APPLICATION FOR NOTICE OF INTENT

Filed under
Massachusetts Wetlands Protection Act
(310 CMR 10.00) – WPA FORM 3

Proposed Subdivision of Land

Northside Farm
New Bedford, Massachusetts

APPLICANT:
New Bedford Cousins, LLC
P.O. Box 36
Scituate, MA 02066

SUBMITTED TO:
City of New Bedford
Conservation Commission
133 William Street, Room 303
New Bedford, MA 02740

PREPARED BY:
Cavanaro Consulting, Inc.
687 Main Street
Norwell, MA 02061

CAVANARO CONSULTING

Table of Contents

SECTION I

WPA Form 3 – Notice of Intent

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

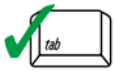
Provided by MassDEP:

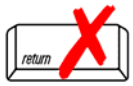
MassDEP File Number

Document Transaction Number

City of New Bedford
City/Town

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





Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Northside Farm Subdivision — a. Street Address
City of New Bedford — b. City/Town
02744 — c. Zip Code

Latitude and Longitude:
41D 41' 57" — d. Latitude
-70D 55' 59" — e. Longitude

Map 130 Block D — f. Assessors Map/Plat Number
See attached — g. Parcel /Lot Number

2. Applicant:

Terrence — a. First Name
Tedeschi — b. Last Name
New Bedford Cousins LLC — c. Organization
P.O. Box 36 — d. Street Address
Scituate — e. City/Town
MA — f. State
02066 — g. Zip Code
781-254-0470 — h. Phone Number
i. Fax Number
tct9067@yahoo.com — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name
b. Last Name
c. Organization
d. Street Address
e. City/Town
f. State
g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

John — a. First Name
Cavanaro — b. Last Name
Cavanaro Consulting — c. Company
687 Main Street — d. Street Address
Norwell — e. City/Town
MA — f. State
02061 — g. Zip Code
781-659-8187 — h. Phone Number
781-659-8186 — i. Fax Number
jcavanaro@cavanaroconsulting.com — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

$1,050.00 — a. Total Fee Paid
$512.50 — b. State Fee Paid
$537.50 — c. City/Town Fee Paid

A. General Information (continued)

6. General Project Description:

Proposed subdivision roadway with associated utiities and drainage system and wetland filling and replication

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☒ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

a. County	b. Certificate # (if registered land)
Bristol South	
c. Book	d. Page Number
7734	340

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☒ Bordering Vegetated Wetland	685 1. square feet	1,400+ 2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☒ Riverfront Area	N/A - inland 1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

☒ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: 14,500+ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
0	0	0

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☒ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☒ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Notice of Intent – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   3/1/16 On Line
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.1.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☐ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

D. Additional Information (cont'd)

3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Site Plan Set, To Accompany Notice of intent - Northside Farm Subdivision, New Bedford, MA

Cavanaro Consulting	Brendan P. Sullivan, P.E.
b. Prepared By	c. Signed and Stamped by
3/3/16	1"=50'
d. Final Revision Date	e. Scale

f. Additional Plan or Document Title | g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

1123	3/2/2016
2. Municipal Check Number	3. Check date
1122	3/2/2016
4. State Check Number	5. Check date
New Bedford Cousins LLC	
6. Payor name on check: First Name	7. Payor name on check: Last Name

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

Terrence Tedeschi	3-2-16
1. Signature of Applicant	2. Date
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	3-2-16 6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

SECTION II

PROJECT NARRATIVE

PROJECT NARRATIVE

1.0 INTRODUCTION

New Bedford Cousins is the current owner of the Northside Farm subdivision in New Bedford. The 35 Lot subdivision was originally approved by the planning board in 2006 and modified in 2008. A notice of intent was approved by the New Bedford Conservation commission for the subdivision in 2006. The 2008 modification did not affect the Conservation submittal. Work approved under the 2006 Order of Conditions (SE 49-578) was never started, requiring a new Notice of Intent to be filed.

2.0 EXISTING CONDITIONS

The subject property is located on Acushnet Avenue between Phillips Road and Victoria Street in the Residential A and Mixed Use Business Districts of New Bedford, MA. The total lot area is 528,127square feet, approximately 492,727 square feet of the lot is composed of upland while approximately 35,400 square feet is composed of wetland. The wetland is associated with a perennial stream located to the east of the site. The entire site runoff generally flows from the Northwest to the Southeast corner of the property into the unnamed river and eventually a small pond located at the end of Victoria Street

3.0 WETLAND RESOURCE AREAS

There are two wetland resource areas subject to the jurisdiction of the Wetlands Protection Act (M.G.L. Ch. 131 § 40) within and adjacent to the proposed site including a riverfront area and a bordering vegetated wetland. A brief description of each resource area is provided below. We have also acknowledged the affected resources areas in our Notice of Intent. The proposed project does not exceed any of the thresholds for review under the Massachusetts Environmental Policy Act Regulations (301 CMR 11.00).

3.1 Riverfront Area

Per 310 CMR 10.58(2)(a)(3), Riverfront Area is defined as the area of land between a river's mean annual high water line measured horizontally outward from a river and a parallel line located 25 feet away.

No improvements are proposed within the riverfront area.

3.2 Bordering Vegetated Wetland

Per 310 CMR 10.55(2), Bordering Vegetated Wetlands are freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. At this locus, the Bordering Vegetated Wetland (BVW) is associated with the perennial river along the eastern side of the site. A small portion of the BVW is adjacent to a headwall and pipe which appears to be a subdrain for the old pasture fields. This pipe and headwall will be removed as part of the project and a portion of the wetlands associated with the pipe is proposed to be filled (685 s.f.) and a replication area of

approximately 1,400 s.f. (2:1 ratio) is proposed onsite as shown on the plan.

The majority of the work within the buffer zone will primarily be grading associated with the proposed work as well as a detention basin improving the stormwater quality before it enters the wetland.

4.0 PROPOSED IMPROVEMENTS

4.1 Proposed Work

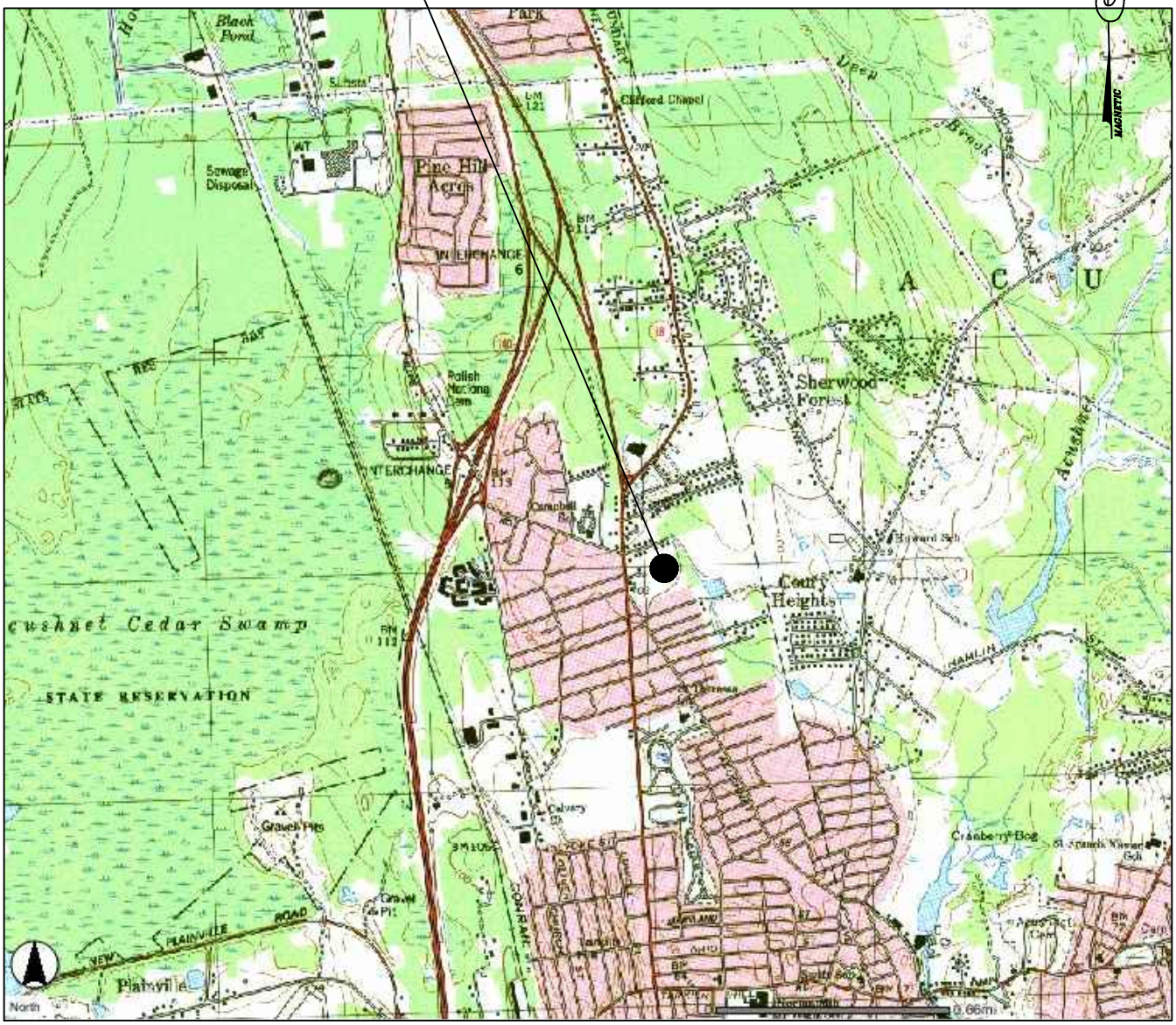
The applicant is proposing to construct a new 35 residential unit subdivision. The majority of the units will be located completely outside of the 100' B.V.W. buffer, with approximately seven units within the 100' B.V.W. buffer. The remainder of the units are completely outside all resource area buffers. Within the 100 foot B.V.W. setback there is a total proposed impervious area of approximately 8,250 square feet (approximately 10% of the 100' resource buffer.) The applicant is proposing a stormwater management design that conforms to the Massachusetts Department of Environmental Protection (MA DEP) best management practices, including deep sump catch basins, infiltration basins, detention basin with forebays and rooftop infiltration units. These best management practices result in a removal of at least 80 percent of the total suspended solids.

The applicant has proposed the use of hay bale and silt fencing to minimize siltation in the direction of the buffer zones and wetlands during construction operations. Additionally, any work done directly abutting any wetland will be done by hand and with the use of small machinery, minimizing the disturbance to the resource areas as much as possible.

SECTION III

FIGURES

SITE



USGS LOCUS PLAN

DRAWING NO.

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

PREPARED FOR:
NORTHSIDE FARM
PHILLIPS AVE
NEW BEDFORD, MA 02746

PROJECT NO. : 5005
DATE : 1/29/16
DRAWN BY : MGJ
CHECKED BY : JCC

LOC

SHEET NO. 1 OF 1
FILENAME: F:\5005\dwg\LOCUS.dwg

MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0383G

FIRM

FLOOD INSURANCE RATE MAP

BRISTOL COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 383 OF 550

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ACUSHNET, TOWN OF	250048	0383	G
NEW BEDFORD, CITY OF	255216	0383	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25005C0383G

MAP REVISED
JULY 16, 2014

Federal Emergency Management Agency

SECTION IV

ABUTTER NOTIFICATION INFORMATION

Notification to Abutters under the Massachusetts Wetlands Protection Act and the City of New Bedford Wetlands Ordinance

In Accordance with the second paragraph of the Massachusetts General Laws Chapter 131, Section 40 and the City of New Bedford Wetlands Ordinance (New Bedford Code of Ordinances Sections 15-101 through 15-112), you are hereby notified of the following.

The name of the applicant is: New Bedford Cousins LLC.

The applicant has filed an Notice of Intent for the municipality of New Bedford, Massachusetts seeking permission to remove, fill, dredge or alter an area subject to protection under the City of New Bedford Wetlands Ordinance (New Bedford Code of Ordinances Sections 15-101 through 15-112).

The address of the lot where the activity is proposed is: Northside Farm Subdivision

Assessor's Map 130D; Multiple Lots

Public Hearing Date: March 15, 2016

Copies of the Notice of Intent may be examined at the New Bedford Conservation Commission, City Hall, 133 William Street, Room 304, New Bedford, MA 02740 between the hours of 8:00 AM and 4:00 PM, Monday through Friday. For more information call (508) 991-6188.

Copies of the Notice of Intent may be obtained from the applicant's representative, Cavanaro Consulting, Inc. by calling (781)659-8187 between the hours of 8:00 AM and 5:00 PM Monday through Friday.

Please confirm information regarding the date, time and place of the public hearing with the New Bedford Conservation Commission by calling (508) 991-6188 between the hours of 8:00 AM and 4:00 PM Monday through Friday.

Note: Notice of Public Hearing, including its date, time and place, will be posted in the City Hall not less than forty eight (48) hours in advance of the meeting.

Note: Notice of the Public Hearing including its date, time and place, will be published at least five (5) days in advance in the Standard Times.

Note: You may also contact the New Bedford Conservation Commission at (508) 991-6188 for more information about this publication or the City of New Bedford Wetlands Ordinance.

SECTION V

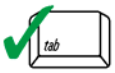
FILING FEE INFORMATION

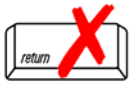
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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





A. Applicant Information

1. Location of Project:

Northside Farm	New Bedford
a. Street Address	b. City/Town
1122	$512.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Terrence	Tedeschi
a. First Name	b. Last Name

New Bedford Cousins LLC
c. Organization

P.O. Box 36
d. Mailing Address

Scituate	MA	02066
e. City/Town	f. State	g. Zip Code

h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name	b. Last Name

c. Organization

d. Mailing Address

e. City/Town	f. State	g. Zip Code

h. Phone Number	i. Fax Number	j. Email Address

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
3c) Subdivision Roadway Construction	1	$1,050.00	$1,050.00

Step 5/Total Project Fee: $1,050.00

Step 6/Fee Payments:

Total Project Fee:	$1,050.00 a. Total Fee from Step 5
State share of filing Fee:	$512.50 b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	$537.50 c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

CITY OF NEW BEDFORD
MASSACHUSETTS

CONSERVATION COMMISSION
2009 FILING FEE CALCULATION WORKSHEET*

PROJECT LOCATION:

Northside Farm **MAP** 130D **LOT(S)** See Attached

APPLICANT: New Bedford Cousins LLC

CONSERVATION COMMISSION FEES (check all that apply):

( ) REQUEST FOR DETERMINATION OF APPLICABILITY
(X) NOTICE OF INTENT
( ) INQUIRY AS TO NEED FOR AN AMENDED ORDER**
( ) AMENDED ORDER OF CONDITIONS
( ) ANRAD (Abbreviated Notice of Resource Area Delineation)
( ) EXTENSION PERMIT
( ) CERTIFICATE OF COMPLIANCE
( ) AFTER THE FACT FILING
( ) RESTORATION PLAN FEE (no NOI filing required)
( ) LIFTING AN ENFORCEMENT ORDER
( ) PENALTIES

(A.) ALTERATION FEES:
Application and field review of a project proposed in a Wetland Resource Area or its Buffer Zone is $150.00 plus the applicable alteration fee as follows

	AMOUNT DUE
• Application and Field Review Fee ($150.00)	$ 150.00
• $0.50 X 685 SF Wetland Resource Area	$ 342.50
• $0.05 X _____ SF Land Subject Coastal Flooding	$_____
• $0.20 X _____ SF Developed Riverfront Area	$_____
• $1.00 X _____ SF Undeveloped Riverfront Area	$_____
• $5.00 X _____ LF Coastal Bank	$_____
• $0.10 X 55,000 SF Buffer Zone	$ 5,500.00

(B.) EXTENSION of an Order of Conditions:

• Minor Project ... $100.00 + _____ (¼ local fee from NOI)	$_____
• Other Projects … $200.00 + _____ (¼ local fee from NOI)	$_____

(C.) AMENDING A PERMIT:

- Written inquiry or request to appear to determine the need for an Amended Order:** ($50.00 fee) $_____

- Amending OOC: $150.00 + _____ (applicable alteration fee) $_____

(D.) RESOURCE BOUNDARY DELINEATION VERIFICATION USING AN RDA APPLICATION:

- $150.00 + $2.00 X _____ LF Wetland boundary $_____

(E.) ABBREVIATED RESOURCE AREA DELINEATION VERIFICATION (ANRAD)

- $150.00 + $1.00 X _____ LF Resource Area boundary $_____

(F.) RESOURCE BOUNDARY DELINEATION VERIFICATION CONDUCTED DURING A NOTICE OF INTENT REVIEW

- $150.00 + $3.00 X _____ LF Resource Area boundary $_____

(G.) DOCKS:

- $100.00 + $4.00 X _____ LF of dock $_____

- Add 150% to total fee if in significant shellfish habitat $_____

(H.) AFTER THE FACT FILING:

- All Total Fees are doubled $_____

(I.) RESTORATION PLAN FEE:

- ($150.00 + _____Alteration Fee) Multiplied by 2 $_____

(J.) LIFTING ON ENFORCEMENT ORDER:

- $150.00 fee $_____

(K.) CERTIFICATE OF COMPLIANCE:

- refer to "K" of the Fee schedule $_____

(L.) PENALTIES:

- refer to "L" of the Fee schedule $_____

TOTAL AMOUNT DUE (including after-the-fact fee if applicable): $ 5,992.50

Notes:

* Please refer to the Conservation Commission Fee Schedule - Revised April 2009

** This is not required, but available for anyone who would like to appear to discuss the need to Amend.

Please make check or Money Order payable to: THE CITY OF NEW BEDFORD.
Cash is not Accepted.

