-hour design rainstorm. The proposed developed areas of the facility as designed will not produce overwhelming runoff volume to the drainage system in Evergreen Circle. The proposed stormwater management system reduces (attenuates) overall site runoff rates by containing the runoff volume up to the 100-year 24-hour design storm in conformance with this standard.

4.3 Standard #3: Stormwater recharge

Recharge to groundwater is required by the DEP Standards and by the Mashpee regulations to approximate existing conditions. Because the existing site retains and infiltrates storm precipitation, the proposed stormwater systems is designed to also intercept and infiltrate storm volume. The soil type on the site and the size of the stormwater system determines the capacity of volume infiltration. The Natural Resources Conservation Service (NRCS) assigns different Soil Class to differentiate the capacity of the topsoil to intercept stormwater. The site has been mapped as Hydrologic Soil Class A and well drain soil. The recharge will be attained through the drain basin areas and subsurface leaching system. Mashpee regulations require pre-treatment to one inch of runoff from the development surfaces prior to discharge to a leaching system. The one-inch target will have to be accumulated within the drainage basin prior to the leaching system. The one-inch target also exceeds

the Target depth factor (F) of 0.60 inches required by Mass DEP Standards and therefore the vegetated basin should be design for at least a volume equal to one-inch runoff. Volume in excess of one-inch will overflow into the leaching system. The drainage system will provide an adequate holding volume capacity to contain the quality volume and comply with the quality treatment to the storm runoff prior to infiltration.

4.4 Standard #4: Water Quality

The proposed drainage systems will provide treatment to the stormwater prior to final discharge. The Mashpee regulations require that one inch of runoff from the contributing area impervious surfaces be treated for quality before reaching the leaching component of the drainage system. The proposed drainage basins will provide the majority of the treatment. Prior to the drainage basin the system chain of components will allow for debris and suspended solids carried within the runoff to settle in the drain basin areas. Before storm volume enters the subsurface leaching system the sump within the catch basin will provide additional settlement of suspended solids. The one-inch requirement by the Mashpee regulations forces the design to be similar to a design for a site considered a LUHPPL by the DEP Standards. Calculations for runoff water quality conformance are provided in the section below.

4.5 Standard #5: Land uses with higher potential pollutant loads (LUHPPL)

The proposed stormwater treatment system is design to treat the equivalent of one-inch runoff volume. This parameter is the requirement for LUHPPL sites as specified within the DEP Standards. LUHPPL sites are specific to some type of uses and developments as defined under the regulations set forth on 310 CMR 10.04. As proposed this development conforms with this standard even if the facility is not a LUHPPL site and this standard found to not be applicable.

4.6 Standard #6: Critical areas

As stated previously, the site is not located near wetland resources and is not located within a DEP approved Zone II for public water supply. Therefore this Standard is not applicable.

4.7 Standard #7: Redevelopment

The proposed project is for an expansion over an area that is currently a vacant parcel it is considered new development therefore this Standard is not applicable.

4.8 Standard #8: Construction period controls

Proper control measures during the construction stages of this project are needed to prevent erosion and sedimentation problems. Open excavation and piled material and equipment shall be properly managed to avoid conditions that may result detrimental to the project. Refer to the Plan details for the proposed erosion and sedimentation measures during the construction period. The Erosion and Sedimentation Control Plan includes the following:

1. The contractor shall establish the limit of work (construction or silt fence) as indicated in the Construction Drawings and maintain the limit of work in good conditions throughout the duration of the work.
2. The Contractor shall install silt bags within nearby exiting catch basins in front of the work site to protect against siltation. The Contractor shall regularly and at least once a week remove the silt sac and properly dispose the accumulated sediments and replace the silt sac in the catch basin
3. The Installer shall examine the work area and site conditions under which this work is to be performed prior to installation of sedimentation and erosion control.
4. After every rainstorm the Contractor shall examine the conditions of all the erosion and sedimentation controls and perform any required repairs or replacements.

5. The Contractor shall maintain on site 200 linear feet of silt fence in the event erosion occurs. If erosion occurs during construction the Contractor shall take steps to control the erosion.
6. The Contractor shall remove all land clearing and construction activities debris (brush, stumps, wood, chips, etc.) from site and properly transport to an approved disposal site.
7. Stripped topsoil from areas to be graded shall be stockpiled at locations approved by the project engineer and shall be enclosed within a siltation fence or bales of straw.
8. Stabilization for construction of the parking and driveway shall be achieved by installing the gravel base immediately after the rough grading and sub-base compaction is complete.
9. The Contractor shall avoid smearing the bottom levels of the excavation and the exposed excavation face walls for subsurface leaching systems. The contractor shall scarified any areas where smearing occurs to provide adequate filtration through the soils.
10. The Contractor shall avoid using dirty or silty crushed stone for the construction of the leaching systems. The Contractor shall use double washed crushed stone for the construction of the subsurface leaching system. The stone shall be inspected and approved by the project engineer prior to installation.
11. All excavated areas rendering a slope greater than 3 horizontal to 1 vertical (3:1) shall be stabilized with the installation of erosion control matte.

4.9 Standard #9: Operation and Maintenance Plan

A properly operating drainage system is the basis for long life of the roads and parking areas and for the protection of wetland resources against pollutants carried by stormwater. If the drainage system fails to work, frequent pooling of stormwater would be expected to occur along the pavement surface leading to saturation of the gravel base and shortening the life expectancy of the pavement also, failing to protect the wetland resource areas. The owner or designated representative will be responsible for maintenance and operation of drainage system.

The owner or designated representative shall maintain a copy of the construction drawings as means of illustration of the location of the stormwater system, or other drawings depicting the site with all components of the drainage system location. Only authorized personnel by the owner shall maintain and operate the drainage system.

The drainage system has been design with consideration of the use as a commercial development. The owner or designated representative shall implement the following long-term pollution prevention measures:

1. The drainage system is intended for the interception of rainfall precipitation and snowmelt runoff. No other discharges shall be allowed within the systems unless reviewed by the appropriate trade professional for conformance with the design parameters of the system.
2. Proper road maintenance shall be performed without harming the drainage system.
3. Lawns, gardens and landscape care and maintenance clippings and refuse shall be properly disposed of. Dumping of yard waste should not be allowed within the drainage systems.
4. Snow and ice shall be properly managed. Snow or ice removal shall not obstruct the stormwater inlets and outlets. Snow piles shall not be placed within the stormwater vegetated basins.
5. A contractor who specializes on spill cleanings shall be engaged in the event of spills into the drainage system. The contractor shall properly clean the affected areas and the drainage system.

To provide for adequate maintenance of the drainage system, the following inspections and procedures will be required:

1. Inspect drainage basins after every major storm event (typically a storm of one inch of rainfall) and at least four times a year. Inspection will include measuring the depth of silt and sediment collected in the stone splash areas before the stone checks.
2. If a depth of sediments of over 4 inches is noticed the owner shall arrange for a contractor to properly remove the accumulated sediments.

3. The proposed crushed stone pads should be kept cleaned by routinely removing any debris that may be collected on the surface.
4. If water pooling remains within the drainage basin after 72 hours following a storm event remove and properly scarified the soil surface and aerate the soil to increase permeability. No need to remove established vegetation within the system.
5. If standing water is observed above the grate inlet rim 24 hours past a storm event inspect the system for the presence of clogging or obstruction. If clogging or an obstacle exists arrange for the system to be cleaned.
6. Inspect each drain basin at least once a year by observing the pooling duration after storm events. Remove any debris accumulation within the system. If pooling remains after 72 hours following a storm event scarified and aerate the soil surface to increase permeability. No need to remove established shrubs or trees within the system.
7. Provide watering as needed to all plantings on the site. Water immediately after planting and continue watering at least twice a week unless the rain does the job. As a general rule, planting needs one-inch of irrigation during the growing season. The planting within the vegetated basin should not require additional watering once the planting is established.
8. If standing water is observed above the outlet structure rim 24 hours past a storm event inspect the outlet piping for the presence of clogging or obstruction. If clogging or an obstacle exists within the pipe, arrange for the piping to be cleaned. If pooling persists and no apparent clogging is present refer to leaching system inspection.

At leaching systems locations, inspect the system by removing the cover and inspecting the interior. Measure the depth of standing water and compare to the actual depth of the structure. If the standing water is greater than half the depth of the structure, the leaching system shall be cleaned and inspected on a monthly basis. The leaching system is considered in failure when pooling occurs at the inlet grate at the leaching system and investigation has determined no apparent clogging or obstructions within the leaching system. To repair this situation, a contractor shall be hired to install the same size system in an adjacent area to the leaching system in failure, subject to subsurface soil investigations concerning permeability. The contractor shall connect the new system to the old failed system with the same size pipe and slope that currently exists.

4.10 Standard #10: Prohibition of Illicit Discharges

As noted within Standard 9 above several long-term pollution prevention measures are recommended to protect not only the stormwater management system but also the community and the environment. The drainage system has been design with consideration of the proposed use as a commercial development and the owner or designated representative shall implement the long-term pollution prevention measures to preserve a properly operating drainage system. A properly operated drainage system is the basis for long life of the roads and parking areas. The owner or designated representative will be responsible for maintenance and operation of drainage system.

5.0 STORMWATER DESIGN CALCULATIONS

5.1 Stormwater Quality and Quantity Volume

The stormwater treatment systems as described above will intercept stormwater runoff for the proposed development. Approximately 39,200 square feet of impervious surface is proposed to contribute surface storm runoff to the four (4) drainage systems (refer to attached Drainage Basin Plan). The proposed drain basin system for each contributing drainage area will manage the equivalent quality and quantity storm volume calculated as one-inch (1") over the proposed impervious areas even if the subsurface leaching systems were not accounted for. The table below identifies the contributing impervious surface and total drainage areas:

Area Description	Contributing Drain Area in square feet				
	Area A	Area B	Area C	Area D	Total
Impervious	10,400	11,900	10,400	6,500	39,200
Total	18,200	14,500	18,100	12,000	52,000

The water quality volume is calculated as one-inch (1") over impervious areas noted above. This volume is contained within the capacity of the proposed corresponding drain basin areas. As depicted below, the proposed drain basin areas are sized to properly contain the quality volume before any possible overtopping.

Drain basin volume obtained from HydroCAD storage calculations.

Parameter	Contributing Drain Area				
	Area A	Area B	Area C	Area D	Total
Impervious area, s.f.	10,400	11,900	10,400	6,500	39,200
Quality volume, c.f.	**867**	**992**	**867**	**542**	**3,267**
Drain basin depth, in.	21.8	17.3	20.9	15.6	N/A
Drain basin volume, c.f.	**872**	**1,011**	**872**	**546**	**3,301**

The drainage basin systems have enough surface area and provide a soil texture that allows for the quality volume contained within to infiltrate the soils in less than 72-hours (3 days) to prevent ponding of rain water for extended periods of time. The volume drawdown time is calculated by allowing the drain basin bottom area to infiltrate the water at an assigned infiltration rate. Based on the encountered soils the design assigns a saturated hydraulic conductivity (Ks) of 2.41 in./hr. from the recommendations published in Rawls table. The table below illustrates the time needed for the quality volume to completely dissipate from the surface of the drain basin areas confirming a drawdown time less than the maximum recommendation of 72-hours:

Drawdown time = (quality volume / Drain basin area) / (infiltration rate) x (units conversion factors)

Parameter	Contributing Drain Area			
	Area A	Area B	Area C	Area D
Drain basin area, s.f.	230	365	255	230
Quality volume, c.f.	867	992	867	542
Drawdown time, hours	**18.8**	**13.5**	**16.9**	**11.7**

5.2 Total Suspended Solid Analysis

As part of the quality treatment the drainage system shall remove total suspended solids (TSS) from the storm runoff water. The removal of TSS is provided by allowing the water volume some still time for suspended soils to drop out of the water. The methods used for the proposed design includes the grassed drain basins and the subsurface leaching systems. The drain basin area will be the main TSS removal component of this system. The subsurface leaching system assist in TSS removal for high intensity storm events.

TSS removal calculations (TSS Removal by BMP component/system) per MassDEP Stormwater Manual. All proposed drainage system will follow the same treatment train and therefore the same calculated TSS removal rates.

Starting TSS load at first BMP for any system set at 1.00

1. Drain Basin Area (BA) = 80% assigned removal rate
2. Infiltration System (IS) = 80% assigned removal rate

BMP	Removal rate	Starting TSS	Removed TSS	Remaining TSS
BA	80	1.00	0.80	0.20
IS	80	0.20	0.16	0.04
Total Suspended Solids (TSS) REMOVAL =				**96%**

5.3 Overall Stormwater Design for High Intensity Design Storms

During major storm events the runoff volume will exceed the capacity of the proposed drain basin areas and be conveyed into the subsurface leaching system. The subsurface leaching system is designed to manage an event equivalent to the 100-year design storm. The water level within the drain basin area and within the subsurface leaching system will vary depending on the intensity and duration of the storm event but the levels will be kept within the constraints of the drainage system. Below is a table comparing the water level within the drain basin and the subsurface system for the 100-year 24-hour design storms.

Parameter	Contributing Drain Area			
	Area A	Area B	Area C	Area D
Drain basin bottom elevation, ft.	111.0	112.0	111.0	112.0
100-year flood level elevation, ft.	113.20	113.90	112.96	113.84
Water depth, inches	**26.4**	**22.8**	**23.5**	**22.1**

6.0 SUMMARY

6.1 Conclusion

The intended commercial development for this site is typical and in keeping with the surrounding commercial and industrial neighborhood. The stormwater management system and erosion and sedimentation control plan proposed provides protection for the development once constructed and during the construction phases from stormwater impacts. Information as described in this report and within the construction documents submitted is comprehensive and informative enough for a qualified and experienced contractor to properly implement on the ground. Proper maintenance tasks and inspections procedures are recommended for the proposed erosion and sedimentation control measures for the contractor to implement and maintenance during the construction stages. Similarly, recommendations area provided for operation and maintenance of the stormwater management system for longevity and protection of the system as proposed. The design and sizing of the stormwater management system is adequate to manage stormwater runoff on the subject property and conforms with applicable requirements. The stormwater system as proposed is appropriate to manage runoff water for this development.

6.2 Contact Information

In an effort to reduce the amount of paper required for filings, the entire application can be emailed upon request to regulatory staff and commission members. Please contact Cape & Islands Engineering, Inc. by phone or email to obtain any paper or digital copies of project information.

Please contact Raul Lizardi-Rivera at 508.477.7272 or Raul@capeeng.com for copies of project information.

The Applicants representative:

Raul Lizardi-Rivera, P.E.
Director of Engineering

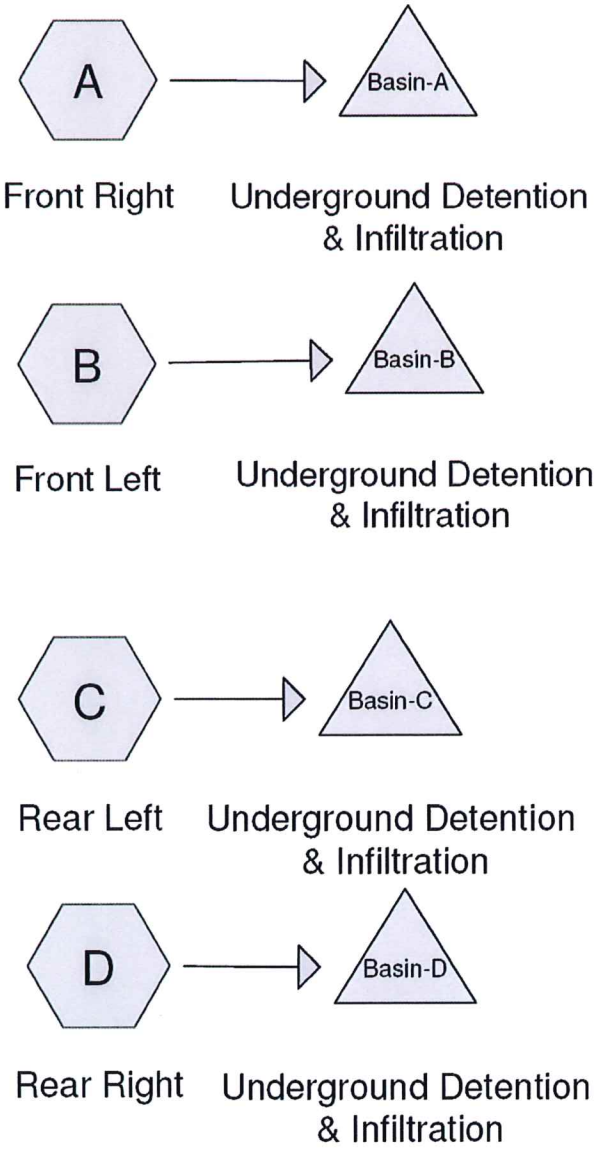
Cape & Islands Engineering, Inc.
800 Falmouth Road, Suite 301C
Mashpee, MA 02649
508.477.7272
508.477.9072 (fax)
raul@capeeng.com

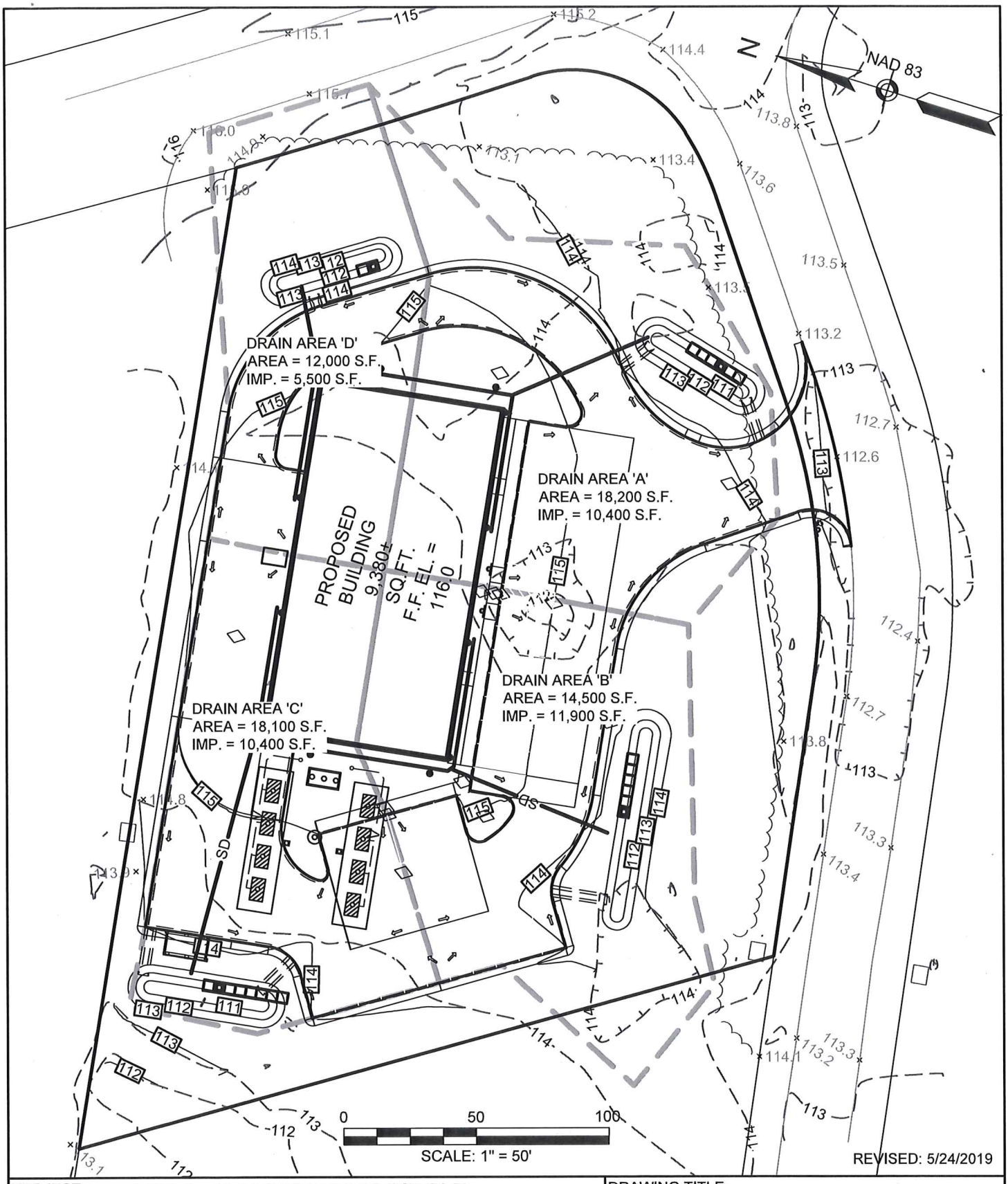
7.0 APPENDIXES

7.1 Appendix A – Development Drainage Basin Areas

&

7.2 Appendix B – Drainage Calculations (HydroCAD analysis)





PROJECT: LOT A, 11 EVERGREEN CIRCLE
MASHPEE, MASSACHUSETTS

DRAWING TITLE: DRAINAGE GRAPHIC

CAPE & ISLANDS ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING - ENVIRONMENTAL PERMITTING
INCORPORATED
508.477.7272 PHONE 508.477.9072 FAX
SUMMERFIELD PARK - 800 FALMOUTH ROAD - SUITE 301C - MASHPEE, MA 02649