New Bedford Cousins LLC
14 Howard Street
Rockland, MA 02370

ROCKLAND TRUST COMPANY
53-447/113

1123

3/2/2016

PAY TO THE ORDER OF City of New Bedford $ **6,530.00

Six Thousand Five Hundred Thirty and 00/100********** DOLLARS

City of New Bedford

MEMO NOI application Fee

Terrence Tedeschi MP

[redacted]

New Bedford Cousins LLC
14 Howard Street
Rockland, MA 02370

ROCKLAND TRUST COMPANY
53-447/113

1122

3/2/2016

PAY TO THE ORDER OF Commonwealth of Mass. $ **512.50

Five Hundred Twelve and 50/100********** DOLLARS

Commonwealth of Mass.

MEMO NOI Application Fees

Terrence Tedeschi MP

[redacted]

SECTION VI

Appendices

APPENDIX A

Stormwater Operation and Maintenance Plan

Stormwater Operation and Maintenance Plan and Illicit Discharge Statement

Proposed Residential Subdivision and Associated Improvements
Northside Farm Subdivision – New Bedford, MA 02745
Stormwater Management System's Owner: New Bedford Cousins LLC
System Owner's Address: P.O. Box 36, Scituate, MA 02066
Party responsible for Operations and Maintenance:
Owner of Northside Farm Subdivision, New Bedford, MA

It is most important for a drainage system to be maintained in order for it to work properly. The following is an Operation and Maintenance plan to upkeep the existing non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management Policy.

Construction Sequencing:

The following section provides construction details and highlights the construction sequence and timing of earth moving activities.

1 Installation of Erosion Controls

Erosion and sedimentation controls (i.e. silt fence and hay bales) will be installed where needed and inspected at the limits of the work area prior to the commencement of earth moving activities.

2 Clearing

The project area will be cleared of debris and boulders. Materials removed from the site will be transported to an appropriate facility or will be disposed of properly. No large boulders will be buried on the site. All cleared vegetation will be removed from the project site or mulched and stockpiled for future use on the site.

3 Rough Grading

During this phase of construction, rough grades will be established for the project site. If suitable topsoil is found, it will be removed and stockpiled in an upland area outside of the 100-foot buffer zone of identified wetlands. The stockpiled topsoil will be stored until ready for re-use on site.

4 Drainage System Construction

After rough grading is complete, the drainage collection, conveyance and discharge areas will be installed. The drainage system design and structures for the proposed development will follow the Department of Environmental Protection's Best Management Practice standards.

5 Utility Installation

In this phase of construction, underground utilities including water, sewer, gas, power, telecommunications, etc. will be installed.

7 Roadway Paving

During this phase of construction, the parking extension and access ways for the facility as shown on the submitted plans will be paved to binder course only.

9 Installation of Amenities

Amenities such as signage and landscaping will be installed or completed as required for safety.

10 Site Stabilization

The final phase of the project is the restoration and stabilization of all exposed surfaces. Disturbed areas will be landscaped or seeded. In the event that weather conditions prevent final restoration, temporary erosion and sedimentation measures will be employed until the weather is suitable for final cleanup. A final inspection will ensure that the project site is cleared of all project debris and that erosion and sedimentation controls are functioning properly. Haybales and silt fencing will not be removed until the site is stabilized and the final inspection is complete.

Operation and Maintenance Plan during Construction:

Sediment and Erosion Control

- Siltation fences shall be inspected at least once a week and after each rainfall event. Make any required repairs immediately. Repair scoured areas on the back side of fence at this time to prevent future problems.

- Should the fabric of the silt sock tear, decompose or otherwise become ineffective, replace it within 24 hours of discovery.

- Remove silt deposits once they reach 15 to 30 percent of the height of the silt fence to provide adequate storage volume for the next rain event and to reduce pressure on the fence. Care should be taken to avoid undermining the fence during cleanout process.

- Accumulated sediment may be spread to form a surface for turf or other vegetation establishment, or disposed of elsewhere. The area should be reshaped to permit natural drainage.

- Crushed stone construction entrances shall be inspected and maintained on a daily basis. Any buildup of material within the apron shall be removed offsite and replaced with clean crushed stone as needed.

- Also at the construction entrances any sediment tracked onto the public road during the construction process shall be removed immediately and any adjustment of the entrance to prevent additional sediment tracking.

Infiltration Systems

All infiltration areas shall be excavated and installed after the construction of the foundation. No heavy equipment shall traverse the proposed infiltration areas after installation.

Per MA DEP Stormwater Guidelines the following work shall be done to stabilize the site prior to installing the subsurface structures:

- Do not allow runoff from any disturbed areas on the site to flow to the subsurface structures.
- Rope off the area where the subsurface structures are to be placed.
- Accomplish any required excavation with equipment placed just outside the area. If the size of the area intended for exfiltration is too large to accommodate this approach, use trucks with low-pressure tires to minimize compaction. Do not allow any other vehicles within the area to be excavated.
- Keep the area above and immediately surrounding the subsurface system roped off to all construction vehicles until the final top surface is installed.
- At no time shall the area for the infiltration system be used as a temporary sediment basin. Stockpiles shall be placed away from the subsurface infiltration system and sedimentation fences shall be placed around the perimeter of the infiltration area to prevent the accumulation of sediment within the native soils.

Dust Control: Sprinkle water as necessary to control dust during construction.

Material Stockpiling: Stockpiles of material must be placed outside all wetland resource areas and their buffer zones. If left overnight, material stockpiling must be protected from the weather.

Good housekeeping:

The following good housekeeping BMP's will be implemented in order to prevent pollution during construction:

- Petroleum products will be stored in tightly sealed containers which are clearly labeled.
- Any asphalt substances used onsite will be applied according to the manufacturer's specifications.
- If portable sanitary units are used, sanitary waste will be removed as necessary to avoid overfilling.
- All paint and other hazardous waste materials will be tightly sealed and stored when not in use. Excess material will not be discharged into the public stormwater system, but will be properly disposed of according to the manufacturer's specifications.
- If spray guns are used, they will be cleaned on a removable tarp.

Operation and Maintenance Plan After Construction:

Subsurface Infiltration System:

Inspect inspection ports at least twice a year. Remove any debris or sediment that may be clogging the system.

Pipes:

Drainage pipes (inlets and outlets) shall be inspected to ensure that they are free of all obstructions and that they are structurally sound during every catch basin inspection.

Roadway Sweeping

All paved areas shall be swept at a minimum twice a year and after a major storm event to remove pollutants.

Catch Basin Cleaning

All catch basins shall be cleaned and inspected in late winter or early spring after the snow melts. Inspections should include the frame and grate, pipe, structure itself and the trap for damage and or repair.

Snow Management

At no time shall the wetlands be used for the stockpiling of snow.

Estimated Operation and Maintenance Budget:

Maintenance cost will be approximately $3,000.00 per year.

Illicit Discharges:

At no time will the owner or any other individual utilize the stormwater management system for any purpose other than its intended use. The stormwater management system as shown on the attached site plan at no time shall receive discharges other than stormwater, this includes "wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil or grease."

_____ _____

Applicant (Signature) Applicant (Print)

APPENDIX B

Stormwater Drainage Calculations

STORMWATER DRAINAGE CALCULATIONS

for

Definitive Subdivision
Notice of Intent

at

Northside Farm
New Bedford, MA

Prepared for:

New Bedford Cousins LLC
P.O. Box 36
Scituate, MA 02066

Prepared by:

CAVANARO CONSULTING, INC.
687 MAIN STREET
NORWELL, MASSACHUSETTS 02061

March 3, 2016

1.0 METHODOLOGY

The adequacy of drainage structures and their ability to function properly must be analyzed to minimize detrimental effects due to flooding conditions. The impacts of storm water are mitigated through several mechanisms such as infiltration, transportation and evaporation. The remaining runoff, can be quantified through developed and accepted methods. By determining the characteristics of site specific storm water conditions, mitigating efforts can be taken to avoid floodwater damage by constructing control devices. Designing and analyzing these facilities requires the acquisition of site data through observations, computer modeling the watershed, and the interpretation and application of the calculated values.

2.0 OVERVIEW

Cavanaro Consulting (CC) has analyzed the existing structures on and adjacent to the site utilizing the HydroCad 7.00 Storm water modeling program. Storm rainfall, run-off curve numbers, and other site characteristics are input into the program. The results of calculations are output into tables and graphs for each area and control structure. The complete calculations are presented in Appendix A of this report.

3.0 DESIGN STORMS

CC has computed storm water run-off calculations for the proposed subdivision site, for a 2, 10, 25, and 100 year, Type III, 24-hour storm events. This results in a 3.2”, 4.6”, 5.6”, and a 6.8” rain event respectively for each storm event.

4.0 EXISTING DRAINAGE AREAS

The existing site is currently divided into four drainage areas: one that flows to the west toward Acushnet Ave through an easement; another that flows to the southwest towards the existing billboard; another flows toward Arnoff and Victoria Street; and a much larger area that flows to the east into an existing bordering vegetated wetland area and eventually to an unnamed river which flows further south to a small pond. It is our understanding that the existing pond located to the southeast has a history of flooding during heavy rainfall events. As a result, we have designed the drainage system for this project to reduce the flow toward the existing wetland while maintaining some flow to continue hydration of the resource area.

5.0 PROPOSED SUBCATCHMENT AREAS

The proposed site was divided into 12 subcatchment areas as shown on the accompanying plan. Four design control points were established to compare the existing with the proposed conditions. The design control points were chosen at the down slope side of the four existing subcatchment areas as shown on the plan. The intent was to direct a limited amount of runoff to the Bordering Vegetated Wetland and to Victoria Street to the South due to the inherent drainage problem at the Easterly end of Victoria Street and the adjacent pond. To achieve this goal more runoff was directed towards Acushnet Avenue, thus resulting in an increase in flow at design control points No. 1 & 2 and a net decrease in flow at design control points No. 3 & 4,

as shown in the table below. Post development peak rate of runoff in the direction of the wetlands (DCP #4) was decreased from existing conditions during all design storm events. Only 4 of the 12 subcatchment areas are directed towards the wetlands. Three of those 4 are attenuated by the proposed detention pond before reaching the BVW onsite.

6.0 PROPOSED DETENTION PONDS

The proposed drainage system consists of one detention pond located in the subdivision. The underground infiltration basins with outlet structures discharge into the exiting drainage systems in the adjacent street. The infiltration system to the north adjacent to the bank site has been installed as part of that project in 2008. All ponds are designed as dry ponds. Therefore, there is no standing water in the ponds between storm events. All street runoff is captured through deep sump catch basins with oil/gas separators, which discharge to the detention ponds. All of the proposed dwellings have their own onsite stormwater recharge systems.

7.0 DRAINAGE ANALYSIS

Design Control Point No. 1 (Acushnet Ave.)

Storm	Existing Conditions (1E)	Post-Modification(1R)
2–Year-24Hour (3.20”)	**0.89 cfs**	**1.23 cfs**
10–Year-24Hour (4.60”)	**1.87 cfs**	**3.77 cfs**
25–Year-24Hour (5.60”)	**2.65 cfs**	**5.30 cfs**
100–Year-24Hour (6.80”)	**3.61 cfs**	**6.44 cfs**

Design Control Point No. 2 (South West Corner)

Storm	Existing Conditions (1E)	Post-Modification(12R)
2–Year-24Hour (3.20”)	**1.64 cfs**	**1.17 cfs**
10–Year-24Hour (4.60”)	**3.31 cfs**	**3.29 cfs**
25–Year-24Hour (5.60”)	**4.60 cfs**	**4.59 cfs**
100–Year-24Hour (6.80”)	**6.20 cfs**	**6.16 cfs**

Flow @ Design control Point No. 3 (Monson & Victoria Street)

Storm	Existing Conditions (3E)	Post-development (16R)
2–Year-24Hour (3.20")	**7.07 cfs**	**7.22 cfs**
10–Year-24Hour (4.60")	**13.33 cfs**	**11.67 cfs**
25–Year-24Hour (5.60")	**18.01 cfs**	**14.84 cfs**
100–Year-24Hour (6.80")	**23.75 cfs**	**18.53 cfs**

Flow @ Design control Point No. 4 (Rear @ Wetland Area/Southeast corner)

Storm	Existing Conditions (4E)	Post-development (10R)
2–Year-24Hour (3.20")	**7.30 cfs**	**6.67 cfs**
10–Year-24Hour (4.60")	**15.49 cfs**	**13.97 cfs**
25–Year-24Hour (5.60")	**21.94 cfs**	**18.84 cfs**
100–Year-24Hour (6.80")	**30.04 cfs**	**23.86 cfs**

The portion of the proposed project directed to DCP #4 will conform to the Stormwater Standards as follows:

Standard 1: No New Stormwater Conveyances of Untreated Stormwater or Erosion Offsite

The proposed improvements have an increase in pavement that will be treated prior to flowing into the infiltration fields and detention pond Also deep sump catch basins with hoods will be provided on all new catch basins, and all runoff will flow through an oil water separator prior to discharging off site.

Standard 2: Peak Rate Attenuation

All proposed runoff rates are less than proposed with the exception of design control point number 1. This existing connection to the street was constructed in 2008 as part of the adjacent bank project. The flow was increased in this area to help alleviate an existing drainage problem with the pond off property to the southeast of the project.

Standard 3: Recharge and Discharge Volume

The required recharge volume for the site is 0.25" per net increase of new impervious, or 0.25"/12 x 132,225 s.f. = 2,645 cubic feet. Both infiltration systems has a total volume of over 45,000 cubic feet of storage. Therefore, this requirement is met.

Drawdown:

Rv / (K x bottom area) = 2,645 ft3/ [0.003 fpm x (10,468 sf)] = 85 min. = 1.4 hours

1.4 hours < 72 hours, therefore drawdown requirement is met.

Standard 4: Water Quality

The implementation of a Long Term Operation and Maintenance Plan will further improve water quality in the long term. The required Water Quality Volume for this site is 0.5" per net increase of new pavement, or 0.5"/12 x 132,225 s.f. = 5,510 cubic feet. The infiltration systems and detention pond have a total volume of over 50,000 cubic feet of storage, therefore this requirement is met.

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

The proposed use of the site does not constitute a higher potential pollutant load, therefore this standard does not apply.

Standard 6: Critical Areas

The locus site is not located within a critical area as can be seen on the attached DEP priority resource map. Thus, Standard 6 does not pertain to this project.

Standard 7: Redevelopment

The project is considered new development.

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

The Operation and Maintenance Plan included with this submittal will ensure proper maintenance of the proposed pollution, erosion and sedimentation measures proposed during construction.

Standard 9: Long Term Operation and Maintenance Plan

The Long Term Operation and Maintenance Plan is included within the Operation and Maintenance Plan which is enclosed in this submittal to ensure drainage non-structural BMP's are maintained as intended.

Standard 10: Prohibition of Illicit Discharges

Routine visual inspections are scheduled as part of the Operations and Maintenance Plan to prevent illicit discharges. Furthermore, an Illicit Compliance Statement is included in this submittal.