SHEET NO.: 1 OF 1	DATE: APRIL 23, 2019
ASSESSORS INFORMATION: MAP 19 PARCEL 10 EXT. 12	
DRAWN BY: RLR	CHECKED BY: RLR

Subcatchment A: Front Right

Runoff = 1.88 cfs @ 12.02 hrs, Volume= 6,231 cf, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Type III 24-hr 100-Year Rainfall=7.20"

Area (sf)	CN	Description
10,400	98	Roofs & parking area
7,800	39	>75% Grass - Landscape Area
18,200	73	Weighted Average
7,800		Pervious Area
10,400		Impervious Area

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

Subcatchment B: Front Left

Runoff = 2.00 cfs @ 12.02 hrs, Volume= 6,855 cf, Depth= 5.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Type III 24-hr 100-Year Rainfall=7.20"

Area (sf)	CN	Description
11,900	98	parking area
2,600	39	>75% Grass - Landscape Area
14,500	87	Weighted Average
2,600		Pervious Area
11,900		Impervious Area

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

Pond Basin-A: Underground Detention & Infiltration

Inflow Area = 18,200 sf, Inflow Depth = 4.11" for 100-Year event
Inflow = 1.88 cfs @ 12.02 hrs, Volume= 6,231 cf
Outflow = 0.25 cfs @ 12.00 hrs, Volume= 6,231 cf, Atten= 87%, Lag= 0.0 min
Discarded = 0.25 cfs @ 12.00 hrs, Volume= 6,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 113.20' @ 12.69 hrs Surf.Area= 300 sf Storage= 2,227 cf

Plug-Flow detention time= 71.5 min calculated for 6,210 cf (100% of inflow)
Center-of-Mass det. time= 71.3 min (890.3 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	111.00'	2,077 cf	**Drain basin (Irregular)** Listed below (Recalc) -Impervious
#2	105.00'	384 cf	**4.00'W x 4.00'L x 4.00'H 4'x4'x4' galley** x 6 Inside #3
#3	104.00'	446 cf	**10.00'W x 30.00'L x 5.00'H Excavation w/stone backfill** 1,500 cf Overall - 384 cf Embedded = 1,116 cf x 40.0% Voids
		2,908 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
111.00	230	100.0	0	0	230
111.50	386	109.0	152	152	389
112.00	557	119.0	234	387	579
112.50	472	128.0	257	644	766
113.50	2,700	260.0	1,434	2,077	4,846

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**15.500 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.25 cfs @ 12.00 hrs HW=111.31' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Pond Basin-B: Underground Detention & Infiltration

Inflow Area = 14,500 sf, Inflow Depth = 5.67" for 100-Year event
Inflow = 2.00 cfs @ 12.02 hrs, Volume= 6,855 cf
Outflow = 0.25 cfs @ 12.00 hrs, Volume= 6,855 cf, Atten= 87%, Lag= 0.0 min
Discarded = 0.25 cfs @ 12.00 hrs, Volume= 6,855 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 113.90' @ 12.64 hrs Surf.Area= 300 sf Storage= 2,469 cf

Plug-Flow detention time= 73.8 min calculated for 6,832 cf (100% of inflow)
Center-of-Mass det. time= 73.6 min (858.1 - 784.5)

Volume	Invert	Avail.Storage	Storage Description
#1	112.00'	2,005 cf	**Drain basin (Irregular)** Listed below (Recalc) -Impervious
#2	106.00'	384 cf	**4.00'W x 4.00'L x 4.00'H 4'x4'x4' galley** x 6 Inside #3
#3	105.00'	446 cf	**10.00'W x 30.00'L x 5.00'H Excavation w/stone backfill** 1,500 cf Overall - 384 cf Embedded = 1,116 cf x 40.0% Voids
		2,836 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.00	365	254.0	0	0	365
112.50	602	163.0	239	239	3,387
113.00	854	172.0	362	601	3,641
113.75	1,120	182.0	738	1,339	3,952
114.00	4,600	340.0	666	2,005	10,516

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**15.500 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.25 cfs @ 12.00 hrs HW=112.63' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Subcatchment C: Rear Left

Runoff = 1.87 cfs @ 12.02 hrs, Volume= 6,197 cf, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Type III 24-hr 100-Year Rainfall=7.20"

Area (sf)	CN	Description
10,400	98	Roofs & parking area
7,700	39	>75% Grass - Landscape Area
18,100	73	Weighted Average
7,700		Pervious Area
10,400		Impervious Area

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

Subcatchment D: Rear Right

Runoff = 1.01 cfs @ 12.03 hrs, Volume= 3,362 cf, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Type III 24-hr 100-Year Rainfall=7.20"

Area (sf)	CN	Description
5,500	98	parking area
6,500	39	>75% Grass - Landscape Area
12,000	66	Weighted Average
6,500		Pervious Area
5,500		Impervious Area

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

Pond Basin-C: Underground Detention & Infiltration

Inflow Area = 18,100 sf, Inflow Depth = 4.11" for 100-Year event
Inflow = 1.87 cfs @ 12.02 hrs, Volume= 6,197 cf
Outflow = 0.31 cfs @ 12.10 hrs, Volume= 6,197 cf, Atten= 84%, Lag= 4.7 min
Discarded = 0.31 cfs @ 12.10 hrs, Volume= 6,197 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 112.96' @ 12.56 hrs Surf.Area= 380 sf Storage= 2,026 cf

Plug-Flow detention time= 49.4 min calculated for 6,176 cf (100% of inflow)
Center-of-Mass det. time= 49.3 min (868.3 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	111.00'	1,103 cf	**Drain basin (Irregular)** Listed below (Recalc) -Impervious
#2	106.00'	410 cf	**4.00'W x 4.00'L x 4.00'H 4'x4'x4' galley** x 8 Inside #3 512 cf Overall x 80.0% Voids
#3	105.00'	555 cf	**10.00'W x 38.00'L x 5.00'H Excavation w/stone backfill** 1,900 cf Overall - 512 cf Embedded = 1,388 cf x 40.0% Voids
		2,068 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
111.00	255	110.0	0	0	255
111.50	426	119.0	168	168	429
112.00	617	129.0	259	428	636
112.50	542	138.0	290	717	838
113.00	1,026	147.0	386	1,103	1,054

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**15.500 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.31 cfs @ 12.10 hrs HW=111.91' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Pond Basin-D: Underground Detention & Infiltration

Inflow Area = 12,000 sf, Inflow Depth = 3.36" for 100-Year event
Inflow = 1.01 cfs @ 12.03 hrs, Volume= 3,362 cf
Outflow = 0.14 cfs @ 12.00 hrs, Volume= 3,362 cf, Atten= 86%, Lag= 0.0 min
Discarded = 0.14 cfs @ 12.00 hrs, Volume= 3,362 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 113.84' @ 12.76 hrs Surf.Area= 140 sf Storage= 1,186 cf

Plug-Flow detention time= 72.1 min calculated for 3,351 cf (100% of inflow)
Center-of-Mass det. time= 71.9 min (906.3 - 834.4)

Volume	Invert	Avail.Storage	Storage Description
#1	112.00'	990 cf	**Drain basin (Irregular)** Listed below (Recalc) -Impervious
#2	106.00'	102 cf	**4.00'W x 4.00'L x 4.00'H 4'x4'x4' galley** x 2 Inside #3 128 cf Overall x 80.0% Voids
#3	105.00'	229 cf	**10.00'W x 14.00'L x 5.00'H Excavation w/stone backfill** 700 cf Overall - 128 cf Embedded = 572 cf x 40.0% Voids
		1,322 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.00	230	100.0	0	0	230
112.50	386	109.0	152	152	389
113.00	557	119.0	234	387	579
113.50	472	128.0	257	644	766
114.00	941	134.0	347	990	907

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**15.500 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.14 cfs @ 12.00 hrs HW=112.40' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Assessors Map will be updated within next Fiscal Year.