Improvement Over Existing Conditions

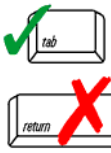
Water quality will be improved through the implementation of an Operation and Maintenance Plan (O & M Plan). This O & M Plan includes good practice measures such as visual maintenance and inspections onsite. The runoff from the existing site has no stormwater controls, the proposed infiltration and stomwater controls will remove greater than 80% of total suspended solids (TSS) from the site improving the downstream runoff dramatically.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

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



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

3-2-16

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

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

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

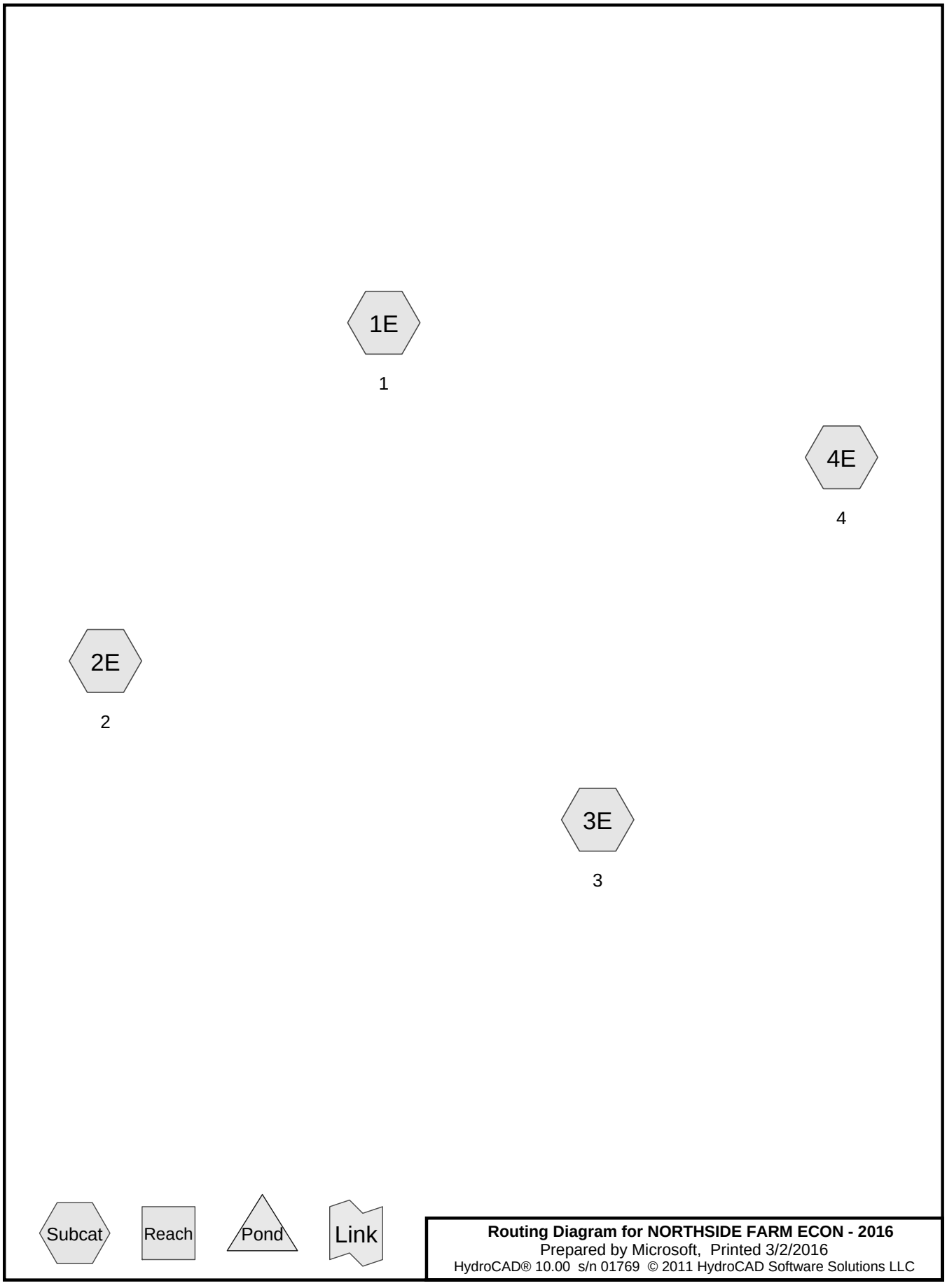
Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

EXISTING CONDITIONS
HYDROCAD



Routing Diagram for NORTHSIDE FARM ECON - 2016
Prepared by Microsoft, Printed 3/2/2016

Time span=5.00-20.00 hrs, dt=0.05 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 1E: 1 Runoff Area=35,642 sf 0.00% Impervious Runoff Depth>0.89"
Tc=5.0 min CN=73 Runoff=0.89 cfs 0.061 af

Subcatchment 2E: 2 Runoff Area=58,000 sf 8.79% Impervious Runoff Depth>1.00"
Tc=5.0 min CN=75 Runoff=1.64 cfs 0.111 af

Subcatchment 3E: 3 Runoff Area=249,488 sf 23.33% Impervious Runoff Depth>1.23"
Flow Length=375' Slope=0.0300 '/' Tc=12.4 min CN=79 Runoff=7.07 cfs 0.587 af

Subcatchment 4E: 4 Runoff Area=411,276 sf 0.00% Impervious Runoff Depth>0.89"
Flow Length=1,200' Tc=16.7 min CN=73 Runoff=7.30 cfs 0.700 af

Summary for Subcatchment 1E: 1

Runoff = 0.89 cfs @ 12.09 hrs, Volume= 0.061 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
35,642	73	Woods, Fair, HSG C
35,642		100.00% Pervious Area

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

Summary for Subcatchment 2E: 2

Runoff = 1.64 cfs @ 12.09 hrs, Volume= 0.111 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	5,100	98	
	52,900	73	Woods, Fair, HSG C
	58,000	75	Weighted Average
	52,900		91.21% Pervious Area
	5,100		8.79% Impervious Area

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

Summary for Subcatchment 3E: 3

Runoff = 7.07 cfs @ 12.18 hrs, Volume= 0.587 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
	191,289	73	Woods, Fair, HSG C
*	58,199	98	IMP
	249,488	79	Weighted Average
	191,289		76.67% Pervious Area
	58,199		23.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	325	0.0300	2.79		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
12.4	375	Total			

Summary for Subcatchment 4E: 4

Runoff = 7.30 cfs @ 12.25 hrs, Volume= 0.700 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
411,276	73	Woods, Fair, HSG C
411,276		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
5.1	700	0.0200	2.28		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
1.1	450	0.0200	6.67	40.03	**Channel Flow, CHANNEL** Area= 6.0 sf Perim= 8.0' r= 0.75' n= 0.026
16.7	1,200	Total			

Time span=5.00-20.00 hrs, dt=0.05 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 1E: 1 Runoff Area=35,642 sf 0.00% Impervious Runoff Depth>1.82"
Tc=5.0 min CN=73 Runoff=1.87 cfs 0.124 af

Subcatchment 2E: 2 Runoff Area=58,000 sf 8.79% Impervious Runoff Depth>1.97"
Tc=5.0 min CN=75 Runoff=3.31 cfs 0.219 af

Subcatchment 3E: 3 Runoff Area=249,488 sf 23.33% Impervious Runoff Depth>2.29"
Flow Length=375' Slope=0.0300 '/' Tc=12.4 min CN=79 Runoff=13.33 cfs 1.091 af

Subcatchment 4E: 4 Runoff Area=411,276 sf 0.00% Impervious Runoff Depth>1.81"
Flow Length=1,200' Tc=16.7 min CN=73 Runoff=15.49 cfs 1.425 af

Summary for Subcatchment 1E: 1

Runoff = 1.87 cfs @ 12.08 hrs, Volume= 0.124 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
35,642	73	Woods, Fair, HSG C
35,642		100.00% Pervious Area

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

Summary for Subcatchment 2E: 2

Runoff = 3.31 cfs @ 12.08 hrs, Volume= 0.219 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	5,100	98	
	52,900	73	Woods, Fair, HSG C
	58,000	75	Weighted Average
	52,900		91.21% Pervious Area
	5,100		8.79% Impervious Area

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

Summary for Subcatchment 3E: 3

Runoff = 13.33 cfs @ 12.17 hrs, Volume= 1.091 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
	191,289	73	Woods, Fair, HSG C
*	58,199	98	IMP
	249,488	79	Weighted Average
	191,289		76.67% Pervious Area
	58,199		23.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	325	0.0300	2.79		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
12.4	375	Total			

Summary for Subcatchment 4E: 4

Runoff = 15.49 cfs @ 12.24 hrs, Volume= 1.425 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
411,276	73	Woods, Fair, HSG C
411,276		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
5.1	700	0.0200	2.28		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
1.1	450	0.0200	6.67	40.03	**Channel Flow, CHANNEL** Area= 6.0 sf Perim= 8.0' r= 0.75' n= 0.026
16.7	1,200	Total			

Time span=5.00-20.00 hrs, dt=0.05 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 1E: 1 Runoff Area=35,642 sf 0.00% Impervious Runoff Depth>2.56"
Tc=5.0 min CN=73 Runoff=2.65 cfs 0.175 af

Subcatchment 2E: 2 Runoff Area=58,000 sf 8.79% Impervious Runoff Depth>2.74"
Tc=5.0 min CN=75 Runoff=4.60 cfs 0.304 af

Subcatchment 3E: 3 Runoff Area=249,488 sf 23.33% Impervious Runoff Depth>3.10"
Flow Length=375' Slope=0.0300 '/' Tc=12.4 min CN=79 Runoff=18.01 cfs 1.481 af

Subcatchment 4E: 4 Runoff Area=411,276 sf 0.00% Impervious Runoff Depth>2.55"
Flow Length=1,200' Tc=16.7 min CN=73 Runoff=21.94 cfs 2.008 af

Summary for Subcatchment 1E: 1

Runoff = 2.65 cfs @ 12.08 hrs, Volume= 0.175 af, Depth> 2.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
35,642	73	Woods, Fair, HSG C
35,642		100.00% Pervious Area

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

Summary for Subcatchment 2E: 2

Runoff = 4.60 cfs @ 12.08 hrs, Volume= 0.304 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	5,100	98	
	52,900	73	Woods, Fair, HSG C
	58,000	75	Weighted Average
	52,900		91.21% Pervious Area
	5,100		8.79% Impervious Area

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

Summary for Subcatchment 3E: 3

Runoff = 18.01 cfs @ 12.17 hrs, Volume= 1.481 af, Depth> 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
	191,289	73	Woods, Fair, HSG C
*	58,199	98	IMP
	249,488	79	Weighted Average
	191,289		76.67% Pervious Area
	58,199		23.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	325	0.0300	2.79		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
12.4	375	Total			

Summary for Subcatchment 4E: 4

Runoff = 21.94 cfs @ 12.24 hrs, Volume= 2.008 af, Depth> 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
411,276	73	Woods, Fair, HSG C
411,276		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
5.1	700	0.0200	2.28		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
1.1	450	0.0200	6.67	40.03	**Channel Flow, CHANNEL** Area= 6.0 sf Perim= 8.0' r= 0.75' n= 0.026
16.7	1,200	Total			

Time span=5.00-20.00 hrs, dt=0.05 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 1E: 1 Runoff Area=35,642 sf 0.00% Impervious Runoff Depth>3.51"
Tc=5.0 min CN=73 Runoff=3.61 cfs 0.239 af

Subcatchment 2E: 2 Runoff Area=58,000 sf 8.79% Impervious Runoff Depth>3.71"
Tc=5.0 min CN=75 Runoff=6.20 cfs 0.412 af

Subcatchment 3E: 3 Runoff Area=249,488 sf 23.33% Impervious Runoff Depth>4.12"
Flow Length=375' Slope=0.0300 '/' Tc=12.4 min CN=79 Runoff=23.75 cfs 1.968 af

Subcatchment 4E: 4 Runoff Area=411,276 sf 0.00% Impervious Runoff Depth>3.50"
Flow Length=1,200' Tc=16.7 min CN=73 Runoff=30.04 cfs 2.751 af

Summary for Subcatchment 1E: 1

Runoff = 3.61 cfs @ 12.08 hrs, Volume= 0.239 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
35,642	73	Woods, Fair, HSG C
35,642		100.00% Pervious Area

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

Summary for Subcatchment 2E: 2

Runoff = 6.20 cfs @ 12.08 hrs, Volume= 0.412 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	5,100	98	
	52,900	73	Woods, Fair, HSG C
	58,000	75	Weighted Average
	52,900		91.21% Pervious Area
	5,100		8.79% Impervious Area

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

Summary for Subcatchment 3E: 3

Runoff = 23.75 cfs @ 12.17 hrs, Volume= 1.968 af, Depth> 4.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
	191,289	73	Woods, Fair, HSG C
*	58,199	98	IMP
	249,488	79	Weighted Average
	191,289		76.67% Pervious Area
	58,199		23.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	325	0.0300	2.79		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
12.4	375	Total			

Summary for Subcatchment 4E: 4

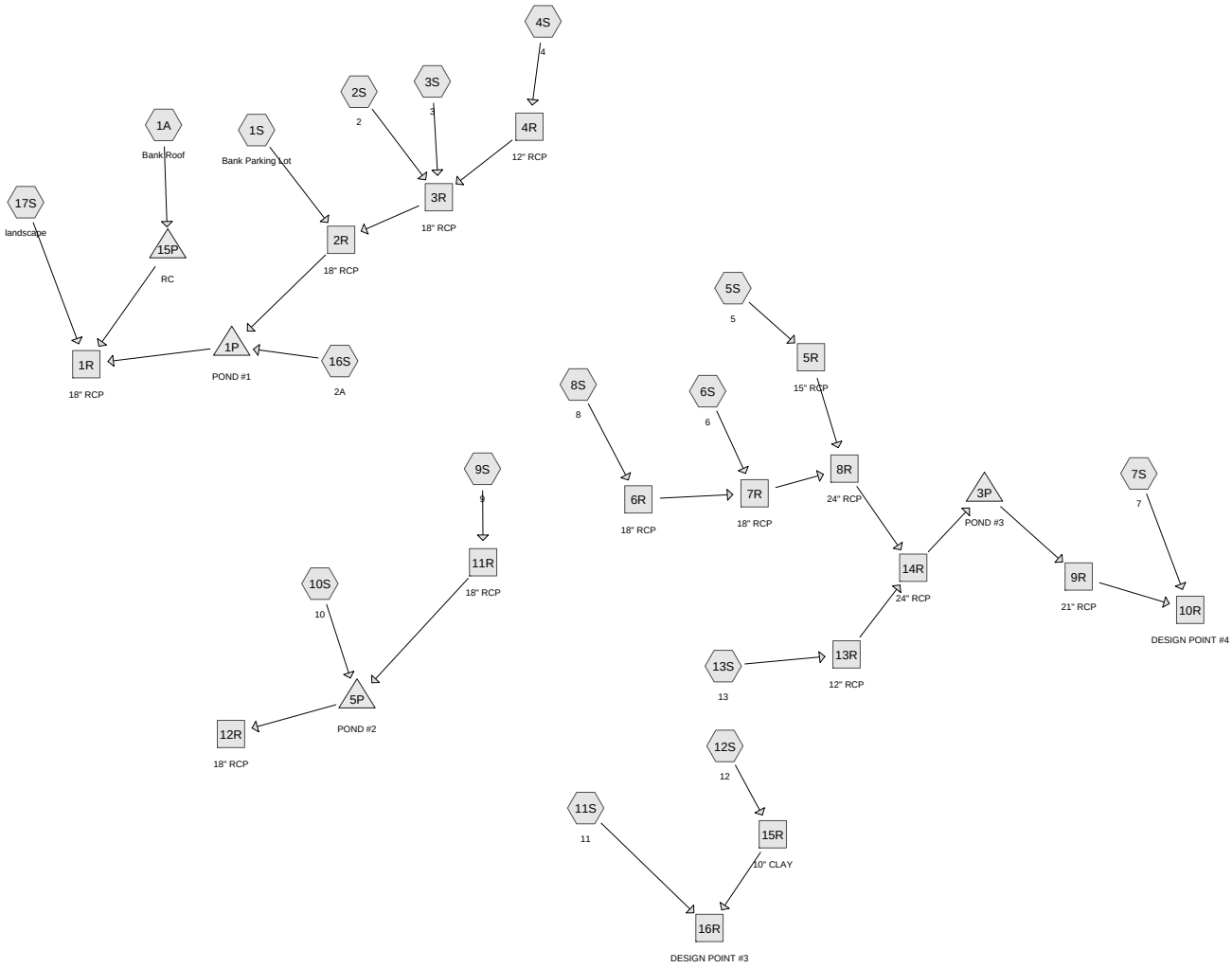
Runoff = 30.04 cfs @ 12.23 hrs, Volume= 2.751 af, Depth> 3.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
411,276	73	Woods, Fair, HSG C
411,276		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
5.1	700	0.0200	2.28		**Shallow Concentrated Flow, SHALLOW** Unpaved Kv= 16.1 fps
1.1	450	0.0200	6.67	40.03	**Channel Flow, CHANNEL** Area= 6.0 sf Perim= 8.0' r= 0.75' n= 0.026
16.7	1,200	Total			

PROPOSED CONDITIONS
HYDROCAD



Subcat Reach Pond Link

Routing Diagram for NORTHSIDE FARM PROP 2016
Prepared by Microsoft, Printed 3/2/2016

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: Bank Roof Runoff Area=3,300 sf 100.00% Impervious Runoff Depth>2.97"
Tc=5.0 min CN=98 Runoff=0.24 cfs 816 cf

Subcatchment 1S: Bank Parking Lot Runoff Area=36,670 sf 59.99% Impervious Runoff Depth>2.00"
Tc=5.0 min CN=88 Runoff=1.96 cfs 6,099 cf

Subcatchment 2S: 2 Runoff Area=40,900 sf 30.12% Impervious Runoff Depth>1.47"
Tc=5.0 min CN=81 Runoff=1.61 cfs 5,003 cf

Subcatchment 3S: 3 Runoff Area=15,276 sf 46.22% Impervious Runoff Depth>1.76"
Tc=5.0 min CN=85 Runoff=0.72 cfs 2,236 cf

Subcatchment 4S: 4 Runoff Area=27,561 sf 25.98% Impervious Runoff Depth>1.40"
Tc=5.0 min CN=80 Runoff=1.03 cfs 3,217 cf

Subcatchment 5S: 5 Runoff Area=31,726 sf 48.19% Impervious Runoff Depth>1.83"
Tc=5.0 min CN=86 Runoff=1.57 cfs 4,848 cf

Subcatchment 6S: 6 Runoff Area=88,490 sf 30.39% Impervious Runoff Depth>1.47"
Tc=5.0 min CN=81 Runoff=3.48 cfs 10,825 cf

Subcatchment 7S: 7 Runoff Area=135,220 sf 6.35% Impervious Runoff Depth>1.09"
Tc=5.0 min CN=75 Runoff=3.83 cfs 12,316 cf

Subcatchment 8S: 8 Runoff Area=33,927 sf 53.03% Impervious Runoff Depth>1.91"
Tc=5.0 min CN=87 Runoff=1.75 cfs 5,410 cf

Subcatchment 9S: 9 Runoff Area=80,516 sf 27.93% Impervious Runoff Depth>1.47"
Tc=5.0 min CN=81 Runoff=3.17 cfs 9,849 cf