Abutters to: 19-10-0

Certified by: Susan L Denise

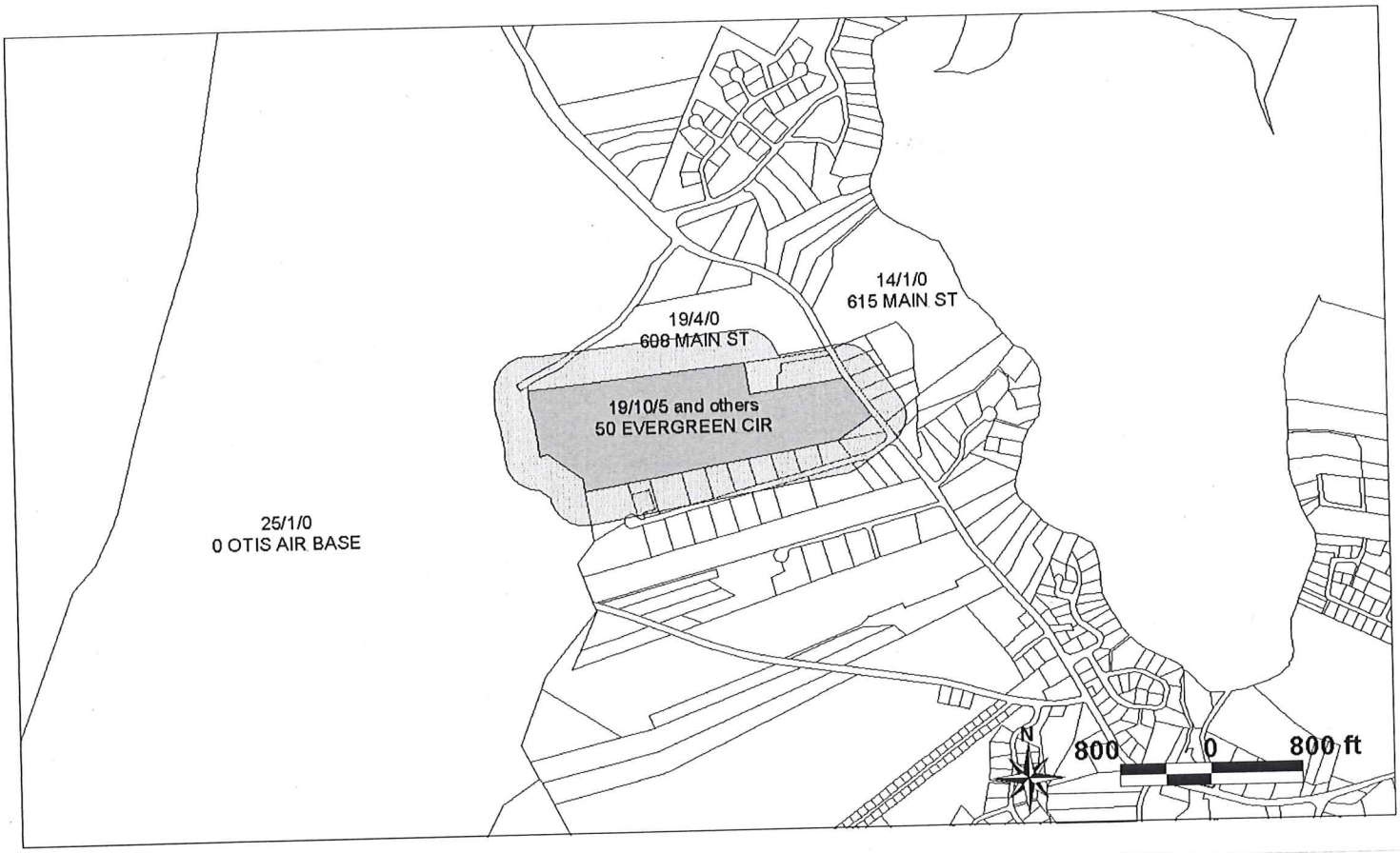
TOWN OF MASHPEE, MA
BOARD OF ASSESSORS
16 Great Neck Rd., North, Mashpee, MA 02649

June 13, 2019

588 Main St

Number of Abutters: 47

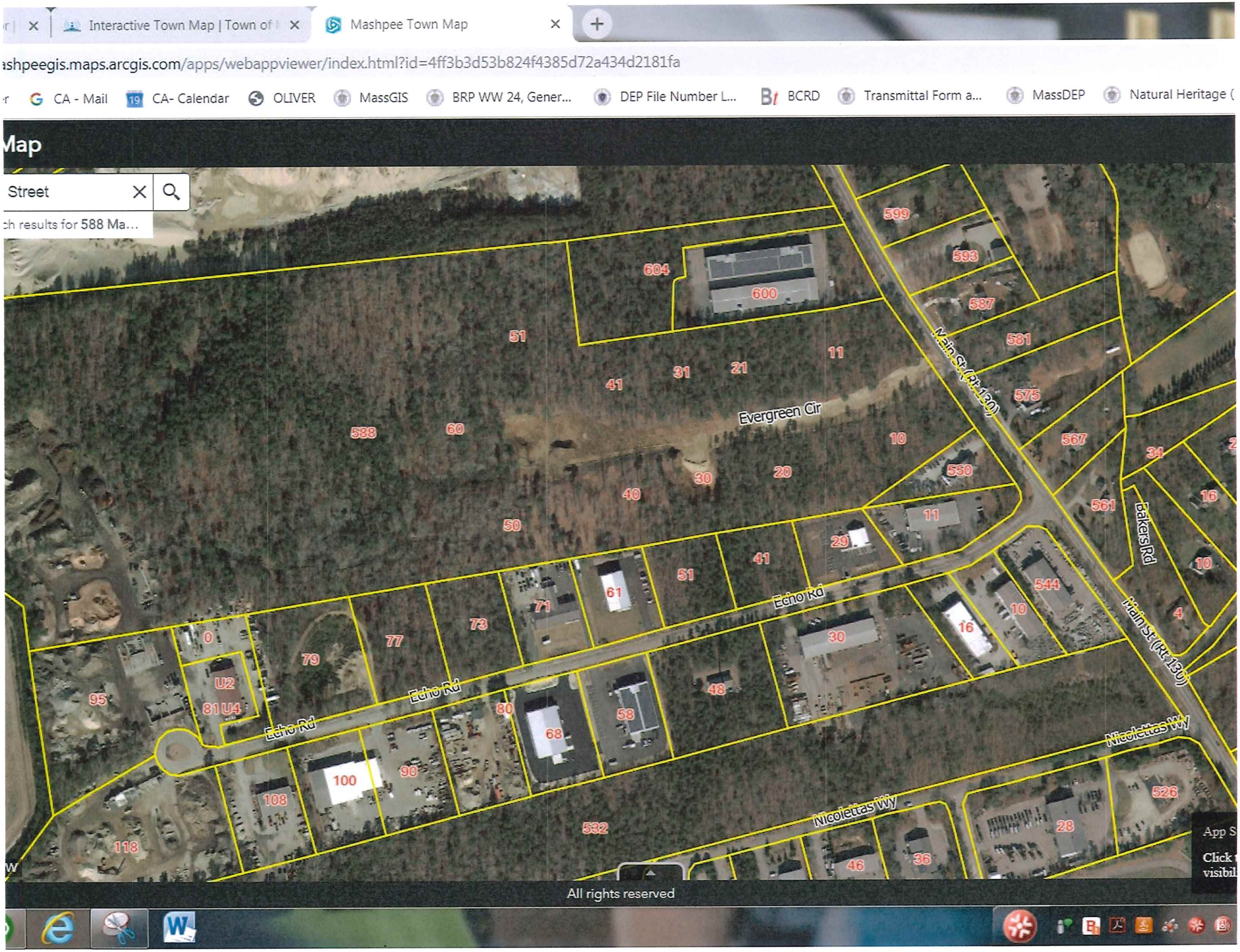
Abutters List Within 300 feet of Parcel 19/10/5 and others



Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
289	14-1-0-E	CAPE COD CAMP CORPORATION	615 MAIN ST	615 MAIN STREET	MASHPEE	MA	02649
507	19-1-0-R	MIKUTOWICZ JOHN F TRUSTEE 30 ECHO ROAD REALTY TRUST	30 ECHO RD	30 ECHO ROAD	MASHPEE	MA	02649
509	19-3-0-R	CABRAL, MANUEL TRUSTEE LIMITED REALTY TRUST	95 ECHO RD	81 ECHO RD - UNIT 1	MASHPEE	MA	02649
18758	19-3-1-E	GANGEMI, PAMELA M TRS THE 81 ECHO ROAD REALTY TRUST	81 ECHO RD	21 PEBBLE PATH	MARSTONS MILLS	MA	02648
21897	19-3-2-R	ORCUTT, PATRICK & CABRAL, MANUEL TR	0 ECHO RD	37 LADYS SLIPPER LANE	MASHPEE	MA	02649
21896	19-3-3-R	GANGEMI, PAMELA M TRS 81 ECHO ROAD REALTY TRUST	79 ECHO RD	21 PEBBLE PATH	MARSTONS MILLS	MA	02648
21892	19-3-4-R	GANGEMI, PAMELA M TRS 81 ECHO ROAD REALTY TRUST	77 ECHO RD	21 PEBBLE PATH	MARSTONS MILLS	MA	02648
21891	19-3-5-R	DECH LLC	71 ECHO RD	2 SPINNAKER CIRCLE	NANTUCKET	MA	02553
21890	19-3-6-R	DRISCOLL CAPE 1969 LLC	61 ECHO RD	83 NEWBERN AVENUE	MEDFORD	MA	02155
21889	19-3-7-R	VICTURINE, PAMELA M	51 ECHO RD	21 PEBBLE PATH	MARSTONS MILLS	MA	02648
21888	19-3-8-R	GANGEMI, RONALD P	41 ECHO RD	20 WHEELER ROAD	MASHPEE	MA	02649
21887	19-3-9-R	TRIPLE M MANAGEMENT CO LLC % JONATHAN HERLIHY	29 ECHO RD	9 COLLINS AVE	PLYMOUTH	MA	02362
18753	19-3-A-R	CABRAL, MANUEL	81-U1 ECHO RD	81-U1 ECHO RD	MASHPEE	MA	02649
18754	19-3-B-R	EARLE, DENNIS A	81-U2 ECHO RD	PO BOX 876	SANDWICH	MA	02563
18756	19-3-C-R	ORCUTT, PATRICK	81-U3 ECHO RD	37 LADYS SLIPPER LANE	MASHPEE	MA	02649

Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
18757	19-3-D-R	GOVONI, PETER J	81-U4 ECHO RD	PO BOX 1323	FORESTDALE	MA	02644
23070	19-3-4A-R	GANGEMI, PAMELA M TRS 81 ECHO ROAD REALTY TRUST	73 ECHO RD	21 PEBBLE PATH	MARSTONS MILLS	MA	02648
510	19-4-0-R	DRINKWATER INVESTMENT CORP	608 MAIN ST	351 WINTER STREET	HANOVER	MA	02339
516	00000019000000000	Subdivided Parcel					
23461	19-10-1-R	EVERGREEN ENERGY LLC	10 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23462	19-10-2-R	EVERGREEN ENERGY LLC	20 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23463	19-10-3-R	EVERGREEN ENERGY LLC	30 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23464	19-10-4-R	EVERGREEN ENERGY LLC	40 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23465	19-10-5-R	EVERGREEN ENERGY LLC	50 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23466	19-10-6-R	EVERGREEN ENERGY LLC	0 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23467	19-10-7-R	EVERGREEN ENERGY LLC	60 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23468	19-10-8-R	EVERGREEN ENERGY LLC	51 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23469	19-10-9-R	EVERGREEN ENERGY LLC	41 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23470	19-10-10-R	EVERGREEN ENERGY LLC	31 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23471	19-10-11-R	EVERGREEN ENERGY LLC	21 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
23472	19-10-12-R	Subject EVERGREEN ENERGY LLC	11 EVERGREEN CIR	81 ECHO ROAD	MASHPEE	MA	02649
517	19-11-0-R	ANCHOR SELF STORAGE OF MASHPEE LLC	600 MAIN ST	600 MAIN ST	MASHPEE	MA	02649
16920	19-12-0-R	UMANO, MICHAEL J ET AL TRS FIFTY FOUR ECHO RD RLTY TRUST	48 ECHO RD	c/o INDUSTRIAL COMMUNICATIONS 40 LONE STREET	MARSHFIELD	MA	02050
16922	19-13-0-R	SEMINARA, ANNE I C/O MERIDIAN FAMILY LTD PARTNE	58 ECHO RD	PO BOX 1219	SOUTH DENNIS	MA	02660
17687	19-15-0-E	MASHPEE, TOWN OF CONSERVATION COMMISSION	604 MAIN ST	16 GREAT NECK RD NORTH	MASHPEE	MA	02649
518	20-1-0-R	CICCOTELLI, CHRISTOPHER A	599 MAIN ST	599 MAIN ST	MASHPEE	MA	02649
519	20-2-0-R	HOLDGATE, BRUCE D	593 MAIN ST	30 FRIENDSHIP LANE	NANTUCKET	MA	02554
520	20-4-0-R	PIERCE, KATHLEEN J ET AL TRS CCR TRUST	575 MAIN ST	575 MAIN ST	MASHPEE	MA	02649
526	20-24-0-R	CUSHMAN, WESTERVELT F TR L & N REALTY TRUST	544 MAIN ST	3 COTTER STREET	CANTON	MA	02021
527	20-25-0-R	MCGEE, PAUL R TRUSTEE ECHO ROAD REALTY TRUST	10 ECHO RD	35 MARWAY	MASHPEE	MA	02649
528	20-26-0-R	DEPAUL, DIANE TRUSTEE EAGLE REALTY TRUST	16 ECHO RD	80 GOLD LEAF LN	MASHPEE	MA	02649
531	20-30-0-R	TIEXEIRA, DOMINGO PINA JR & TIEXEIRA JANET C	567 MAIN ST	P O BOX 55	MASHPEE	MA	02649
532	20-31-0-R	DESROSIERS, HENRY P	561 MAIN ST	561 MAIN ST	MASHPEE	MA	02649
555	20-3A-0-R	MENDES, KEITH S & VANESSA D	587 MAIN ST	587 MAIN ST	MASHPEE	MA	02649
556	20-3B-0-R	WILSON, THOMAS D & LYNN E	581 MAIN ST	581 MAIN ST	MASHPEE	MA	02649
547	20-47-0-R	OBRIEN GEORGE F III TRST GEMARKO NOMINEE TRUST	11 ECHO RD	281 GREAT WESTERN RD	SOUTH DENNIS	MA	02660
550	20-50-0-E	THE MAY INSTITUTE INC	550 MAIN ST	14 PACELLA PARK DRIVE	RANDOLPH	MA	02368
1013	25-1-0-E	UNITED STATES OF AMERICA DEPT OF THE AIR FORCE	0 OTIS AIR BASE	HEADQUARTERS 102D FIGHTER WING MASS AIR NATIONAL GUARD	OTIS ANGB	MA	02542-1330

Evergreen Parcels


Interactive Town Map | Town of
Mashpee Town Map
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Bakers Rd
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Interactive Town Map | Town of

Mashpee Town Map

ashpeegis.maps.arcgis.com/apps/webappviewer/index.html?id=4ff3b3d53b824f4385d72a434d2181fa

CA - Mail | CA- Calendar | OLIVER | MassGIS | BRP WW 24, Gener... | DEP File Number L... | BCRD | Transmittal Form a... | MassDEP | Natural Heritage (

Article_

To see if the Town will appropriate and transfer the sum of $207 from revenue available for appropriation to pay previous fiscal year unpaid bills as follows:

John J. Maurer, Inc. $207

Submitted by the Department of Public Works

Article_

To see if the Town will vote to amend ARTICLE IV – Council on Aging, Section 3-15

"The Board of Selectmen shall appoint a Council on Aging to consist of seven (7) members"

Submitted by the Council on Aging

Article:

To see if the Town will vote to appropriate and transfer $85,100 from the Interest Outside 2 ½ account to the Principal Inside 2 ½ account and further appropriate and transfer $7,500 from the Interest Outside 2 ½ account to the Temporary Principal Outside 2 ½ account and further appropriate and transfer $42,500 Principal Outside 2 ½ to Temporary Principal Outside 2 ½ and further appropriate and transfer $500 from Interest outside 2 ½ to Interest Temporary Borrowing Outside 2 1/2 and further appropriate and transfer $950 from Interest outside 2 ½ to Principal Inside 2 ½ or take any other action relating thereto.

Submitted by the Town Treasurer

Explanation: This article is for the purpose of distributing the funds in the proper accounts due to the actual bonds and premium from the April 1st 2109 Bond issue. These funds could not be appropriated in annual Town meeting as the Bonding was completed after the warrant article submission. The $50,000 amount and $500 interest transferred will be used payoff a small BAN for the Quashnet school project.

Article_

To see if the Town will vote to add the following "Promulgation of Regulations" paragraph directly after the "WATERWAYS USE OF" heading and before Chapter 170-1 "Definitions" paragraph the following:

Chapter 170 – A. Promulgation of Regulations.

A. After public notice and public hearing, the Board of Selectmen shall promulgate rules and regulations to effectuate the purpose of this article. Notice shall be given at least two weeks prior to the public hearing by publication in a newspaper of general circulation in the Town and by posting with the Town Clerk and posting in the Harbormasters office.

B. These regulations shall define key terms and establish procedures for all waterways related uses including registration of moorings, assignment of mooring space, establishment and maintenance of a waiting list, inspection of moorings, specifications for moorings, identification of moorings and assignment and collection of fees.

C. Failure by the Board of Selectmen to promulgate such rules and regulations or a legal declaration of their invalidity by a court of law shall not act to suspend or invalidate the effects of this article.

D. After public notice and public hearing, the Board of Selectmen may amend or otherwise modify these rules and regulations. Notice shall be given at least two weeks prior to the public hearing by publication in a newspaper of general circulation in the Town and by posting with the Town Clerk and posting at the Harbormasters office.

Explanation: This article will greatly reduce the amount of time it presently takes to make any changes to our Waterways Bylaws and keeps the changes out in front of the interested public.

Article_

To see if the Town will vote to add to the Mashpee General Bylaw Chapter 170 §6-B.6 as follows:

The use of jet ski watercraft, surf jet watercraft, wet bike watercraft and other so-called personal watercraft which are motorboats is prohibited on Ashumet Pond.

Explanation: This Article will add a paragraph to the Town of Mashpee bylaw Chapter 170 §6-B. The Town of Falmouth has a bylaw with the same wording and the Commonwealth of Massachusetts will not enforce the Falmouth bylaw unless Mashpee also has a similar bylaw. Ashumet Pond is bordered by both Mashpee and Falmouth.

Article_

To see if the Town will vote to appropriate and transfer the sum of $37,950.00 from the Waterways Improvement Fund to the Popponesset Approach Channel account to cover the cost of dredging 5,000CY of sand and associated expenses from the Popponesset Approach Channel, or take any other action thereto.

Explanation: This Article will transfer funds from the Waterways Improvement Fund to cover the costs of dredging 5,000CY of sand from the Popponesset Approach Channel to help provide safe navigation.

Article_

To see if the Town will vote create a Waterways matching grant fund account and appropriate and transfer from the Waterways Improvement Fund the sum of $40,000.00 to the Waterways matching grant fund account for the purpose of applying for grant monies that become available to the Town for the purpose of engineering and/or dredging of Mashpee waterways including associated expenses, or take any other action relating thereto.

Note: These funds available for 3 years and the line item has to be renewed very 3 years if not expended. Note that engineering services would fall under the "related expenses" heading.

Explanation: This Article will create and fund an account that would be available to apply for grant monies that require the Town to have matching funds in order to be eligible.

Article_

To see if the Town will vote to create an Engineering/Permitting/Dredging and Associated Expenses Account and appropriate and transfer the sum of $.08 from the Waterways Maintenance/Dredging account and appropriate and transfer the sum of $98,846.66 from the Mashpee River Dredging account for a total of $98,846.74 to the Engineering/Permitting/Dredging and Associated Expenses account.

Explanation: This Article will create and fund an account that will make the process easier to manage for the engineering, permitting, dredging and associated expenses for the Town's waterways.

Article_

To see if the Town will vote to appropriate and transfer the sum of $34,500.00 from the Channel Permit Account to the Engineering/Permitting/Dredging and Associated Expenses Account.

Explanation: This Article will transfer monies in to the Waterways account created in the previous article.

Article_

To see if the Town will vote to add the following words to the Mashpee Town Code Chapter 170, Section 170-2, A: except as otherwise noted, and vote to replace Chapter 170, Section 9, Moorings with the following:

A. After public notice and public hearing, the Board of Selectmen with input from the Harbormaster shall promulgate mooring rules and regulations. Notice shall be given at least two weeks prior to the public hearing by publication in a newspaper of general circulation in the Town and by posting with the Town Clerk and posting in the Harbormasters office.

B. These regulations shall define key terms and establish procedures for all waterways related uses including registration of moorings, assignment of mooring space, establishment and maintenance of a waiting list, inspection of moorings, specifications for moorings, identification of moorings and assignment and collection of fees.

C. Failure by the Board of Selectmen to promulgate such rules and regulations or a legal declaration of their invalidity by a court of law shall not act to suspend or invalidate the effects of this article.