Subcatchment 10S: 10 Runoff Area=35,520 sf 0.00% Impervious Runoff Depth>1.04"
Tc=5.0 min CN=74 Runoff=0.95 cfs 3,068 cf

Subcatchment 11S: 11 Runoff Area=118,427 sf 60.52% Impervious Runoff Depth>2.08"
Tc=5.0 min CN=89 Runoff=6.63 cfs 20,530 cf

Subcatchment 12S: 12 Runoff Area=18,515 sf 47.91% Impervious Runoff Depth>1.76"
Tc=5.0 min CN=85 Runoff=0.88 cfs 2,710 cf

Subcatchment 13S: 13 Runoff Area=10,954 sf 50.76% Impervious Runoff Depth>1.83"
Tc=5.0 min CN=86 Runoff=0.54 cfs 1,674 cf

Subcatchment 16S: 2A Runoff Area=17,160 sf 0.00% Impervious Runoff Depth>1.04"
Tc=5.0 min CN=74 Runoff=0.46 cfs 1,482 cf

Subcatchment 17S: landscape Runoff Area=3,128 sf 0.00% Impervious Runoff Depth>1.04"
Tc=5.0 min CN=74 Runoff=0.08 cfs 270 cf

Reach 1R: 18" RCP Avg. Flow Depth=0.31' Max Vel=4.77 fps Inflow=1.23 cfs 6,386 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0167 '/' Capacity=13.56 cfs Outflow=1.23 cfs 6,385 cf

Reach 2R: 18" RCP Avg. Flow Depth=0.84' Max Vel=4.70 fps Inflow=4.80 cfs 16,533 cf
18.0" Round Pipe n=0.013 L=35.0' S=0.0057 '/' Capacity=7.94 cfs Outflow=4.78 cfs 16,531 cf

Reach 3R: 18" RCP Avg. Flow Depth=0.69' Max Vel=4.03 fps Inflow=3.23 cfs 10,451 cf
18.0" Round Pipe n=0.013 L=340.0' S=0.0050 '/' Capacity=7.43 cfs Outflow=3.05 cfs 10,435 cf

Reach 4R: 12" RCP Avg. Flow Depth=0.47' Max Vel=2.80 fps Inflow=1.03 cfs 3,217 cf
12.0" Round Pipe n=0.013 L=240.0' S=0.0040 '/' Capacity=2.25 cfs Outflow=0.96 cfs 3,212 cf

Reach 5R: 15" RCP Avg. Flow Depth=0.45' Max Vel=3.91 fps Inflow=1.57 cfs 4,848 cf
15.0" Round Pipe n=0.013 L=240.0' S=0.0075 '/' Capacity=5.59 cfs Outflow=1.51 cfs 4,843 cf

Reach 6R: 18" RCP Avg. Flow Depth=0.49' Max Vel=3.47 fps Inflow=1.75 cfs 5,410 cf
18.0" Round Pipe n=0.013 L=204.0' S=0.0051 '/' Capacity=7.54 cfs Outflow=1.68 cfs 5,405 cf

Reach 7R: 18" RCP Avg. Flow Depth=0.74' Max Vel=5.90 fps Inflow=5.12 cfs 16,229 cf
18.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=10.50 cfs Outflow=5.11 cfs 16,228 cf

Reach 8R: 24" RCP Avg. Flow Depth=0.81' Max Vel=5.52 fps Inflow=6.60 cfs 21,071 cf
24.0" Round Pipe n=0.013 L=107.0' S=0.0071 '/' Capacity=19.07 cfs Outflow=6.52 cfs 21,064 cf

Reach 9R: 21" RCP Avg. Flow Depth=0.62' Max Vel=5.58 fps Inflow=4.24 cfs 22,516 cf
21.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=15.85 cfs Outflow=4.23 cfs 22,514 cf

Reach 10R: DESIGN POINT #4 Inflow=6.67 cfs 34,830 cf
Outflow=6.67 cfs 34,830 cf

Reach 11R: 18" RCP Avg. Flow Depth=0.53' Max Vel=5.73 fps Inflow=3.17 cfs 9,849 cf
18.0" Round Pipe n=0.013 L=80.0' S=0.0131 '/' Capacity=12.03 cfs Outflow=3.15 cfs 9,847 cf

Reach 12R: 18" RCP Avg. Flow Depth=0.25' Max Vel=6.00 fps Inflow=1.17 cfs 4,604 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0333 '/' Capacity=19.18 cfs Outflow=1.17 cfs 4,604 cf

Reach 13R: 12" RCP Avg. Flow Depth=0.30' Max Vel=2.57 fps Inflow=0.54 cfs 1,674 cf
12.0" Round Pipe n=0.013 L=370.0' S=0.0053 '/' Capacity=2.59 cfs Outflow=0.51 cfs 1,670 cf

Reach 14R: 24" RCP Avg. Flow Depth=0.92' Max Vel=4.91 fps Inflow=6.97 cfs 22,734 cf
24.0" Round Pipe n=0.013 L=30.0' S=0.0050 '/' Capacity=16.00 cfs Outflow=6.94 cfs 22,731 cf

Reach 15R: 10" CLAY Avg. Flow Depth=0.38' Max Vel=3.52 fps Inflow=0.88 cfs 2,710 cf
10.0" Round Pipe n=0.013 L=490.0' S=0.0084 '/' Capacity=2.01 cfs Outflow=0.82 cfs 2,703 cf

Reach 16R: DESIGN POINT #3 Inflow=7.22 cfs 23,233 cf
Outflow=7.22 cfs 23,233 cf

Pond 1P: POND #1 Peak Elev=96.55' Storage=6,139 cf Inflow=5.22 cfs 18,014 cf
Discarded=0.27 cfs 11,847 cf Primary=1.21 cfs 6,115 cf Outflow=1.48 cfs 17,963 cf

Pond 3P: POND #3 Peak Elev=94.47' Storage=3,601 cf Inflow=6.94 cfs 22,731 cf
Outflow=4.24 cfs 22,516 cf

Pond 5P: POND #2 Peak Elev=94.14' Storage=3,603 cf Inflow=4.10 cfs 12,915 cf
Discarded=0.26 cfs 8,256 cf Primary=1.17 cfs 4,604 cf Outflow=1.43 cfs 12,860 cf

Pond 15P: RC Peak Elev=91.91' Storage=336 cf Inflow=0.24 cfs 816 cf
Discarded=0.02 cfs 815 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 815 cf

Summary for Subcatchment 1A: Bank Roof

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 816 cf, Depth> 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	3,300	98	Bank Roof
	3,300		100.00% Impervious Area

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

Summary for Subcatchment 1S: Bank Parking Lot

Runoff = 1.96 cfs @ 12.08 hrs, Volume= 6,099 cf, Depth> 2.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
22,000	98	Paved parking & roofs
14,670	74	>75% Grass cover, Good, HSG C
36,670	88	Weighted Average
14,670		40.01% Pervious Area
22,000		59.99% Impervious Area

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

Summary for Subcatchment 2S: 2

Runoff = 1.61 cfs @ 12.08 hrs, Volume= 5,003 cf, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
11,778	98	Paved parking & roofs
28,582	74	>75% Grass cover, Good, HSG C
540	98	Paved parking & roofs
40,900	81	Weighted Average
28,582		69.88% Pervious Area
12,318		30.12% Impervious Area

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

Summary for Subcatchment 3S: 3

Runoff = 0.72 cfs @ 12.08 hrs, Volume= 2,236 cf, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	7,060	98	
*	8,216	74	
	15,276	85	Weighted Average
	8,216		53.78% Pervious Area
	7,060		46.22% Impervious Area

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

Summary for Subcatchment 4S: 4

Runoff = 1.03 cfs @ 12.08 hrs, Volume= 3,217 cf, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	7,160	98	
*	20,401	74	
	27,561	80	Weighted Average
	20,401		74.02% Pervious Area
	7,160		25.98% Impervious Area

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

Summary for Subcatchment 5S: 5

Runoff = 1.57 cfs @ 12.08 hrs, Volume= 4,848 cf, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	15,290	98	
*	16,436	74	
	31,726	86	Weighted Average
	16,436		51.81% Pervious Area
	15,290		48.19% Impervious Area

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

Summary for Subcatchment 6S: 6

Runoff = 3.48 cfs @ 12.08 hrs, Volume= 10,825 cf, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	26,890	98	
*	61,600	74	
	88,490	81	Weighted Average
	61,600		69.61% Pervious Area
	26,890		30.39% Impervious Area

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

Summary for Subcatchment 7S: 7

Runoff = 3.83 cfs @ 12.09 hrs, Volume= 12,316 cf, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	8,590	98	
	73,262	74	>75% Grass cover, Good, HSG C
	53,368	73	Woods, Fair, HSG C
	135,220	75	Weighted Average
	126,630		93.65% Pervious Area
	8,590		6.35% Impervious Area

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

Summary for Subcatchment 8S: 8

Runoff = 1.75 cfs @ 12.08 hrs, Volume= 5,410 cf, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	17,990	98	
*	15,937	74	
	33,927	87	Weighted Average
	15,937		46.97% Pervious Area
	17,990		53.03% Impervious Area

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

Summary for Subcatchment 9S: 9

Runoff = 3.17 cfs @ 12.08 hrs, Volume= 9,849 cf, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	22,490	98	
*	58,026	74	
	80,516	81	Weighted Average
	58,026		72.07% Pervious Area
	22,490		27.93% Impervious Area

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

Summary for Subcatchment 10S: 10

Runoff = 0.95 cfs @ 12.09 hrs, Volume= 3,068 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	6,648	74	
*	28,872	74	
	35,520	74	Weighted Average
	35,520		100.00% Pervious Area

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

Summary for Subcatchment 11S: 11

Runoff = 6.63 cfs @ 12.07 hrs, Volume= 20,530 cf, Depth> 2.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	71,670	98	
*	43,932	74	
*	2,825	73	
	118,427	89	Weighted Average
	46,757		39.48% Pervious Area
	71,670		60.52% Impervious Area

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

Summary for Subcatchment 12S: 12

Runoff = 0.88 cfs @ 12.08 hrs, Volume= 2,710 cf, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	8,870	98	Pvmt
*	9,645	74	grass
	18,515	85	Weighted Average
	9,645		52.09% Pervious Area
	8,870		47.91% Impervious Area

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

Summary for Subcatchment 13S: 13

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 1,674 cf, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	5,560	98	
*	5,394	74	
	10,954	86	Weighted Average
	5,394		49.24% Pervious Area
	5,560		50.76% Impervious Area

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

Summary for Subcatchment 16S: 2A

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 1,482 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
17,160	74	>75% Grass cover, Good, HSG C
17,160		100.00% Pervious Area

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

Summary for Subcatchment 17S: landscape

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 270 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

Area (sf)	CN	Description
3,128	74	>75% Grass cover, Good, HSG C
3,128		100.00% Pervious Area

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

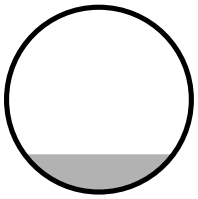
Summary for Reach 1R: 18" RCP

Inflow Area = 143,995 sf, 36.00% Impervious, Inflow Depth > 0.53" for 2 Year Event event
Inflow = 1.23 cfs @ 12.51 hrs, Volume= 6,386 cf
Outflow = 1.23 cfs @ 12.51 hrs, Volume= 6,385 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.77 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.6 min

Peak Storage= 15 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.56 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0167 '/'
Inlet Invert= 94.00', Outlet Invert= 93.00'



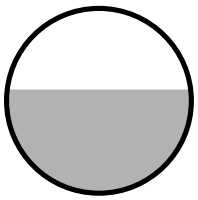
Summary for Reach 2R: 18" RCP

Inflow Area = 120,407 sf, 40.31% Impervious, Inflow Depth > 1.65" for 2 Year Event event
Inflow = 4.80 cfs @ 12.11 hrs, Volume= 16,533 cf
Outflow = 4.78 cfs @ 12.11 hrs, Volume= 16,531 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.70 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 0.3 min

Peak Storage= 36 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.94 cfs

18.0" Round Pipe
n= 0.013
Length= 35.0' Slope= 0.0057 '/'
Inlet Invert= 95.65', Outlet Invert= 95.45'



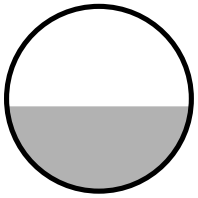
Summary for Reach 3R: 18" RCP

Inflow Area = 83,737 sf, 31.69% Impervious, Inflow Depth > 1.50" for 2 Year Event event
Inflow = 3.23 cfs @ 12.09 hrs, Volume= 10,451 cf
Outflow = 3.05 cfs @ 12.14 hrs, Volume= 10,435 cf, Atten= 6%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 3.9 min

Peak Storage= 268 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.43 cfs

18.0" Round Pipe
n= 0.013
Length= 340.0' Slope= 0.0050 '/'
Inlet Invert= 97.05', Outlet Invert= 95.35'



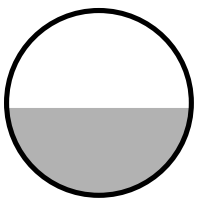
Summary for Reach 4R: 12" RCP

Inflow Area = 27,561 sf, 25.98% Impervious, Inflow Depth > 1.40" for 2 Year Event event
Inflow = 1.03 cfs @ 12.08 hrs, Volume= 3,217 cf
Outflow = 0.96 cfs @ 12.13 hrs, Volume= 3,212 cf, Atten= 7%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.80 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 3.8 min

Peak Storage= 87 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.25 cfs

12.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0040 '/'
Inlet Invert= 98.01', Outlet Invert= 97.05'



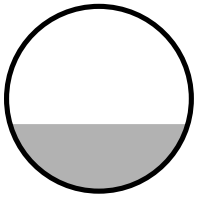
Summary for Reach 5R: 15" RCP

Inflow Area = 31,726 sf, 48.19% Impervious, Inflow Depth > 1.83" for 2 Year Event event
Inflow = 1.57 cfs @ 12.08 hrs, Volume= 4,848 cf
Outflow = 1.51 cfs @ 12.11 hrs, Volume= 4,843 cf, Atten= 4%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.91 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 2.9 min

Peak Storage= 96 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.59 cfs

15.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0075 '/'
Inlet Invert= 96.16', Outlet Invert= 94.36'



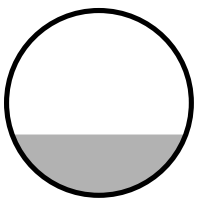
Summary for Reach 6R: 18" RCP

Inflow Area = 33,927 sf, 53.03% Impervious, Inflow Depth > 1.91" for 2 Year Event event
Inflow = 1.75 cfs @ 12.08 hrs, Volume= 5,410 cf
Outflow = 1.68 cfs @ 12.11 hrs, Volume= 5,405 cf, Atten= 4%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 2.8 min

Peak Storage= 103 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.54 cfs

18.0" Round Pipe
n= 0.013
Length= 204.0' Slope= 0.0051 '/'
Inlet Invert= 95.35', Outlet Invert= 94.30'



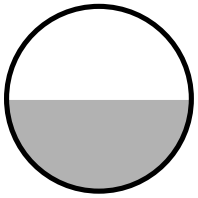
Summary for Reach 7R: 18" RCP

Inflow Area = 122,417 sf, 36.66% Impervious, Inflow Depth > 1.59" for 2 Year Event event
Inflow = 5.12 cfs @ 12.09 hrs, Volume= 16,229 cf
Outflow = 5.11 cfs @ 12.09 hrs, Volume= 16,228 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 0.2 min

Peak Storage= 26 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 94.20', Outlet Invert= 93.90'



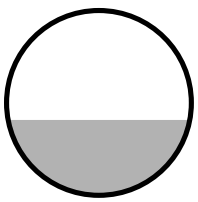
Summary for Reach 8R: 24" RCP

Inflow Area = 154,143 sf, 39.04% Impervious, Inflow Depth > 1.64" for 2 Year Event event
Inflow = 6.60 cfs @ 12.10 hrs, Volume= 21,071 cf
Outflow = 6.52 cfs @ 12.10 hrs, Volume= 21,064 cf, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.52 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.9 min

Peak Storage= 128 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.07 cfs

24.0" Round Pipe
n= 0.013
Length= 107.0' Slope= 0.0071 '/'
Inlet Invert= 93.61', Outlet Invert= 92.85'



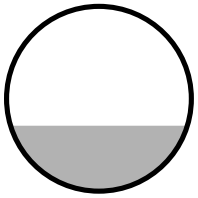
Summary for Reach 9R: 21" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 1.64" for 2 Year Event event
Inflow = 4.24 cfs @ 12.24 hrs, Volume= 22,516 cf
Outflow = 4.23 cfs @ 12.25 hrs, Volume= 22,514 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.58 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.2 min

Peak Storage= 23 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.75' Flow Area= 2.4 sf, Capacity= 15.85 cfs

21.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 92.30', Outlet Invert= 92.00'



Summary for Reach 10R: DESIGN POINT #4

Inflow Area = 300,317 sf, 24.75% Impervious, Inflow Depth > 1.39" for 2 Year Event event
Inflow = 6.67 cfs @ 12.12 hrs, Volume= 34,830 cf
Outflow = 6.67 cfs @ 12.12 hrs, Volume= 34,830 cf, Atten= 0%, Lag= 0.0 min

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

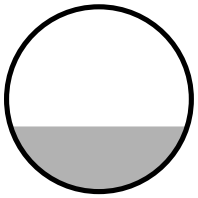
Summary for Reach 11R: 18" RCP

Inflow Area = 80,516 sf, 27.93% Impervious, Inflow Depth > 1.47" for 2 Year Event event
Inflow = 3.17 cfs @ 12.08 hrs, Volume= 9,849 cf
Outflow = 3.15 cfs @ 12.09 hrs, Volume= 9,847 cf, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.73 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 0.6 min

Peak Storage= 44 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.03 cfs

18.0" Round Pipe
n= 0.013
Length= 80.0' Slope= 0.0131 '/'
Inlet Invert= 94.05', Outlet Invert= 93.00'



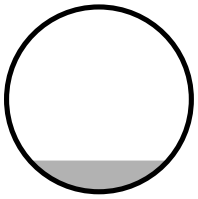
Summary for Reach 12R: 18" RCP

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth = 0.48" for 2 Year Event event
Inflow = 1.17 cfs @ 12.41 hrs, Volume= 4,604 cf
Outflow = 1.17 cfs @ 12.41 hrs, Volume= 4,604 cf, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.00 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.28 fps, Avg. Travel Time= 0.3 min

Peak Storage= 12 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 19.18 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 92.00', Outlet Invert= 90.00'



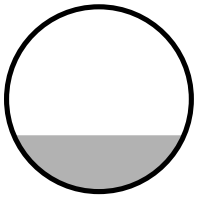
Summary for Reach 13R: 12" RCP

Inflow Area = 10,954 sf, 50.76% Impervious, Inflow Depth > 1.83" for 2 Year Event event
Inflow = 0.54 cfs @ 12.08 hrs, Volume= 1,674 cf
Outflow = 0.51 cfs @ 12.15 hrs, Volume= 1,670 cf, Atten= 7%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.57 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 6.7 min

Peak Storage= 74 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.59 cfs

12.0" Round Pipe
n= 0.013
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 94.90', Outlet Invert= 92.95'



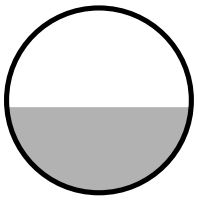
Summary for Reach 14R: 24" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 1.65" for 2 Year Event event
Inflow = 6.97 cfs @ 12.11 hrs, Volume= 22,734 cf
Outflow = 6.94 cfs @ 12.11 hrs, Volume= 22,731 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 0.3 min

Peak Storage= 43 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 16.00 cfs

24.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 92.65', Outlet Invert= 92.50'



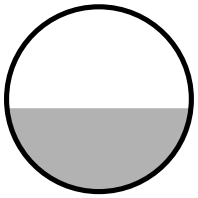
Summary for Reach 15R: 10" CLAY

Inflow Area = 18,515 sf, 47.91% Impervious, Inflow Depth > 1.76" for 2 Year Event event
Inflow = 0.88 cfs @ 12.08 hrs, Volume= 2,710 cf
Outflow = 0.82 cfs @ 12.15 hrs, Volume= 2,703 cf, Atten= 7%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.52 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 6.3 min

Peak Storage= 117 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.01 cfs

10.0" Round Pipe
n= 0.013
Length= 490.0' Slope= 0.0084 '/'
Inlet Invert= 89.23', Outlet Invert= 85.10'



Summary for Reach 16R: DESIGN POINT #3

Inflow Area = 136,942 sf, 58.81% Impervious, Inflow Depth > 2.04" for 2 Year Event event
Inflow = 7.22 cfs @ 12.08 hrs, Volume= 23,233 cf
Outflow = 7.22 cfs @ 12.08 hrs, Volume= 23,233 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 1P: POND #1

Inflow Area = 137,567 sf, 35.28% Impervious, Inflow Depth > 1.57" for 2 Year Event event
Inflow = 5.22 cfs @ 12.11 hrs, Volume= 18,014 cf
Outflow = 1.48 cfs @ 12.52 hrs, Volume= 17,963 cf, Atten= 72%, Lag= 24.4 min
Discarded = 0.27 cfs @ 11.45 hrs, Volume= 11,847 cf
Primary = 1.21 cfs @ 12.52 hrs, Volume= 6,115 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 96.55' @ 12.52 hrs Surf.Area= 5,325 sf Storage= 6,139 cf

Plug-Flow detention time= 101.9 min calculated for 17,926 cf (100% of inflow)
Center-of-Mass det. time= 100.0 min (933.3 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	95.40'	11,746 cf	**Custom Stage Data (Irregular)**Listed below 18,638 cf Overall - 6,891 cf Embedded = 11,746 cf
#2	95.90'	6,891 cf	**StormTech SC-740** x 150 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		18,638 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.40	5,325	292.0	0	0	5,325
98.90	5,325	292.0	18,638	18,638	6,347

Device	Routing	Invert	Outlet Devices
#1	Primary	95.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	96.30'	**11.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	95.40'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.27 cfs @ 11.45 hrs HW=95.44' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=1.21 cfs @ 12.52 hrs HW=96.55' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 0.95 cfs @ 2.75 fps)
└**2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 1.71 fps)

Summary for Pond 3P: POND #3

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 1.65" for 2 Year Event event
Inflow = 6.94 cfs @ 12.11 hrs, Volume= 22,731 cf
Outflow = 4.24 cfs @ 12.24 hrs, Volume= 22,516 cf, Atten= 39%, Lag= 8.1 min
Primary = 4.24 cfs @ 12.24 hrs, Volume= 22,516 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.47' @ 12.24 hrs Surf.Area= 2,316 sf Storage= 3,601 cf

Plug-Flow detention time= 19.0 min calculated for 22,516 cf (99% of inflow)
Center-of-Mass det. time= 13.4 min (844.3 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	92.50'	11,508 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	1,307	189.0	0	0	1,307
93.00	1,547	197.0	713	713	1,571
94.00	2,058	212.0	1,796	2,509	2,100
95.00	2,607	230.0	2,327	4,836	2,771
96.00	3,363	261.0	2,977	7,813	4,007
97.00	4,037	277.0	3,695	11,508	4,743

Device	Routing	Invert	Outlet Devices
#1	Primary	92.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.0' Crest Height
#3	Primary	96.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.23 cfs @ 12.24 hrs HW=94.47' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 3.27 cfs @ 5.99 fps)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.96 cfs @ 2.26 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 5P: POND #2

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth > 1.34" for 2 Year Event event
Inflow = 4.10 cfs @ 12.09 hrs, Volume= 12,915 cf
Outflow = 1.43 cfs @ 12.41 hrs, Volume= 12,860 cf, Atten= 65%, Lag= 19.2 min
Discarded = 0.26 cfs @ 11.70 hrs, Volume= 8,256 cf
Primary = 1.17 cfs @ 12.41 hrs, Volume= 4,604 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.14' @ 12.41 hrs Surf.Area= 5,143 sf Storage= 3,603 cf

Plug-Flow detention time= 50.5 min calculated for 12,860 cf (100% of inflow)
Center-of-Mass det. time= 48.0 min (891.9 - 843.9)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	22,353 cf	**Custom Stage Data (Irregular)**Listed below 61,716 cf Overall - 5,834 cf Embedded = 55,882 cf x 40.0% Voids
#2	93.50'	5,834 cf	**StormTech SC-740** x 127 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		28,187 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	5,143	340.0	0	0	5,143
105.00	5,143	340.0	61,716	61,716	9,223

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**9.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	93.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.26 cfs @ 11.70 hrs HW=93.13' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=1.17 cfs @ 12.41 hrs HW=94.14' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.10 cfs @ 2.73 fps)
└**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.28 fps)

Summary for Pond 15P: RC

Inflow Area = 3,300 sf,100.00% Impervious, Inflow Depth > 2.97" for 2 Year Event event
Inflow = 0.24 cfs @ 12.07 hrs, Volume= 816 cf
Outflow = 0.02 cfs @ 18.95 hrs, Volume= 815 cf, Atten= 91%, Lag= 412.8 min
Discarded = 0.02 cfs @ 18.95 hrs, Volume= 815 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 91.91' @ 13.01 hrs Surf.Area= 384 sf Storage= 336 cf

Plug-Flow detention time= 139.8 min calculated for 815 cf (100% of inflow)
Center-of-Mass det. time= 139.2 min (894.4 - 755.1)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	320 cf	**Custom Stage Data (Irregular)**Listed below 800 cf Overall x 40.0% Voids
#2	91.00'	368 cf	**StormTech SC-740** x 8 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		688 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
90.00	200	60.0	0	0	200
94.00	200	60.0	800	800	440

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	90.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 18.95 hrs HW=91.01' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: Bank Roof Runoff Area=3,300 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.34 cfs 1,199 cf

Subcatchment 1S: Bank Parking Lot Runoff Area=36,670 sf 59.99% Impervious Runoff Depth>3.29"
Tc=5.0 min CN=88 Runoff=3.21 cfs 10,049 cf

Subcatchment 2S: 2 Runoff Area=40,900 sf 30.12% Impervious Runoff Depth>2.63"
Tc=5.0 min CN=81 Runoff=2.90 cfs 8,974 cf

Subcatchment 3S: 3 Runoff Area=15,276 sf 46.22% Impervious Runoff Depth>3.00"
Tc=5.0 min CN=85 Runoff=1.23 cfs 3,817 cf

Subcatchment 4S: 4 Runoff Area=27,561 sf 25.98% Impervious Runoff Depth>2.55"
Tc=5.0 min CN=80 Runoff=1.89 cfs 5,846 cf

Subcatchment 5S: 5 Runoff Area=31,726 sf 48.19% Impervious Runoff Depth>3.09"
Tc=5.0 min CN=86 Runoff=2.63 cfs 8,179 cf

Subcatchment 6S: 6 Runoff Area=88,490 sf 30.39% Impervious Runoff Depth>2.63"
Tc=5.0 min CN=81 Runoff=6.28 cfs 19,416 cf

Subcatchment 7S: 7 Runoff Area=135,220 sf 6.35% Impervious Runoff Depth>2.13"
Tc=5.0 min CN=75 Runoff=7.72 cfs 23,973 cf

Subcatchment 8S: 8 Runoff Area=33,927 sf 53.03% Impervious Runoff Depth>3.19"
Tc=5.0 min CN=87 Runoff=2.89 cfs 9,020 cf

Subcatchment 9S: 9 Runoff Area=80,516 sf 27.93% Impervious Runoff Depth>2.63"
Tc=5.0 min CN=81 Runoff=5.71 cfs 17,666 cf

Subcatchment 10S: 10 Runoff Area=35,520 sf 0.00% Impervious Runoff Depth>2.05"
Tc=5.0 min CN=74 Runoff=1.95 cfs 6,062 cf

Subcatchment 11S: 11 Runoff Area=118,427 sf 60.52% Impervious Runoff Depth>3.39"
Tc=5.0 min CN=89 Runoff=10.61 cfs 33,438 cf

Subcatchment 12S: 12 Runoff Area=18,515 sf 47.91% Impervious Runoff Depth>3.00"
Tc=5.0 min CN=85 Runoff=1.49 cfs 4,626 cf

Subcatchment 13S: 13 Runoff Area=10,954 sf 50.76% Impervious Runoff Depth>3.09"
Tc=5.0 min CN=86 Runoff=0.91 cfs 2,824 cf

Subcatchment 16S: 2A Runoff Area=17,160 sf 0.00% Impervious Runoff Depth>2.05"
Tc=5.0 min CN=74 Runoff=0.94 cfs 2,929 cf

Subcatchment 17S: landscape Runoff Area=3,128 sf 0.00% Impervious Runoff Depth>2.05"
Tc=5.0 min CN=74 Runoff=0.17 cfs 534 cf

Reach 1R: 18" RCP Avg. Flow Depth=0.54' Max Vel=6.57 fps Inflow=3.77 cfs 17,211 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0167 '/' Capacity=13.56 cfs Outflow=3.77 cfs 17,210 cf

Reach 2R: 18" RCP Avg. Flow Depth=1.33' Max Vel=5.12 fps Inflow=8.43 cfs 28,656 cf
18.0" Round Pipe n=0.013 L=35.0' S=0.0057 '/' Capacity=7.94 cfs Outflow=8.38 cfs 28,653 cf

Reach 3R: 18" RCP Avg. Flow Depth=0.99' Max Vel=4.64 fps Inflow=5.81 cfs 18,629 cf
18.0" Round Pipe n=0.013 L=340.0' S=0.0050 '/' Capacity=7.43 cfs Outflow=5.48 cfs 18,607 cf

Reach 4R: 12" RCP Avg. Flow Depth=0.70' Max Vel=3.21 fps Inflow=1.89 cfs 5,846 cf
12.0" Round Pipe n=0.013 L=240.0' S=0.0040 '/' Capacity=2.25 cfs Outflow=1.79 cfs 5,838 cf

Reach 5R: 15" RCP Avg. Flow Depth=0.60' Max Vel=4.48 fps Inflow=2.63 cfs 8,179 cf
15.0" Round Pipe n=0.013 L=240.0' S=0.0075 '/' Capacity=5.59 cfs Outflow=2.53 cfs 8,172 cf

Reach 6R: 18" RCP Avg. Flow Depth=0.64' Max Vel=3.97 fps Inflow=2.89 cfs 9,020 cf
18.0" Round Pipe n=0.013 L=204.0' S=0.0051 '/' Capacity=7.54 cfs Outflow=2.78 cfs 9,012 cf

Reach 7R: 18" RCP Avg. Flow Depth=1.07' Max Vel=6.67 fps Inflow=9.00 cfs 28,428 cf
18.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=10.50 cfs Outflow=8.98 cfs 28,426 cf

Reach 8R: 24" RCP Avg. Flow Depth=1.12' Max Vel=6.35 fps Inflow=11.48 cfs 36,598 cf
24.0" Round Pipe n=0.013 L=107.0' S=0.0071 '/' Capacity=19.07 cfs Outflow=11.37 cfs 36,588 cf

Reach 9R: 21" RCP Avg. Flow Depth=0.88' Max Vel=6.60 fps Inflow=8.00 cfs 39,132 cf
21.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=15.85 cfs Outflow=7.99 cfs 39,129 cf

Reach 10R: DESIGN POINT #4 Inflow=13.97 cfs 63,102 cf
Outflow=13.97 cfs 63,102 cf

Reach 11R: 18" RCP Avg. Flow Depth=0.73' Max Vel=6.69 fps Inflow=5.71 cfs 17,666 cf
18.0" Round Pipe n=0.013 L=80.0' S=0.0131 '/' Capacity=12.03 cfs Outflow=5.68 cfs 17,663 cf

Reach 12R: 18" RCP Avg. Flow Depth=0.42' Max Vel=8.10 fps Inflow=3.29 cfs 12,588 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0333 '/' Capacity=19.18 cfs Outflow=3.29 cfs 12,588 cf

Reach 13R: 12" RCP Avg. Flow Depth=0.40' Max Vel=2.97 fps Inflow=0.91 cfs 2,824 cf
12.0" Round Pipe n=0.013 L=370.0' S=0.0053 '/' Capacity=2.59 cfs Outflow=0.84 cfs 2,818 cf

Reach 14R: 24" RCP Avg. Flow Depth=1.30' Max Vel=5.60 fps Inflow=12.15 cfs 39,407 cf
24.0" Round Pipe n=0.013 L=30.0' S=0.0050 '/' Capacity=16.00 cfs Outflow=12.10 cfs 39,403 cf

Reach 15R: 10" CLAY Avg. Flow Depth=0.52' Max Vel=4.00 fps Inflow=1.49 cfs 4,626 cf
10.0" Round Pipe n=0.013 L=490.0' S=0.0084 '/' Capacity=2.01 cfs Outflow=1.38 cfs 4,618 cf

Reach 16R: DESIGN POINT #3 Inflow=11.67 cfs 38,056 cf
Outflow=11.67 cfs 38,056 cf

Pond 1P: POND #1 Peak Elev=97.18' Storage=9,462 cf Inflow=9.29 cfs 31,582 cf
Discarded=0.27 cfs 14,150 cf Primary=3.70 cfs 16,677 cf Outflow=3.97 cfs 30,827 cf

Pond 3P: POND #3 Peak Elev=95.35' Storage=5,881 cf Inflow=12.10 cfs 39,403 cf
Outflow=8.00 cfs 39,132 cf

Pond 5P: POND #2 Peak Elev=94.75' Storage=5,906 cf Inflow=7.62 cfs 23,725 cf
Discarded=0.26 cfs 11,048 cf Primary=3.29 cfs 12,588 cf Outflow=3.55 cfs 23,636 cf

Pond 15P: RC Peak Elev=93.02' Storage=588 cf Inflow=0.34 cfs 1,199 cf
Discarded=0.02 cfs 1,000 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 1,000 cf

Summary for Subcatchment 1A: Bank Roof

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 1,199 cf, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	3,300	98	Bank Roof
	3,300		100.00% Impervious Area

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

Summary for Subcatchment 1S: Bank Parking Lot

Runoff = 3.21 cfs @ 12.07 hrs, Volume= 10,049 cf, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
22,000	98	Paved parking & roofs
14,670	74	>75% Grass cover, Good, HSG C
36,670	88	Weighted Average
14,670		40.01% Pervious Area
22,000		59.99% Impervious Area