D. After public notice and public hearing, the Board of Selectmen may amend or otherwise modify these rules and regulations. Notice shall be given at least two weeks prior to the public hearing by publication in a newspaper of general circulation in the Town and by posting with the Town Clerk and posting at the Harbormasters office.

Explanation: This article will allow the Board of Selectmen make Mooring Regulations without changing the Mashpee Town Code.

Article_

To see if the Town will vote to add to the Mashpee General Bylaw Chapter 170 §6-B.6 as follows: The use of jet ski watercraft, surf jet watercraft, wet bike watercraft and other so-called personal watercraft which are motorboats is prohibited on Ashumet Pond.

Explanation: This Article will add a paragraph to the Town of Mashpee bylaw Chapter 170 §6-B. The Town of Falmouth has a bylaw with the same wording and the Commonwealth of Massachusetts will not enforce the Falmouth bylaw unless Mashpee also has a similar bylaw. The Falmouth and Mashpee town line goes through Ashumet Pond with most of the pond in Mashpee.

ARTICLE

To see if the Town will vote to create an additional position of part-time (19 hours/week) Assistant Health Agent within the Health Department, with said position to be classified under Unit A of the Managers Laborers' International Union of North America, to be effective July 1, 2020, and to appropriate and transfer the sum of $XXX from revenue available for appropriation, with said funds to be distributed as follows: $XXX to the Health Department Salary/Wage account, $XXX to the Medical Insurance account, $XX to the Group Life Insurance account, $XXX to the Medicare expense account, and $XXX to the Barnstable County Retirement expense account, or take any other action relating thereto.

Submitted by the [illegible] Health Agent

Explanation: The part-time assistant health agent position is requested to help the existing Board of Health staff enforce the Board of Health's Short-Term Rental Regulation. The regulation requires inspection and registration of each of the short-term rental properties. The State's short-term rental program began in July, 2019 with a registration requirement and excise tax payment requirement but no enforcement. Over 600 short-term rental properties are reported in Mashpee. The new position will support the existing staff to implement, inspect and register the new properties within the short-term rental program.

ARTICLE

To see if the Town will vote to raise and appropriate or transfer from revenue available for appropriation a sum of money, to be expended under the direction of the Board of Health, for the purpose of entering into a contract with a consulting agency to identify short-term rental properties and to issue notifications on the requirements of the Board of Health Short-Term Rental Regulation.

Submitted by the [illegible] Health Agent

Explanation: These funds are being requested to aid the Board of Health in identifying and notifying short-term rental properties that are required to participate in the State's short-term rental program that went into effect in 2019, and to ensure enforcement of the Board of Health Short-Term Rental Regulation. The increase in compliance/participation will increase monies paid into the State's lodging excise tax program, which also contributes to the Cape Cod and Islands Water Protection Management Fund that funds water pollution abatement projects (sewers). The Board of Health has attained three (3) quotes from short-term rental compliance agencies, which are currently under consideration.

Article ____:

2019 JUL -8 AM 8:01

To see if the Town will vote to amend §174-45.4 of the Mashpee Zoning Bylaw as follows:

§174-45.4 Accessory Apartment:

A ~~Special Permit~~ **Building Permit** authorizing one (1) accessory apartment per lot may be granted ~~by the Board of Appeals~~ if consistent with the following:

A. In order for an accessory apartment to be permitted, in addition to meeting all of the requirements under subsections B-I, the principal dwelling unit shall not be occupied by anyone other than the property owner as listed on the latest recorded deed. On an annual basis coinciding with the initial date of issuance of the **Building Permit** ~~Special Permit~~, the property owner shall submit to the Building Inspector sufficient evidence to demonstrate occupancy of the principal dwelling unit.

B. The Applicant must provide documentation, endorsed by the Board of Health or its agent,that the proposed accessory apartment conforms **to** ~~with~~ all state and town health and sewage disposal regulations.

C. **Unit Size.** The design, installation, **and** use of an accessory apartment shall be secondary and incidental to the principal use of the structure as the owner's home**.** An accessory apartment **may** be located within the same structure as said home **or constructed within a new or pre-existing detached structure.** The gross floor area of the accessory apartment shall be not less than three hundred (300') square feet nor more than forty percent (40%) of the gross floor area of said structure on the date the **Building Permit** ~~Special Permit~~ application is filed.

D. **Interior Design**. The accessory apartment shall be self-contained, with separate sleeping, cooking and sanitary facilities for the exclusive use of the occupant(s). Provided that the requirements of subsection B are met, there shall be a maximum of two (2) bedrooms in an accessory apartment. Rooms which might be converted at some future time to a bedroom, such as studies, studios, libraries and the like, shall be counted as bedrooms for the purposes of this Section.

E. **Exterior Design.** Modifications to the exterior of an existing principal structure resulting from the installation of an accessory apartment **located within the same structure as the applicant's home** shall be consistent with the principal structure's predominant character as a single-family home.

Detached accessory apartments shall be consistent with the principal structure's dominant design character, will contribute to the subject property's lot coverage maximum and shall comply with the dimensional criteria established in § 174-31.

Appropriate landscaping may be required in order to provide a buffer between the applicant's lot and abutting properties.

F. **Parking.** Notwithstanding the provision of § 174-39, at least one (1) off-street parking space shall be provided for the accessory apartment in addition to any other off-street parking requirement.

G. No new driveway or curb cut shall be created to service the accessory apartment, unless the **Building Commissioner** ~~Board~~ determines that, due to severe topographic or other constraints on the lot, the required parking cannot be provided without relief from this provision and unless any necessary town or state curb cut permit is approved.

~~H. Any application for a Special Permit under this Section shall require the submission of three (3) original copies of the application, plans and documentation required under §174-24C.3 for Special Permit application to the Board of Appeals.~~

~~I. The Special Permit granted under this section shall run with the property owner and shall lapse upon sale and/or transfer to another property owner.~~

H. The accessory apartment shall not be rented or occupied until a Certificate of Occupancy has been issued by the Building Inspector.

~~I. A single accessory apartment per existing principal structure is exempt from the Plan Review requirement of §174-24.B.~~

I. An accessory apartment shall not be used for boarding and lodging, or other commercial use. An accessory apartment and principal dwelling to which it is accessory may be rented for periods not shorter than one month at a time, and are prohibited from any use as rental units on a weekly or daily basis.

J. An accessory apartment is not intended for sale. The principal dwelling and accessory apartment and lot on which they are located shall remain in common or single ownership, and shall not be severed in ownership, including that the lot or buildings thereon shall not be placed in a condominium form of ownership.

Submitted by Planning Board

EXPLANATION:

This article would allow for the development of accessory apartments as a by right use. It would also allow for the development of accessory apartments in newly constructed or pre-existing detached structures. Accessory apartments would also be allowed to be constructed within the principal structures existing envelope. It also defines standards limiting short term rentals.

Article____:

To see if the Town will vote to amend §174-25 (A)(8) of the Mashpee Zoning By Law "Table of Use Regulations" by replacing the letters 'SP' located in the columns identified as R-3 and R-5 with a 'Y' as follows:

Type of Use	Residential		Commercial			Industrial
	R-3	R-5	C-1	C-2	C-3	I-1
Accessory apartment subject to the provisions of §174-45.4	**~~SP~~** **Y**	**~~SP~~** **Y**	--	--	--	--

Submitted by Planning Board

EXPLANATION:

This article would allow the development of accessory apartments in the residential zoning districts of the Town as a by-right use.

Article _____:

To see if the Town will vote to amend §174-3 of the Mashpee Zoning Bylaw- Terms Defined as follows:

Accessory Apartment - An apartment created within **or detached from** a single-family residential structure under the provisions of §174-45.4.

Dwelling Accessory - A residence created under the provisions of Section 174- 46B(1), containing no more than ~~one (1)~~ **two (2)** bedrooms, which may have kitchen and bathroom facilities and other rooms which are not bedrooms, either attached to or detached from a principle residence on the same lot and not owned separately from the lot or principle residence. ~~**Such dwellings may not be occupied by more than two (2) persons.**~~

Submitted by Planning Board

EXPLANATION

This article would change the definition of Accessory apartment in the zoning bylaw to include detached structures. It would also change the definition of Dwelling Accessory in the Open Space Incentive Development (OSID) to allow Accessory Dwellings permitted under OSID to have up to two (2) bedrooms. This would establish consistency with the accessory apartment definition.

OCT 2019 T.M.

Proposed Article – General Bylaw. Polystyrene Reduction Bylaw. To see if the Town will vote to amend the Mashpee General Bylaws as follows:

#. Polystyrene Reduction Bylaw
#-1. Purpose and Intent
The use and disposal of polystyrene has significant impacts on our Town and our environment, including but not limited to:

1. Harm to marine and terrestrial animals through ingestion and entanglement.
2. Unsightly pollution and degradation of the terrestrial and aquatic environment, requiring costly cleanup efforts.
3. Disposal costs of difficult to recycle plastics for solid waste collection and recycling facilities.

With the goal of protecting the health of its citizens and the unique natural beauty and irreplaceable natural resources of the Town of Mashpee, and given that inexpensive, safe alternatives to polystyrene are easily obtained, the Town will phase out the use of certain polystyrene plastics by June 1, 2019.

#-2. Definitions

"Polystyrene Disposable Food Services Containers and Cutlery" shall mean single-use disposable products for serving or transporting food or beverages, including without limitation take-out foods and/or leftovers from partially consumed meals prepared by a restaurant and/or retail food establishment. This includes but is not limited to plates, cups, bowls, trays, hinged or lidded containers, straws, cup lids, and cutlery. It shall also include single-use disposable packaging for uncooked foods prepared on the premises, as well as disposable catering trays.

"Expanded or Foam Polystyrene" and "Polystyrene" shall mean blown polystyrene (polystyrene that has been expanded or blown using a gaseous blowing agent into a solid foam) and expanded and extruded forms, which are thermoplastic petrochemical materials utilizing a styrene monomer and processed by any number of techniques including but not limited to fusion of polymer spheres (expandable bead polystyrene), injection molding, form molding, and extrusion blown molding (extruded foam polystyrene), sometimes called Styrofoam, a Dow Chemical Co. trademarked form of polystyrene foam. It bears the recycling number 6.