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

Summary for Subcatchment 2S: 2

Runoff = 2.90 cfs @ 12.08 hrs, Volume= 8,974 cf, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
11,778	98	Paved parking & roofs
28,582	74	>75% Grass cover, Good, HSG C
540	98	Paved parking & roofs
40,900	81	Weighted Average
28,582		69.88% Pervious Area
12,318		30.12% Impervious Area

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

Summary for Subcatchment 3S: 3

Runoff = 1.23 cfs @ 12.07 hrs, Volume= 3,817 cf, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	7,060	98	
*	8,216	74	
	15,276	85	Weighted Average
	8,216		53.78% Pervious Area
	7,060		46.22% Impervious Area

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

Summary for Subcatchment 4S: 4

Runoff = 1.89 cfs @ 12.08 hrs, Volume= 5,846 cf, Depth> 2.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	7,160	98	
*	20,401	74	
	27,561	80	Weighted Average
	20,401		74.02% Pervious Area
	7,160		25.98% Impervious Area

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

Summary for Subcatchment 5S: 5

Runoff = 2.63 cfs @ 12.07 hrs, Volume= 8,179 cf, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	15,290	98	
*	16,436	74	
	31,726	86	Weighted Average
	16,436		51.81% Pervious Area
	15,290		48.19% Impervious Area

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

Summary for Subcatchment 6S: 6

Runoff = 6.28 cfs @ 12.08 hrs, Volume= 19,416 cf, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	26,890	98	
*	61,600	74	
	88,490	81	Weighted Average
	61,600		69.61% Pervious Area
	26,890		30.39% Impervious Area

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

Summary for Subcatchment 7S: 7

Runoff = 7.72 cfs @ 12.08 hrs, Volume= 23,973 cf, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	8,590	98	
	73,262	74	>75% Grass cover, Good, HSG C
	53,368	73	Woods, Fair, HSG C
	135,220	75	Weighted Average
	126,630		93.65% Pervious Area
	8,590		6.35% Impervious Area

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

Summary for Subcatchment 8S: 8

Runoff = 2.89 cfs @ 12.07 hrs, Volume= 9,020 cf, Depth> 3.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	17,990	98	
*	15,937	74	
	33,927	87	Weighted Average
	15,937		46.97% Pervious Area
	17,990		53.03% Impervious Area

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

Summary for Subcatchment 9S: 9

Runoff = 5.71 cfs @ 12.08 hrs, Volume= 17,666 cf, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	22,490	98	
*	58,026	74	
	80,516	81	Weighted Average
	58,026		72.07% Pervious Area
	22,490		27.93% Impervious Area

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

Summary for Subcatchment 10S: 10

Runoff = 1.95 cfs @ 12.08 hrs, Volume= 6,062 cf, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	6,648	74	
*	28,872	74	
	35,520	74	Weighted Average
	35,520		100.00% Pervious Area

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

Summary for Subcatchment 11S: 11

Runoff = 10.61 cfs @ 12.07 hrs, Volume= 33,438 cf, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	71,670	98	
*	43,932	74	
*	2,825	73	
	118,427	89	Weighted Average
	46,757		39.48% Pervious Area
	71,670		60.52% Impervious Area

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

Summary for Subcatchment 12S: 12

Runoff = 1.49 cfs @ 12.07 hrs, Volume= 4,626 cf, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	8,870	98	Pvmt
*	9,645	74	grass
	18,515	85	Weighted Average
	9,645		52.09% Pervious Area
	8,870		47.91% Impervious Area

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

Summary for Subcatchment 13S: 13

Runoff = 0.91 cfs @ 12.07 hrs, Volume= 2,824 cf, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

	Area (sf)	CN	Description
*	5,560	98	
*	5,394	74	
	10,954	86	Weighted Average
	5,394		49.24% Pervious Area
	5,560		50.76% Impervious Area

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

Summary for Subcatchment 16S: 2A

Runoff = 0.94 cfs @ 12.08 hrs, Volume= 2,929 cf, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
17,160	74	>75% Grass cover, Good, HSG C
17,160		100.00% Pervious Area

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

Summary for Subcatchment 17S: landscape

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 534 cf, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Event Rainfall=4.60"

Area (sf)	CN	Description
3,128	74	>75% Grass cover, Good, HSG C
3,128		100.00% Pervious Area

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

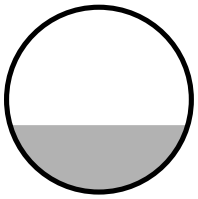
Summary for Reach 1R: 18" RCP

Inflow Area = 143,995 sf, 36.00% Impervious, Inflow Depth > 1.43" for 10 Year Event event
Inflow = 3.77 cfs @ 12.35 hrs, Volume= 17,211 cf
Outflow = 3.77 cfs @ 12.36 hrs, Volume= 17,210 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.57 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.03 fps, Avg. Travel Time= 0.5 min

Peak Storage= 34 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.56 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0167 '/'
Inlet Invert= 94.00', Outlet Invert= 93.00'



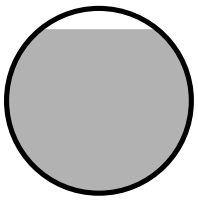
Summary for Reach 2R: 18" RCP

Inflow Area = 120,407 sf, 40.31% Impervious, Inflow Depth > 2.86" for 10 Year Event event
Inflow = 8.43 cfs @ 12.11 hrs, Volume= 28,656 cf
Outflow = 8.38 cfs @ 12.11 hrs, Volume= 28,653 cf, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 0.3 min

Peak Storage= 58 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.94 cfs

18.0" Round Pipe
n= 0.013
Length= 35.0' Slope= 0.0057 '/'
Inlet Invert= 95.65', Outlet Invert= 95.45'



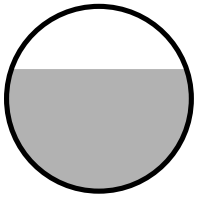
Summary for Reach 3R: 18" RCP

Inflow Area = 83,737 sf, 31.69% Impervious, Inflow Depth > 2.67" for 10 Year Event event
Inflow = 5.81 cfs @ 12.09 hrs, Volume= 18,629 cf
Outflow = 5.48 cfs @ 12.13 hrs, Volume= 18,607 cf, Atten= 6%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.64 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 3.4 min

Peak Storage= 421 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.99'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.43 cfs

18.0" Round Pipe
n= 0.013
Length= 340.0' Slope= 0.0050 '/'
Inlet Invert= 97.05', Outlet Invert= 95.35'



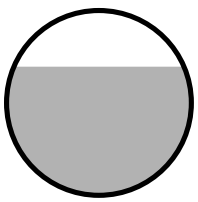
Summary for Reach 4R: 12" RCP

Inflow Area = 27,561 sf, 25.98% Impervious, Inflow Depth > 2.55" for 10 Year Event event
Inflow = 1.89 cfs @ 12.08 hrs, Volume= 5,846 cf
Outflow = 1.79 cfs @ 12.12 hrs, Volume= 5,838 cf, Atten= 5%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 3.3 min

Peak Storage= 140 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.25 cfs

12.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0040 '/'
Inlet Invert= 98.01', Outlet Invert= 97.05'



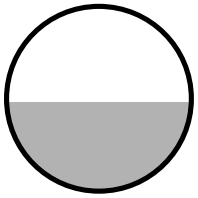
Summary for Reach 5R: 15" RCP

Inflow Area = 31,726 sf, 48.19% Impervious, Inflow Depth > 3.09" for 10 Year Event event
Inflow = 2.63 cfs @ 12.07 hrs, Volume= 8,179 cf
Outflow = 2.53 cfs @ 12.10 hrs, Volume= 8,172 cf, Atten= 4%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.48 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 2.6 min

Peak Storage= 140 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.59 cfs

15.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0075 '/'
Inlet Invert= 96.16', Outlet Invert= 94.36'



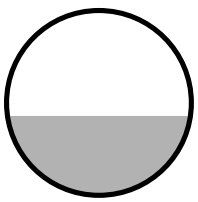
Summary for Reach 6R: 18" RCP

Inflow Area = 33,927 sf, 53.03% Impervious, Inflow Depth > 3.19" for 10 Year Event event
Inflow = 2.89 cfs @ 12.07 hrs, Volume= 9,020 cf
Outflow = 2.78 cfs @ 12.10 hrs, Volume= 9,012 cf, Atten= 4%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.97 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 2.5 min

Peak Storage= 147 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.54 cfs

18.0" Round Pipe
n= 0.013
Length= 204.0' Slope= 0.0051 '/'
Inlet Invert= 95.35', Outlet Invert= 94.30'



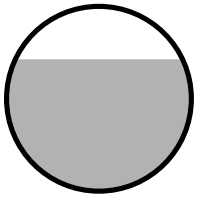
Summary for Reach 7R: 18" RCP

Inflow Area = 122,417 sf, 36.66% Impervious, Inflow Depth > 2.79" for 10 Year Event event
Inflow = 9.00 cfs @ 12.09 hrs, Volume= 28,428 cf
Outflow = 8.98 cfs @ 12.09 hrs, Volume= 28,426 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.37 fps, Avg. Travel Time= 0.2 min

Peak Storage= 40 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.07'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 94.20', Outlet Invert= 93.90'



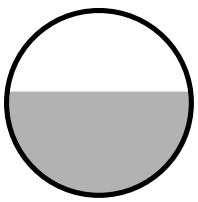
Summary for Reach 8R: 24" RCP

Inflow Area = 154,143 sf, 39.04% Impervious, Inflow Depth > 2.85" for 10 Year Event event
Inflow = 11.48 cfs @ 12.09 hrs, Volume= 36,598 cf
Outflow = 11.37 cfs @ 12.10 hrs, Volume= 36,588 cf, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.35 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.20 fps, Avg. Travel Time= 0.8 min

Peak Storage= 194 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.12'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.07 cfs

24.0" Round Pipe
n= 0.013
Length= 107.0' Slope= 0.0071 '/'
Inlet Invert= 93.61', Outlet Invert= 92.85'



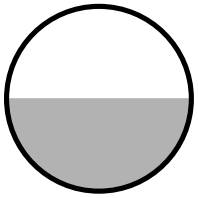
Summary for Reach 9R: 21" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 2.84" for 10 Year Event event
Inflow = 8.00 cfs @ 12.21 hrs, Volume= 39,132 cf
Outflow = 7.99 cfs @ 12.21 hrs, Volume= 39,129 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.60 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.58 fps, Avg. Travel Time= 0.2 min

Peak Storage= 36 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 1.75' Flow Area= 2.4 sf, Capacity= 15.85 cfs

21.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 92.30', Outlet Invert= 92.00'



Summary for Reach 10R: DESIGN POINT #4

Inflow Area = 300,317 sf, 24.75% Impervious, Inflow Depth > 2.52" for 10 Year Event event
Inflow = 13.97 cfs @ 12.11 hrs, Volume= 63,102 cf
Outflow = 13.97 cfs @ 12.11 hrs, Volume= 63,102 cf, Atten= 0%, Lag= 0.0 min

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

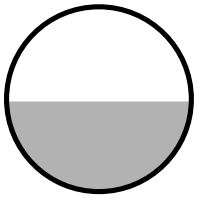
Summary for Reach 11R: 18" RCP

Inflow Area = 80,516 sf, 27.93% Impervious, Inflow Depth > 2.63" for 10 Year Event event
Inflow = 5.71 cfs @ 12.08 hrs, Volume= 17,666 cf
Outflow = 5.68 cfs @ 12.08 hrs, Volume= 17,663 cf, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.69 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.42 fps, Avg. Travel Time= 0.6 min

Peak Storage= 68 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.03 cfs

18.0" Round Pipe
n= 0.013
Length= 80.0' Slope= 0.0131 '/'
Inlet Invert= 94.05', Outlet Invert= 93.00'



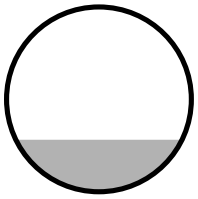
Summary for Reach 12R: 18" RCP

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth = 1.30" for 10 Year Event event
Inflow = 3.29 cfs @ 12.27 hrs, Volume= 12,588 cf
Outflow = 3.29 cfs @ 12.28 hrs, Volume= 12,588 cf, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.78 fps, Avg. Travel Time= 0.3 min

Peak Storage= 24 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 19.18 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 92.00', Outlet Invert= 90.00'



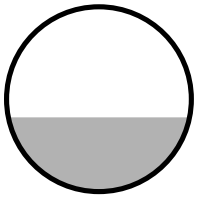
Summary for Reach 13R: 12" RCP

Inflow Area = 10,954 sf, 50.76% Impervious, Inflow Depth > 3.09" for 10 Year Event event
Inflow = 0.91 cfs @ 12.07 hrs, Volume= 2,824 cf
Outflow = 0.84 cfs @ 12.14 hrs, Volume= 2,818 cf, Atten= 7%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 6.0 min

Peak Storage= 109 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.59 cfs

12.0" Round Pipe
n= 0.013
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 94.90', Outlet Invert= 92.95'



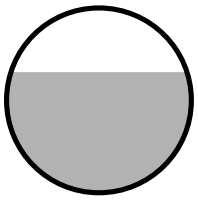
Summary for Reach 14R: 24" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 2.86" for 10 Year Event event
Inflow = 12.15 cfs @ 12.10 hrs, Volume= 39,407 cf
Outflow = 12.10 cfs @ 12.10 hrs, Volume= 39,403 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.60 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 0.3 min

Peak Storage= 65 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.30'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 16.00 cfs

24.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 92.65', Outlet Invert= 92.50'



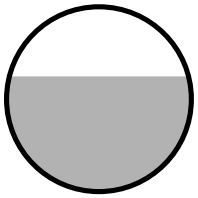
Summary for Reach 15R: 10" CLAY

Inflow Area = 18,515 sf, 47.91% Impervious, Inflow Depth > 3.00" for 10 Year Event event
Inflow = 1.49 cfs @ 12.07 hrs, Volume= 4,626 cf
Outflow = 1.38 cfs @ 12.14 hrs, Volume= 4,618 cf, Atten= 8%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 5.6 min

Peak Storage= 175 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.01 cfs

10.0" Round Pipe
n= 0.013
Length= 490.0' Slope= 0.0084 '/'
Inlet Invert= 89.23', Outlet Invert= 85.10'



Summary for Reach 16R: DESIGN POINT #3

Inflow Area = 136,942 sf, 58.81% Impervious, Inflow Depth > 3.33" for 10 Year Event event
Inflow = 11.67 cfs @ 12.08 hrs, Volume= 38,056 cf
Outflow = 11.67 cfs @ 12.08 hrs, Volume= 38,056 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 1P: POND #1

Inflow Area = 137,567 sf, 35.28% Impervious, Inflow Depth > 2.75" for 10 Year Event event
Inflow = 9.29 cfs @ 12.11 hrs, Volume= 31,582 cf
Outflow = 3.97 cfs @ 12.36 hrs, Volume= 30,827 cf, Atten= 57%, Lag= 15.2 min
Discarded = 0.27 cfs @ 10.50 hrs, Volume= 14,150 cf
Primary = 3.70 cfs @ 12.36 hrs, Volume= 16,677 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 97.18' @ 12.36 hrs Surf.Area= 5,325 sf Storage= 9,462 cf

Plug-Flow detention time= 85.4 min calculated for 30,763 cf (97% of inflow)
Center-of-Mass det. time= 71.5 min (889.1 - 817.6)

Volume	Invert	Avail.Storage	Storage Description
#1	95.40'	11,746 cf	**Custom Stage Data (Irregular)**Listed below 18,638 cf Overall - 6,891 cf Embedded = 11,746 cf
#2	95.90'	6,891 cf	**StormTech SC-740** x 150 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		18,638 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.40	5,325	292.0	0	0	5,325
98.90	5,325	292.0	18,638	18,638	6,347

Device	Routing	Invert	Outlet Devices
#1	Primary	95.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	96.30'	**11.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	95.40'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.27 cfs @ 10.50 hrs HW=95.44' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=3.70 cfs @ 12.36 hrs HW=97.18' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 1.63 cfs @ 4.67 fps)
└**2=Orifice/Grate** (Orifice Controls 2.07 cfs @ 3.19 fps)

Summary for Pond 3P: POND #3

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 2.86" for 10 Year Event event
Inflow = 12.10 cfs @ 12.10 hrs, Volume= 39,403 cf
Outflow = 8.00 cfs @ 12.21 hrs, Volume= 39,132 cf, Atten= 34%, Lag= 6.5 min
Primary = 8.00 cfs @ 12.21 hrs, Volume= 39,132 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.35' @ 12.21 hrs Surf.Area= 2,872 sf Storage= 5,881 cf

Plug-Flow detention time= 16.3 min calculated for 39,051 cf (99% of inflow)
Center-of-Mass det. time= 12.2 min (827.3 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	92.50'	11,508 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	1,307	189.0	0	0	1,307
93.00	1,547	197.0	713	713	1,571
94.00	2,058	212.0	1,796	2,509	2,100
95.00	2,607	230.0	2,327	4,836	2,771
96.00	3,363	261.0	2,977	7,813	4,007
97.00	4,037	277.0	3,695	11,508	4,743

Device	Routing	Invert	Outlet Devices
#1	Primary	92.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.0' Crest Height
#3	Primary	96.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.95 cfs @ 12.21 hrs HW=95.34' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 4.09 cfs @ 7.49 fps)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.86 cfs @ 3.94 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 5P: POND #2

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth > 2.45" for 10 Year Event event
Inflow = 7.62 cfs @ 12.08 hrs, Volume= 23,725 cf
Outflow = 3.55 cfs @ 12.27 hrs, Volume= 23,636 cf, Atten= 53%, Lag= 11.2 min
Discarded = 0.26 cfs @ 11.10 hrs, Volume= 11,048 cf
Primary = 3.29 cfs @ 12.27 hrs, Volume= 12,588 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 94.75' @ 12.27 hrs Surf.Area= 5,143 sf Storage= 5,906 cf

Plug-Flow detention time= 44.6 min calculated for 23,587 cf (99% of inflow)
Center-of-Mass det. time= 42.3 min (868.8 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	22,353 cf	**Custom Stage Data (Irregular)**Listed below 61,716 cf Overall - 5,834 cf Embedded = 55,882 cf x 40.0% Voids
#2	93.50'	5,834 cf	**StormTech SC-740** x 127 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		28,187 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	5,143	340.0	0	0	5,143
105.00	5,143	340.0	61,716	61,716	9,223

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**9.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	93.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.26 cfs @ 11.10 hrs HW=93.12' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=3.28 cfs @ 12.27 hrs HW=94.75' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 1.98 cfs @ 4.49 fps)
└**2=Orifice/Grate** (Orifice Controls 1.30 cfs @ 2.94 fps)

Summary for Pond 15P: RC

Inflow Area = 3,300 sf,100.00% Impervious, Inflow Depth > 4.36" for 10 Year Event event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 1,199 cf
Outflow = 0.02 cfs @ 11.40 hrs, Volume= 1,000 cf, Atten= 94%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.40 hrs, Volume= 1,000 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.02' @ 14.69 hrs Surf.Area= 294 sf Storage= 588 cf

Plug-Flow detention time= 271.9 min calculated for 998 cf (83% of inflow)
Center-of-Mass det. time= 203.5 min (951.7 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	320 cf	**Custom Stage Data (Irregular)**Listed below 800 cf Overall x 40.0% Voids
#2	91.00'	368 cf	**StormTech SC-740** x 8 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		688 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
90.00	200	60.0	0	0	200
94.00	200	60.0	800	800	440

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	90.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.40 hrs HW=91.01' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: Bank Roof Runoff Area=3,300 sf 100.00% Impervious Runoff Depth>5.36"
Tc=5.0 min CN=98 Runoff=0.42 cfs 1,474 cf

Subcatchment 1S: Bank Parking Lot Runoff Area=36,670 sf 59.99% Impervious Runoff Depth>4.24"
Tc=5.0 min CN=88 Runoff=4.09 cfs 12,954 cf

Subcatchment 2S: 2 Runoff Area=40,900 sf 30.12% Impervious Runoff Depth>3.52"
Tc=5.0 min CN=81 Runoff=3.86 cfs 11,993 cf

Subcatchment 3S: 3 Runoff Area=15,276 sf 46.22% Impervious Runoff Depth>3.92"
Tc=5.0 min CN=85 Runoff=1.60 cfs 4,995 cf

Subcatchment 4S: 4 Runoff Area=27,561 sf 25.98% Impervious Runoff Depth>3.42"
Tc=5.0 min CN=80 Runoff=2.53 cfs 7,855 cf

Subcatchment 5S: 5 Runoff Area=31,726 sf 48.19% Impervious Runoff Depth>4.03"
Tc=5.0 min CN=86 Runoff=3.39 cfs 10,650 cf

Subcatchment 6S: 6 Runoff Area=88,490 sf 30.39% Impervious Runoff Depth>3.52"
Tc=5.0 min CN=81 Runoff=8.35 cfs 25,949 cf

Subcatchment 7S: 7 Runoff Area=135,220 sf 6.35% Impervious Runoff Depth>2.94"
Tc=5.0 min CN=75 Runoff=10.72 cfs 33,151 cf

Subcatchment 8S: 8 Runoff Area=33,927 sf 53.03% Impervious Runoff Depth>4.13"
Tc=5.0 min CN=87 Runoff=3.71 cfs 11,685 cf

Subcatchment 9S: 9 Runoff Area=80,516 sf 27.93% Impervious Runoff Depth>3.52"
Tc=5.0 min CN=81 Runoff=7.60 cfs 23,610 cf

Subcatchment 10S: 10 Runoff Area=35,520 sf 0.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=74 Runoff=2.73 cfs 8,434 cf

Subcatchment 11S: 11 Runoff Area=118,427 sf 60.52% Impervious Runoff Depth>4.35"
Tc=5.0 min CN=89 Runoff=13.44 cfs 42,893 cf

Subcatchment 12S: 12 Runoff Area=18,515 sf 47.91% Impervious Runoff Depth>3.92"
Tc=5.0 min CN=85 Runoff=1.94 cfs 6,055 cf

Subcatchment 13S: 13 Runoff Area=10,954 sf 50.76% Impervious Runoff Depth>4.03"
Tc=5.0 min CN=86 Runoff=1.17 cfs 3,677 cf

Subcatchment 16S: 2A Runoff Area=17,160 sf 0.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=74 Runoff=1.32 cfs 4,075 cf

Subcatchment 17S: landscape Runoff Area=3,128 sf 0.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=74 Runoff=0.24 cfs 743 cf

Reach 1R: 18" RCP Avg. Flow Depth=0.65' Max Vel=7.20 fps Inflow=5.30 cfs 26,190 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0167 '/' Capacity=13.56 cfs Outflow=5.30 cfs 26,189 cf

Reach 2R: 18" RCP Avg. Flow Depth=1.50' Max Vel=5.08 fps Inflow=10.96 cfs 37,763 cf
18.0" Round Pipe n=0.013 L=35.0' S=0.0057 '/' Capacity=7.94 cfs Outflow=7.94 cfs 37,759 cf

Reach 3R: 18" RCP Avg. Flow Depth=1.24' Max Vel=4.79 fps Inflow=7.57 cfs 24,835 cf
18.0" Round Pipe n=0.013 L=340.0' S=0.0050 '/' Capacity=7.43 cfs Outflow=7.23 cfs 24,809 cf

Reach 4R: 12" RCP Avg. Flow Depth=1.00' Max Vel=3.27 fps Inflow=2.53 cfs 7,855 cf
12.0" Round Pipe n=0.013 L=240.0' S=0.0040 '/' Capacity=2.25 cfs Outflow=2.30 cfs 7,846 cf

Reach 5R: 15" RCP Avg. Flow Depth=0.70' Max Vel=4.76 fps Inflow=3.39 cfs 10,650 cf
15.0" Round Pipe n=0.013 L=240.0' S=0.0075 '/' Capacity=5.59 cfs Outflow=3.27 cfs 10,642 cf

Reach 6R: 18" RCP Avg. Flow Depth=0.74' Max Vel=4.23 fps Inflow=3.71 cfs 11,685 cf
18.0" Round Pipe n=0.013 L=204.0' S=0.0051 '/' Capacity=7.54 cfs Outflow=3.57 cfs 11,677 cf

Reach 7R: 18" RCP Avg. Flow Depth=1.50' Max Vel=6.78 fps Inflow=11.84 cfs 37,625 cf
18.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=10.50 cfs Outflow=11.27 cfs 37,623 cf

Reach 8R: 24" RCP Avg. Flow Depth=1.28' Max Vel=6.63 fps Inflow=13.86 cfs 48,265 cf
24.0" Round Pipe n=0.013 L=107.0' S=0.0071 '/' Capacity=19.07 cfs Outflow=13.97 cfs 48,253 cf

Reach 9R: 21" RCP Avg. Flow Depth=1.03' Max Vel=7.02 fps Inflow=10.35 cfs 51,614 cf
21.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=15.85 cfs Outflow=10.35 cfs 51,611 cf

Reach 10R: DESIGN POINT #4 Inflow=18.84 cfs 84,762 cf
Outflow=18.84 cfs 84,762 cf

Reach 11R: 18" RCP Avg. Flow Depth=0.87' Max Vel=7.17 fps Inflow=7.60 cfs 23,610 cf
18.0" Round Pipe n=0.013 L=80.0' S=0.0131 '/' Capacity=12.03 cfs Outflow=7.55 cfs 23,606 cf

Reach 12R: 18" RCP Avg. Flow Depth=0.50' Max Vel=8.91 fps Inflow=4.59 cfs 19,289 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0333 '/' Capacity=19.18 cfs Outflow=4.59 cfs 19,289 cf

Reach 13R: 12" RCP Avg. Flow Depth=0.46' Max Vel=3.18 fps Inflow=1.17 cfs 3,677 cf
12.0" Round Pipe n=0.013 L=370.0' S=0.0053 '/' Capacity=2.59 cfs Outflow=1.08 cfs 3,670 cf

Reach 14R: 24" RCP Avg. Flow Depth=1.54' Max Vel=5.79 fps Inflow=15.00 cfs 51,923 cf
24.0" Round Pipe n=0.013 L=30.0' S=0.0050 '/' Capacity=16.00 cfs Outflow=15.03 cfs 51,919 cf

Reach 15R: 10" CLAY Avg. Flow Depth=0.63' Max Vel=4.18 fps Inflow=1.94 cfs 6,055 cf
10.0" Round Pipe n=0.013 L=490.0' S=0.0084 '/' Capacity=2.01 cfs Outflow=1.78 cfs 6,044 cf

Reach 16R: DESIGN POINT #3 Inflow=14.84 cfs 48,937 cf
Outflow=14.84 cfs 48,937 cf

Pond 1P: POND #1 Peak Elev=97.74' Storage=12,479 cf Inflow=9.25 cfs 41,834 cf
Discarded=0.27 cfs 14,869 cf Primary=5.22 cfs 25,300 cf Outflow=5.49 cfs 40,169 cf

Pond 3P: POND #3 Peak Elev=95.95' Storage=7,679 cf Inflow=15.03 cfs 51,919 cf
Outflow=10.35 cfs 51,614 cf

Pond 5P: POND #2 Peak Elev=95.30' Storage=7,814 cf Inflow=10.28 cfs 32,040 cf
Discarded=0.26 cfs 12,639 cf Primary=4.59 cfs 19,289 cf Outflow=4.85 cfs 31,928 cf

Pond 15P: RC Peak Elev=93.65' Storage=659 cf Inflow=0.42 cfs 1,474 cf
Discarded=0.02 cfs 904 cf Primary=0.06 cfs 147 cf Outflow=0.07 cfs 1,052 cf

Summary for Subcatchment 1A: Bank Roof

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 1,474 cf, Depth> 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	3,300	98	Bank Roof
	3,300		100.00% Impervious Area

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

Summary for Subcatchment 1S: Bank Parking Lot

Runoff = 4.09 cfs @ 12.07 hrs, Volume= 12,954 cf, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
22,000	98	Paved parking & roofs
14,670	74	>75% Grass cover, Good, HSG C
36,670	88	Weighted Average
14,670		40.01% Pervious Area
22,000		59.99% Impervious Area

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

Summary for Subcatchment 2S: 2

Runoff = 3.86 cfs @ 12.08 hrs, Volume= 11,993 cf, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
11,778	98	Paved parking & roofs
28,582	74	>75% Grass cover, Good, HSG C
540	98	Paved parking & roofs
40,900	81	Weighted Average
28,582		69.88% Pervious Area
12,318		30.12% Impervious Area

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

Summary for Subcatchment 3S: 3

Runoff = 1.60 cfs @ 12.07 hrs, Volume= 4,995 cf, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	7,060	98	
*	8,216	74	
	15,276	85	Weighted Average
	8,216		53.78% Pervious Area
	7,060		46.22% Impervious Area

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

Summary for Subcatchment 4S: 4

Runoff = 2.53 cfs @ 12.08 hrs, Volume= 7,855 cf, Depth> 3.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	7,160	98	
*	20,401	74	
	27,561	80	Weighted Average
	20,401		74.02% Pervious Area
	7,160		25.98% Impervious Area

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

Summary for Subcatchment 5S: 5

Runoff = 3.39 cfs @ 12.07 hrs, Volume= 10,650 cf, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	15,290	98	
*	16,436	74	
	31,726	86	Weighted Average
	16,436		51.81% Pervious Area
	15,290		48.19% Impervious Area

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

Summary for Subcatchment 6S: 6

Runoff = 8.35 cfs @ 12.08 hrs, Volume= 25,949 cf, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	26,890	98	
*	61,600	74	
	88,490	81	Weighted Average
	61,600		69.61% Pervious Area
	26,890		30.39% Impervious Area

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

Summary for Subcatchment 7S: 7

Runoff = 10.72 cfs @ 12.08 hrs, Volume= 33,151 cf, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	8,590	98	
	73,262	74	>75% Grass cover, Good, HSG C
	53,368	73	Woods, Fair, HSG C
	135,220	75	Weighted Average
	126,630		93.65% Pervious Area
	8,590		6.35% Impervious Area

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

Summary for Subcatchment 8S: 8

Runoff = 3.71 cfs @ 12.07 hrs, Volume= 11,685 cf, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	17,990	98	
*	15,937	74	
	33,927	87	Weighted Average
	15,937		46.97% Pervious Area
	17,990		53.03% Impervious Area

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

Summary for Subcatchment 9S: 9

Runoff = 7.60 cfs @ 12.08 hrs, Volume= 23,610 cf, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	22,490	98	
*	58,026	74	
	80,516	81	Weighted Average
	58,026		72.07% Pervious Area
	22,490		27.93% Impervious Area

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

Summary for Subcatchment 10S: 10

Runoff = 2.73 cfs @ 12.08 hrs, Volume= 8,434 cf, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	6,648	74	
*	28,872	74	
	35,520	74	Weighted Average
	35,520		100.00% Pervious Area

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

Summary for Subcatchment 11S: 11

Runoff = 13.44 cfs @ 12.07 hrs, Volume= 42,893 cf, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	71,670	98	
*	43,932	74	
*	2,825	73	
	118,427	89	Weighted Average
	46,757		39.48% Pervious Area
	71,670		60.52% Impervious Area

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

Summary for Subcatchment 12S: 12

Runoff = 1.94 cfs @ 12.07 hrs, Volume= 6,055 cf, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	8,870	98	Pvmt
*	9,645	74	grass
	18,515	85	Weighted Average
	9,645		52.09% Pervious Area
	8,870		47.91% Impervious Area

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

Summary for Subcatchment 13S: 13

Runoff = 1.17 cfs @ 12.07 hrs, Volume= 3,677 cf, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

	Area (sf)	CN	Description
*	5,560	98	
*	5,394	74	
	10,954	86	Weighted Average
	5,394		49.24% Pervious Area
	5,560		50.76% Impervious Area

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

Summary for Subcatchment 16S: 2A

Runoff = 1.32 cfs @ 12.08 hrs, Volume= 4,075 cf, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
17,160	74	>75% Grass cover, Good, HSG C
17,160		100.00% Pervious Area

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

Summary for Subcatchment 17S: landscape

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 743 cf, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year Event Rainfall=5.60"

Area (sf)	CN	Description
3,128	74	>75% Grass cover, Good, HSG C
3,128		100.00% Pervious Area

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

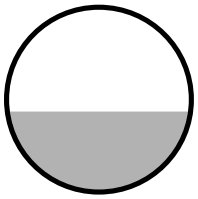
Summary for Reach 1R: 18" RCP

Inflow Area = 143,995 sf, 36.00% Impervious, Inflow Depth > 2.18" for 25 Year Event event
Inflow = 5.30 cfs @ 12.39 hrs, Volume= 26,190 cf
Outflow = 5.30 cfs @ 12.39 hrs, Volume= 26,189 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.20 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.31 fps, Avg. Travel Time= 0.4 min

Peak Storage= 44 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.56 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0167 '/'
Inlet Invert= 94.00', Outlet Invert= 93.00'



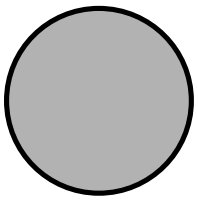
Summary for Reach 2R: 18" RCP

Inflow Area = 120,407 sf, 40.31% Impervious, Inflow Depth > 3.76" for 25 Year Event event
Inflow = 10.96 cfs @ 12.10 hrs, Volume= 37,763 cf
Outflow = 7.94 cfs @ 12.10 hrs, Volume= 37,759 cf, Atten= 28%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.08 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.3 min

Peak Storage= 62 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.94 cfs

18.0" Round Pipe
n= 0.013
Length= 35.0' Slope= 0.0057 '/'
Inlet Invert= 95.65', Outlet Invert= 95.45'



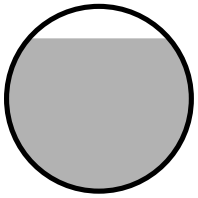
Summary for Reach 3R: 18" RCP

Inflow Area = 83,737 sf, 31.69% Impervious, Inflow Depth > 3.56" for 25 Year Event event
Inflow = 7.57 cfs @ 12.09 hrs, Volume= 24,835 cf
Outflow = 7.23 cfs @ 12.12 hrs, Volume= 24,809 cf, Atten= 5%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.79 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 3.2 min

Peak Storage= 531 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.24'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.43 cfs

18.0" Round Pipe
n= 0.013
Length= 340.0' Slope= 0.0050 '/'
Inlet Invert= 97.05', Outlet Invert= 95.35'