"Food Establishments" shall mean any operations, including without limitation schools, farmers markets and other public venues that store, prepare, package, serve, vend or otherwise provide food for human consumption. Any establishment requiring a permit to operate in accordance with the State Food Code, 105 CMR 590.000, et. seq., shall be considered Food Establishments for the purpose of this bylaw.

"Retail Establishments" shall mean any commercial business facility that sells goods directly to consumers including but not limited to grocery stores, pharmacies, liquor stores, convenience stores, retail stores and vendors selling clothing, food, and personal items, dry cleaning services, theaters and all other food services establishments.

"Public Venues" shall mean operations including but not limited to schools, meeting halls, churches, Town offices, the Senior Center, Recreation Department facilities, and the Library.

#-3. Use Regulations

Polystyrene disposable food service containers, cutlery, and new polystyrene packing peanuts shall not be used or sold by food establishments and/or retail establishments within the Town of Mashpee on or after June 1, 2019. Any stock remaining after that date shall be accepted for disposal free of charge, through June 30, 2019, at the Mashpee Transfer Station/Recycling Center.

This bylaw shall not apply to:

1. Polystyrene packing peanuts and foam packaging reused from shipments coming to Mashpee.
2. Prepackaged meat and produce trays, egg cartons, and other food or beverage products bought from a wholesaler or an out-of-own supplier.
3. Polystyrene foam freezer chests.

#-4. Enforcement

Any enforcing person shall have the right to enter any establishment during regular business hours, without a search or inspection warrant, to make reasonable inspection to ascertain whether there is compliance with the provisions of this chapter. This article may be enforced by any Town police officer or agents of the Board of Health. This article may be enforced through any lawful means in law or in equity, including, but not limited to, noncriminal disposition pursuant to MGL c. 40, §21D and [add appropriate chapter of the Town's General By-laws]. Any establishment which violates any provision of this bylaw shall be subject to the following penalties:

First Offense:	$100 fine
Second Offense:	$200 fine
Third and Subsequent Offenses:	$300 fine for each offense

Offenses occurring within two years of the date of first reported offense will be considered as subsequent offenses. Each day or portion thereof shall constitute a separate offense, to do or act thereon.

The Board of Health, after a hearing conducted in accordance with the procedures set forth in 105 CMR 590.14 and 590.15, may suspend or revoke the food service permit for any establishment failing to comply with this bylaw.

#-5. Severability

If any provision of this ordinance shall be held to be invalid by a court of competent jurisdiction, then such provision shall be considered separately and apart from the remaining provisions of this ordinance, which shall remain in full force and effect

Proposed Article – General Bylaw Amendment. Single Use Plastic Straw Ban Bylaw. To see if the Town will vote to amend the Mashpee General Bylaws as follows:

#. Single Use Plastic Straw Ban
#-1. Intentions and Findings.
It has been found that:

1. Plastic straws are expensive and difficult to collect or recycle.
2. Mashpee's proximity to the ocean means that plastic straws that go uncollected by DPW have a high chance of ending up on the beaches or in the bays or ponds.
3. Plastic straws take hundreds of years to degrade, during which time they remain hazardous to wildlife and harmful to the environment.
4. There is currently a national movement to reduce and ban the use of plastic straws, making reasonable affordable alternatives increasingly available.

Because Mashpee has a duty to protect the natural environment, the economy, and the health of its citizens, this amendment proposes to ban the sale or dispensing of single use plastic straws, including those made from polyethylene, polypropylene, and polystyrene, by any food establishment, retail establishment, or public venue in the Town of Mashpee.

#-2. Definitions
"Plastic straw" shall mean any single use plastic straw including but not limited to those made from polyethylene, polypropylene, and polystyrene.

"Food Establishments" shall mean any operations including without limitation schools, farmers markets and other public venues that store, prepare, package, serve, vend or otherwise provide food for human consumption. Any establishment requiring a permit to operate in accordance with the State Food Code, 105 CMR 590.000, et. seq., shall be considered Food Establishments for the purposes of this bylaw.

"Retail Establishments" shall mean any commercial business facility that sells goods directly to consumers including but not limited to grocery stores, pharmacies, liquor stores, convenience stores, retail stores and vendors selling clothing, food, and personal items, dry cleaning services, theaters and all other food services establishments.

"Public Venues" shall mean operations including but not limited to meeting halls, schools, churches, Town offices, the Senior Center, the Recreation Department, and the Library.

#-3. Use Regulations

Plastic straws shall not be used, dispensed, or sold by food establishments and/or retail establishments within the Town of Mashpee on or after June 1, 2019. Any stock remaining after that date shall be accepted for disposal free of charge, through June 30, 2019, at the Mashpee Transfer Station/Recycling Center.

109-4. Administration and Enforcement
Any enforcing person shall have the right to enter any establishment during regular business hours, without a search or inspection warrant, to make reasonable inspection to ascertain whether there is compliance with the provisions of this chapter. This article may be enforced by any Town police officer or agents of the Board of Health. This article may be enforced through any lawful means in law or in equity, including, but not limited to, noncriminal disposition pursuant to MGL c. 40, §21D and [add appropriate chapter of the Town's General By-laws]. Any Establishment which violates any provision of this Bylaw shall be subject to the following penalties:

First Offense:	$100 fine
Second Offense:	$200 fine
Third and Subsequent Offenses:	$300 fine for each offense

Offenses occurring within two years of the date of first reported offense will be considered as subsequent offenses. Each day or portion thereof shall constitute a separate offense, to do or act thereon.

The Board of Health, after a hearing conducted in accordance with the procedures set forth in 105 CMR 590.14 and 590.15, may suspend or revoke the food service permit for any establishment failing to comply with this Bylaw.

109-5. Severability

If any provision of this ordinance shall be held to be invalid by a court of competent jurisdiction, then such provision shall be considered separately and apart from the remaining provisions of this ordinance, which shall remain in full force and effect.

For October 2019 Annual Town Meeting

2019 JUN 21 PM 2:23

Article __

To see if the Town will vote to appropriate or transfer from available funds $840,000 to the Sewer Commission Wastewater Treatment Plant Design Account, to complete the design of Phase 1 of the municipal wastewater treatment plant to be located adjacent to the Town's solid waste transfer station, or take any other action relating thereto.

Submitted by the Sewer Commission

Explanation: This article would provide funding to complete final design of phase 1 of the wastewater treatment plant to be located adjacent to the Town's solid waste transfer station. Work on preliminary designs for the plant is currently under way, expected to be completed by the end of 2019, using nitrogen mitigation funds held by the Cape Cod Commission as the result of conditions imposed on a number of Development of Regional Impact projects. This proposed funding would allow continuation of design work, to full design of Phase 1, upon completion of the preliminary design. This project is one of the initial steps in implementing the Town's Watershed Nitrogen Management Plan/CWMP.

For October 2019 Annual Town Meeting

2019 JUN 21 PM 2:23

Article __

To see if the Town will vote to appropriate or transfer from available funds $1,640,000 to the Sewer Commission Collection System Design Account, to complete the design of the first phase of the sewer collection system to be connected to the municipal wastewater treatment plant to be located adjacent to the Town's solid waste transfer station, or take any other action relating thereto.

Submitted by the Sewer Commission

Explanation: This article would provide funding for complete design of phase 1 of the sewer collection system to be connected to the wastewater treatment plant adjacent to the Town's solid waste transfer station. Work on collection system design would begin in late summer 2019 and be completed in December 2020, with construction anticipated in 2021 through 2023, pending funding and permitting for said construction. This project is one of the initial steps in implementing the Town's Watershed Nitrogen Management Plan/CWMP.

Article_____

To see of the Town will vote to amend **<u>Chapter 172-4(B)(3)</u>** of the General Bylaw as follows:

Amend the language of Subsection (B)(3) as follows:

Replace the phrase *"as prescribed in 310 CMR 280.21 through 280.25"* **with** *"as prescribed in 310 CMR 10.05(4)"*

<u>Explanation:</u> The existing wording makes reference to 310 CMR 280.21 through 280.25. This is an incorrect regulatory citation. The correct regulatory citation in the Massachusetts State Wetlands Protection Act is 310 CMR 10.05(4)

Submitted by the Conservation Department

Article_____

<u>To see if the Town will vote to amend Chapter 172-7 of the General Bylaws as follows:</u>

Amend the language of Chapter 172-7(A) as follows:

Replace the phrase *"significant or cumulative effect"* with *"adverse impacts"* or take any other action relating thereto.

Explanation:

The term *"adverse impact"* is used to describe a threshold of alteration within wetlands jurisdiction that is considered beyond negligible. It is referenced throughout the Massachusetts State Wetlands Protection Act. In order to establish consistency of proper terminology between the Chapter 172 Wetland Bylaw and the MA State Wetlands Protection Acts, this change of wording is necessary.

<u>To see if the will vote to amend Chapter 172-7(A)(3)(a) as follows:</u>

Replace the phrase *"preexisting conditions"* to *"existing conditions"* in the following sentence under this subsection *"Such waivers are intended to be granted only in rare and unusual cases and only when resource protection would be enhanced relative to* ***preexisting*** *conditions"*

Explanation:

The term *"existing conditions"* is a more appropriate term under the context of this bylaw subsection.

<u>To see if the Town will vote to amend Chapter 172-7(B) as follows:</u>

Replace the phrase *"unacceptable, significant or cumulative effects"* with *"adverse impacts"*

Explanation:

The term *"adverse impact"* is used to describe a threshold of alteration within wetlands jurisdiction that is considered beyond negligible. It is referenced throughout the Massachusetts State Wetlands Protection Act. In order to establish consistency of proper terminology between the Chapter 172 Wetland Bylaw and the MA State Wetlands Protection Acts, this change of wording is necessary.

Article_____

To see if the Town will vote to amend Chapter 172-9 of the General Bylaws as follows:

Amend the language of 172-9(A) to include the term "Adverse Impact" and it's definition as follows:

*"**Adverse Impact**- Adverse impact means an impact to the value or interest of a wetland resource area as defined by the bylaw that is deemed by the issuing authority to be more than negligible, or random, unnecessary or undesirable to the public interests of the resource area. Negligible means insignificant to the values or interests of the resource area"*

or take any other action relating thereto.

Explanation: The term "adverse impact" is commonly referenced in the regulatory language of the Massachusetts State Wetland Protection Act as a barometer of impact thresholds within wetlands jurisdiction. Adding this definition to Mashpee's Chapter 172 Bylaw will provide consistency of regulatory language and terminology.

Submitted by the Conservation Department

Article_____

To see if the Town will vote to amend Chapter 172-12 of the General Bylaws as follows:

Amend the language of 172-12(A) as follows:

Replace the phrase *"unacceptable, significant or cumulative effect"* with *"adverse impacts"* or take any other action relating thereto.

Explanation:

The term *"adverse impacts"* is used to describe a threshold of alteration within wetlands jurisdiction that is considered beyond negligible. It is referenced throughout the Massachusetts State Wetlands Protection Act. In order to establish consistency of proper terminology between the Chapter 172 Wetland Bylaw and the MA State Wetlands Protection Acts, this change of wording is necessary.

or take any other action relating thereto.

Submitted by the Conservation Department

Article [illegible]

To see if the Town will vote to amend Chapter 172-5 of the General Bylaws as follows:

Amend the language of subsection (A)(1) as follows:

Replace the phrase *"an Administrative Review Level 1"* with *"a permit"*

Preface the existing language of Subsection (A)(2) with the following:

"Any person filing a Notice of Intent application and/or a request for an Amended Order of Conditions with the Commission must, after being given written notice by the Commission of the time and date of the required hearing, notify all abutting property owners within 100 feet of the boundary of the property on which the work is proposed, according to the most recent records of the Assessors, including owners in another municipality"

or take any other action relating thereto.

<u>Explanation:</u> The Conservation Department no longer has an approval procedure called *"Administrative Review Level 1"*. Replacing this phrase with *"permit application"* accurately reflects the current procedures

The existing language in Subsection (A)(2) must include this prefacing language as it is required under the Massachusetts Wetlands Protection Act (310 CMR 10.05(4)) and thus must be reflected in the local bylaw

BYLAW REVIEW

Submitted by the Conservation Department

Article 42

To see if the Town will vote to amend Chapter 172-5 of the General Bylaws as follows:

Delete Section 172-5(B) and replace the language (B) as follows:

"Any applicant filing a Request for Determination of Applicability or Notice of Intent for activities on property other than their own must provide written authorization of the requested activity from the property owner at the time of filing. Notice and copy of the permit application must also be mailed certified to the owner"

or take any other action relating thereto.

Explanation: Sometimes, an applicant will request work to be done, either wholly or partially, on property not owned by the applicant *(for example, a hazardous tree is requested to be removed by an applicant and the tree lies on a neighboring property in close proximity to the applicant's home)* In these instances, the applicant is required to provide documentation of written permission from the property owner and have this documented permission accompany the permit application. The existing language requires notification to be provided to the property owner if the applicant is not the property owner; however, it is necessary to have this permission in writing before the permit application is placed on a meeting agenda, so the other property owner is aware of the request prior to a given meeting.

BYLAW REVIEW

Submitted by the Conservation Department

Article 45

To see if the Town will vote to amend Chapter 172-14 of the General Bylaws as follows:

Replace any reference to *"Office of Energy and Environmental Affairs"* and its acronym *"OEEA"* with *"Executive Office of Energy and Environmental Affairs"* and its acronym *"EOEEA"*

or take any other action relating thereto.

<u>Explanation:</u> The bylaw must accurately reflect any name/acronym changes in reference to other state agencies in the bylaw language. This is housekeeping amendment.

BYLAW REVIEW
Submitted by the Conservation Department

Article _____

To see if the Town will vote to amend Section 173-3 (Violations and Penalties) of the General Bylaws by deleting the phrase *"not to exceed three hundred dollars ($300) per incident"* and inserting *"as established by the Board of Selectmen"*

Or take any action related thereto

Explanation:

The current cap for non-criminal offenses under the bylaw is $300 per offense. In the event that this cap is increased in the future, the proposed replacement wording won't restrict the commission to a cap of $300

BYLAW REVIEW

Submitted by the Conservation Department

Article_

To see if the Town will vote to appropriate and transfer the sum of $40,000 from the Community Preservation 10% Open Space/Recreation Reserve in accordance with the provisions of M.G.L., Chapter 44B, §5, for the purpose of funding the Ockway Bay Boat Ramp Improvement Project II, including necessary costs and expenses related thereto, as recommended by the Community Preservation Committee, or take any other action relating thereto.

Submitted by the Community Preservation Committee

Explanation: In October 2017 CPA funding in the amount of $121,500 was approved to develop a site plan and to reconfigure the Ockway Bay parking lot. As a result of site reconstruction, the parking lot will now accommodate 19 vehicle/trailer spaces and 8 vehicle-only spaces. Additional CPA monies are required to complete the project which involves more extensive site work due to existing topography. The additional $40,000 required to complete this project would fund the top course of asphalt, shoulder work, landscape and an outdoor storage area for the Department of Natural Resources (included in original plan). The Ockway Bay Boat Ramp is one of the Town's three public launch facilities for boating access and it is used year round by recreational boaters and fishermen.

The vote of the Community Preservation Committee was unanimous 6-0 in support of this article.

Article_

To see if the Town will vote to appropriate and transfer the sum of $100,000 from the Community Preservation Fund 10% Affordable Housing Reserve, in accordance with the provisions of M.G.L. Chapter 44B, §5, for the purpose of appropriating funds for the acquisition of 12 Cypress Circle, property identified on Assessor's Map 21, Parcel 33 comprised of 1.2 acres, including any necessary costs and expenses related thereto, as recommended by the Community Preservation Committee; said funds shall be held and expended by the Affordable Housing Trust ("Trust") Board of Trustees for the purpose of funding Affordable Housing, including any necessary costs and expenses related thereto, provided, however, that said sum shall be used exclusively for community housing and shall remain subject to all the rules, regulations and limitations of M.G.L. Chapter 44B when expensed by the Trust, or take any action relating thereto.

Submitted by the Community Preservation Committee

Explanation: This article seeks to acquire vacant residential land identified as 12 Cypress Circle for affordable housing purposes in a well-established subdivision. The property is located at the end of two cul-de-sacs, Cypress Circle and Fox Hill Road. An opinion of value dated December 19, 2018 appraised the 1.2 acre site at $110,000. The 2019 Town of Mashpee assessment of this property is $102,900.

The Community Preservation Committee supports this project under the care and custody of Affordable Housing Trust for efficiency and effectiveness on decisions required regarding the development of affordable housing.

The vote of the Community Preservation Committee was unanimous 6-0 in support of this article.

CPC Articles – October 2019 Town Meeting Warrant

Article_

To see if the Town will vote to appropriate and transfer pursuant to the provisions of M.G.L. Chapter 44B, §6 to Reserve from the FY 2020 estimated Community Preservation revenues, the following amounts:

$154,794	10% for Open Space/Recreational Purposes
$154,794	10% for Historic Preservation Purposes
$154,794	10% for Affordable Housing Purposes
$1,043,551	to the FY 2020 Community Preservation Fund Budget for Appropriation Reserve as recommended by the Community Preservation Committee, or take any other acting relating thereto.

Submitted by the Community Preservation Committee

Explanation: This article is required annually to set aside the 10% Reserves of the estimated Community Preservation Funds for Open Space/Recreation Purposes, Historic Preservation Purposes and Affordable Housing Purposes and to fund the Budget for Appropriation Reserve.

The Community Preservation Committee voted to approve this article to set aside the 10% Reserves and Budget for Appropriation Reserve to be available for use in fiscal year 2020 as certified by the Finance Director and reflected in the FY 2020 CP-1.

The vote of the Community Preservation Committee was unanimous 6-0 in support of this article.

Article by Petition:

To see if the Town will vote to exclude current town employees from serving on Elected Town Boards.

Explanation: Town employees who hold elected positions on any Mashpee Town Board can be conflicted when making decisions regarding issues that are pertinent to their jobs or their co-workers. This article would exclude any person currently employed by the town of Mashpee from seeking election to any Mashpee Town Board.

We the undersigned support the article by petition to not allow current town employees to hold elected positions. We consider town employees to be conflicted when holding an elected seat on any town board.

Name:	Address:	Signature:
Richard Cook	19 Pem Lane	
Diane Cook	19 Pem Lane	
Debbie Lynch	3 Lady Slipper Ln	
Tim Lynch	3 Lady Slipper Lane	
CARL LUBELCZYK	56 TRACY LN	
LINDA Lubelczyk	56 TRACY LN.	
Jennifer McDonald	103 DeGrass Rd	
Chris McDonald	103 DeGrass Rd	
Jason Smith	70 Sunset Circle	
Cindy Smith	70 Sunset Circle	
Teresa Ronhock	82 Sunset Circle	
Michael Ronhock	82 Sunset cir	
Diane Scannell	108 Degrass Rd.	
Dennis Scannell	108 DeGrass Rd	

Draft

Article _

To see if the Town will vote add the following sections to the Mashpee Zoning Bylaw:

§174-57 Temporary/Seasonal Signs

1.) In all districts, no temporary on-premises sign or other temporary on-premises advertising device shall be permitted except as follows:

a.) The design and location of all temporary/seasonal signs attached to or associated with a commercial property or use shall be subject to approval of the Building Commissioner following design guidelines approved by the Planning Board.

b.) Except as provided in §174-57.1, the Building Commissioner may approve temporary signs attached to or associated with a commercial property or use for no more than a four month period in any calendar year.

c.) Temporary signs associated with a non-commercial property, dwelling or use not exceeding 12 square feet may be placed in all districts.

d.) Signs related to a specific event on a specific date or dates shall be removed within 7 days after the event.

2.) Sandwich Board/A-Frame Signs shall be permitted only within the C-1 District and the Light Industrial Overlay District

a.) Only one sandwich board/A-frame sign shall be permitted per commercial storefront subject to approval of the Building Commissioner.

b.) Sandwich Board signs will only be displayed during the commercial storefront's displayed hours of operation and shall be brought inside when not open for business.

c.) Sandwich Board signs will not be permitted if they hinder adequate access to the pedestrian right of way or neighboring storefronts.

§174-57.1 Exceptions to the Above

a.) Upon the expiration of the initial four-month period for a temporary/seasonal sign for a commercial property or use, the Building Commissioner may permit a temporary sign for an additional four month period upon written application, if need is shown.

Temporary/Seasonal Sign Guidelines

TBD