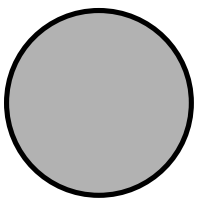
Summary for Reach 4R: 12" RCP

Inflow Area = 27,561 sf, 25.98% Impervious, Inflow Depth > 3.42" for 25 Year Event event
Inflow = 2.53 cfs @ 12.08 hrs, Volume= 7,855 cf
Outflow = 2.30 cfs @ 12.13 hrs, Volume= 7,846 cf, Atten= 9%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.27 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 3.1 min

Peak Storage= 189 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.25 cfs

12.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0040 '/'
Inlet Invert= 98.01', Outlet Invert= 97.05'



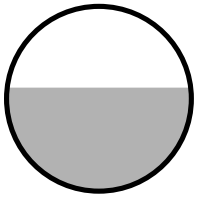
Summary for Reach 5R: 15" RCP

Inflow Area = 31,726 sf, 48.19% Impervious, Inflow Depth > 4.03" for 25 Year Event event
Inflow = 3.39 cfs @ 12.07 hrs, Volume= 10,650 cf
Outflow = 3.27 cfs @ 12.10 hrs, Volume= 10,642 cf, Atten= 4%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.76 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 2.4 min

Peak Storage= 170 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.59 cfs

15.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0075 '/'
Inlet Invert= 96.16', Outlet Invert= 94.36'



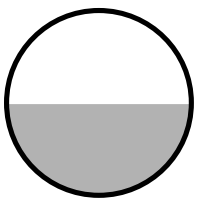
Summary for Reach 6R: 18" RCP

Inflow Area = 33,927 sf, 53.03% Impervious, Inflow Depth > 4.13" for 25 Year Event event
Inflow = 3.71 cfs @ 12.07 hrs, Volume= 11,685 cf
Outflow = 3.57 cfs @ 12.10 hrs, Volume= 11,677 cf, Atten= 4%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.23 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 2.3 min

Peak Storage= 177 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.54 cfs

18.0" Round Pipe
n= 0.013
Length= 204.0' Slope= 0.0051 '/'
Inlet Invert= 95.35', Outlet Invert= 94.30'



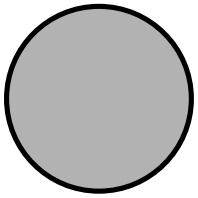
Summary for Reach 7R: 18" RCP

Inflow Area = 122,417 sf, 36.66% Impervious, Inflow Depth > 3.69" for 25 Year Event event
Inflow = 11.84 cfs @ 12.08 hrs, Volume= 37,625 cf
Outflow = 11.27 cfs @ 12.07 hrs, Volume= 37,623 cf, Atten= 5%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.78 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.53 fps, Avg. Travel Time= 0.2 min

Peak Storage= 53 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 94.20', Outlet Invert= 93.90'



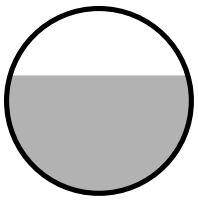
Summary for Reach 8R: 24" RCP

Inflow Area = 154,143 sf, 39.04% Impervious, Inflow Depth > 3.76" for 25 Year Event event
Inflow = 13.86 cfs @ 12.08 hrs, Volume= 48,265 cf
Outflow = 13.97 cfs @ 12.10 hrs, Volume= 48,253 cf, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.63 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 0.8 min

Peak Storage= 226 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.28'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.07 cfs

24.0" Round Pipe
n= 0.013
Length= 107.0' Slope= 0.0071 '/'
Inlet Invert= 93.61', Outlet Invert= 92.85'



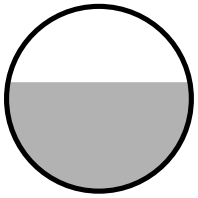
Summary for Reach 9R: 21" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 3.75" for 25 Year Event event
Inflow = 10.35 cfs @ 12.22 hrs, Volume= 51,614 cf
Outflow = 10.35 cfs @ 12.22 hrs, Volume= 51,611 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.02 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.75 fps, Avg. Travel Time= 0.2 min

Peak Storage= 44 cf @ 12.22 hrs
Average Depth at Peak Storage= 1.03'
Bank-Full Depth= 1.75' Flow Area= 2.4 sf, Capacity= 15.85 cfs

21.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 92.30', Outlet Invert= 92.00'



Summary for Reach 10R: DESIGN POINT #4

Inflow Area = 300,317 sf, 24.75% Impervious, Inflow Depth > 3.39" for 25 Year Event event
Inflow = 18.84 cfs @ 12.11 hrs, Volume= 84,762 cf
Outflow = 18.84 cfs @ 12.11 hrs, Volume= 84,762 cf, Atten= 0%, Lag= 0.0 min

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

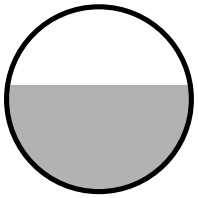
Summary for Reach 11R: 18" RCP

Inflow Area = 80,516 sf, 27.93% Impervious, Inflow Depth > 3.52" for 25 Year Event event
Inflow = 7.60 cfs @ 12.08 hrs, Volume= 23,610 cf
Outflow = 7.55 cfs @ 12.08 hrs, Volume= 23,606 cf, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.17 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.58 fps, Avg. Travel Time= 0.5 min

Peak Storage= 85 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.03 cfs

18.0" Round Pipe
n= 0.013
Length= 80.0' Slope= 0.0131 '/'
Inlet Invert= 94.05', Outlet Invert= 93.00'



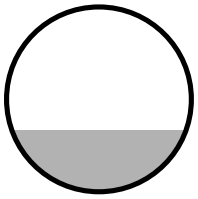
Summary for Reach 12R: 18" RCP

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth = 1.99" for 25 Year Event event
Inflow = 4.59 cfs @ 12.26 hrs, Volume= 19,289 cf
Outflow = 4.59 cfs @ 12.26 hrs, Volume= 19,289 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.95 fps, Avg. Travel Time= 0.3 min

Peak Storage= 31 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 19.18 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 92.00', Outlet Invert= 90.00'



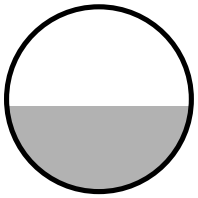
Summary for Reach 13R: 12" RCP

Inflow Area = 10,954 sf, 50.76% Impervious, Inflow Depth > 4.03" for 25 Year Event event
Inflow = 1.17 cfs @ 12.07 hrs, Volume= 3,677 cf
Outflow = 1.08 cfs @ 12.14 hrs, Volume= 3,670 cf, Atten= 8%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.18 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 5.6 min

Peak Storage= 131 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.59 cfs

12.0" Round Pipe
n= 0.013
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 94.90', Outlet Invert= 92.95'



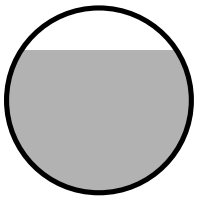
Summary for Reach 14R: 24" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 3.77" for 25 Year Event event
Inflow = 15.00 cfs @ 12.10 hrs, Volume= 51,923 cf
Outflow = 15.03 cfs @ 12.11 hrs, Volume= 51,919 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.79 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 0.2 min

Peak Storage= 78 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.54'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 16.00 cfs

24.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 92.65', Outlet Invert= 92.50'



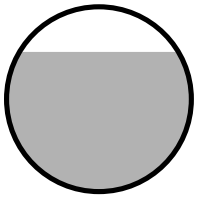
Summary for Reach 15R: 10" CLAY

Inflow Area = 18,515 sf, 47.91% Impervious, Inflow Depth > 3.92" for 25 Year Event event
Inflow = 1.94 cfs @ 12.07 hrs, Volume= 6,055 cf
Outflow = 1.78 cfs @ 12.14 hrs, Volume= 6,044 cf, Atten= 8%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.18 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 5.3 min

Peak Storage= 217 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.01 cfs

10.0" Round Pipe
n= 0.013
Length= 490.0' Slope= 0.0084 '/'
Inlet Invert= 89.23', Outlet Invert= 85.10'



Summary for Reach 16R: DESIGN POINT #3

Inflow Area = 136,942 sf, 58.81% Impervious, Inflow Depth > 4.29" for 25 Year Event event
Inflow = 14.84 cfs @ 12.08 hrs, Volume= 48,937 cf
Outflow = 14.84 cfs @ 12.08 hrs, Volume= 48,937 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 1P: POND #1

Inflow Area = 137,567 sf, 35.28% Impervious, Inflow Depth > 3.65" for 25 Year Event event
Inflow = 9.25 cfs @ 12.08 hrs, Volume= 41,834 cf
Outflow = 5.49 cfs @ 12.39 hrs, Volume= 40,169 cf, Atten= 41%, Lag= 18.6 min
Discarded = 0.27 cfs @ 9.80 hrs, Volume= 14,869 cf
Primary = 5.22 cfs @ 12.39 hrs, Volume= 25,300 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 97.74' @ 12.39 hrs Surf.Area= 5,325 sf Storage= 12,479 cf

Plug-Flow detention time= 76.5 min calculated for 40,169 cf (96% of inflow)
Center-of-Mass det. time= 54.0 min (864.2 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	95.40'	11,746 cf	**Custom Stage Data (Irregular)**Listed below 18,638 cf Overall - 6,891 cf Embedded = 11,746 cf
#2	95.90'	6,891 cf	**StormTech SC-740** x 150 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		18,638 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.40	5,325	292.0	0	0	5,325
98.90	5,325	292.0	18,638	18,638	6,347

Device	Routing	Invert	Outlet Devices
#1	Primary	95.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	96.30'	**11.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	95.40'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.27 cfs @ 9.80 hrs HW=95.44' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=5.21 cfs @ 12.39 hrs HW=97.74' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 2.06 cfs @ 5.91 fps)
└**2=Orifice/Grate** (Orifice Controls 3.15 cfs @ 4.77 fps)

Summary for Pond 3P: POND #3

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 3.77" for 25 Year Event event
Inflow = 15.03 cfs @ 12.11 hrs, Volume= 51,919 cf
Outflow = 10.35 cfs @ 12.22 hrs, Volume= 51,614 cf, Atten= 31%, Lag= 6.5 min
Primary = 10.35 cfs @ 12.22 hrs, Volume= 51,614 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.95' @ 12.21 hrs Surf.Area= 3,329 sf Storage= 7,679 cf

Plug-Flow detention time= 15.4 min calculated for 51,614 cf (99% of inflow)
Center-of-Mass det. time= 11.8 min (819.1 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.50'	11,508 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	1,307	189.0	0	0	1,307
93.00	1,547	197.0	713	713	1,571
94.00	2,058	212.0	1,796	2,509	2,100
95.00	2,607	230.0	2,327	4,836	2,771
96.00	3,363	261.0	2,977	7,813	4,007
97.00	4,037	277.0	3,695	11,508	4,743

Device	Routing	Invert	Outlet Devices
#1	Primary	92.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.0' Crest Height
#3	Primary	96.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.27 cfs @ 12.22 hrs HW=95.93' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 4.56 cfs @ 8.36 fps)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.71 cfs @ 4.82 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 5P: POND #2

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth > 3.31" for 25 Year Event event
Inflow = 10.28 cfs @ 12.08 hrs, Volume= 32,040 cf
Outflow = 4.85 cfs @ 12.26 hrs, Volume= 31,928 cf, Atten= 53%, Lag= 10.6 min
Discarded = 0.26 cfs @ 10.50 hrs, Volume= 12,639 cf
Primary = 4.59 cfs @ 12.26 hrs, Volume= 19,289 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 95.30' @ 12.26 hrs Surf.Area= 5,143 sf Storage= 7,814 cf

Plug-Flow detention time= 42.9 min calculated for 31,862 cf (99% of inflow)
Center-of-Mass det. time= 40.6 min (858.6 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	22,353 cf	**Custom Stage Data (Irregular)**Listed below 61,716 cf Overall - 5,834 cf Embedded = 55,882 cf x 40.0% Voids
#2	93.50'	5,834 cf	**StormTech SC-740** x 127 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		28,187 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	5,143	340.0	0	0	5,143
105.00	5,143	340.0	61,716	61,716	9,223

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**9.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	93.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.26 cfs @ 10.50 hrs HW=93.12' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=4.59 cfs @ 12.26 hrs HW=95.30' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 2.54 cfs @ 5.75 fps)
└**2=Orifice/Grate** (Orifice Controls 2.05 cfs @ 4.63 fps)

Summary for Pond 15P: RC

Inflow Area = 3,300 sf,100.00% Impervious, Inflow Depth > 5.36" for 25 Year Event event
Inflow = 0.42 cfs @ 12.07 hrs, Volume= 1,474 cf
Outflow = 0.07 cfs @ 12.54 hrs, Volume= 1,052 cf, Atten= 83%, Lag= 28.0 min
Discarded = 0.02 cfs @ 10.85 hrs, Volume= 904 cf
Primary = 0.06 cfs @ 12.54 hrs, Volume= 147 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.65' @ 12.54 hrs Surf.Area= 200 sf Storage= 659 cf

Plug-Flow detention time= 234.9 min calculated for 1,050 cf (71% of inflow)
Center-of-Mass det. time= 142.6 min (887.5 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	320 cf	**Custom Stage Data (Irregular)**Listed below 800 cf Overall x 40.0% Voids
#2	91.00'	368 cf	**StormTech SC-740** x 8 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		688 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
90.00	200	60.0	0	0	200
94.00	200	60.0	800	800	440

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	90.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 10.85 hrs HW=91.00' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.06 cfs @ 12.54 hrs HW=93.64' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.29 fps)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1A: Bank Roof Runoff Area=3,300 sf 100.00% Impervious Runoff Depth>6.56"
Tc=5.0 min CN=98 Runoff=0.51 cfs 1,803 cf

Subcatchment 1S: Bank Parking Lot Runoff Area=36,670 sf 59.99% Impervious Runoff Depth>5.40"
Tc=5.0 min CN=88 Runoff=5.14 cfs 16,490 cf

Subcatchment 2S: 2 Runoff Area=40,900 sf 30.12% Impervious Runoff Depth>4.62"
Tc=5.0 min CN=81 Runoff=5.06 cfs 15,735 cf

Subcatchment 3S: 3 Runoff Area=15,276 sf 46.22% Impervious Runoff Depth>5.06"
Tc=5.0 min CN=85 Runoff=2.04 cfs 6,440 cf

Subcatchment 4S: 4 Runoff Area=27,561 sf 25.98% Impervious Runoff Depth>4.51"
Tc=5.0 min CN=80 Runoff=3.34 cfs 10,352 cf

Subcatchment 5S: 5 Runoff Area=31,726 sf 48.19% Impervious Runoff Depth>5.17"
Tc=5.0 min CN=86 Runoff=4.31 cfs 13,670 cf

Subcatchment 6S: 6 Runoff Area=88,490 sf 30.39% Impervious Runoff Depth>4.62"
Tc=5.0 min CN=81 Runoff=10.94 cfs 34,043 cf

Subcatchment 7S: 7 Runoff Area=135,220 sf 6.35% Impervious Runoff Depth>3.97"
Tc=5.0 min CN=75 Runoff=14.46 cfs 44,747 cf

Subcatchment 8S: 8 Runoff Area=33,927 sf 53.03% Impervious Runoff Depth>5.28"
Tc=5.0 min CN=87 Runoff=4.68 cfs 14,937 cf

Subcatchment 9S: 9 Runoff Area=80,516 sf 27.93% Impervious Runoff Depth>4.62"
Tc=5.0 min CN=81 Runoff=9.95 cfs 30,975 cf

Subcatchment 10S: 10 Runoff Area=35,520 sf 0.00% Impervious Runoff Depth>3.87"
Tc=5.0 min CN=74 Runoff=3.70 cfs 11,442 cf

Subcatchment 11S: 11 Runoff Area=118,427 sf 60.52% Impervious Runoff Depth>5.51"
Tc=5.0 min CN=89 Runoff=16.83 cfs 54,378 cf

Subcatchment 12S: 12 Runoff Area=18,515 sf 47.91% Impervious Runoff Depth>5.06"
Tc=5.0 min CN=85 Runoff=2.47 cfs 7,805 cf

Subcatchment 13S: 13 Runoff Area=10,954 sf 50.76% Impervious Runoff Depth>5.17"
Tc=5.0 min CN=86 Runoff=1.49 cfs 4,720 cf

Subcatchment 16S: 2A Runoff Area=17,160 sf 0.00% Impervious Runoff Depth>3.87"
Tc=5.0 min CN=74 Runoff=1.79 cfs 5,528 cf

Subcatchment 17S: landscape Runoff Area=3,128 sf 0.00% Impervious Runoff Depth>3.87"
Tc=5.0 min CN=74 Runoff=0.33 cfs 1,008 cf

Reach 1R: 18" RCP Avg. Flow Depth=0.73' Max Vel=7.58 fps Inflow=6.45 cfs 37,902 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0167 '/' Capacity=13.56 cfs Outflow=6.44 cfs 37,902 cf

Reach 2R: 18" RCP Avg. Flow Depth=1.50' Max Vel=5.12 fps Inflow=12.61 cfs 48,975 cf
18.0" Round Pipe n=0.013 L=35.0' S=0.0057 '/' Capacity=7.94 cfs Outflow=7.94 cfs 48,971 cf

Reach 3R: 18" RCP Avg. Flow Depth=1.50' Max Vel=4.77 fps Inflow=9.25 cfs 32,516 cf
18.0" Round Pipe n=0.013 L=340.0' S=0.0050 '/' Capacity=7.43 cfs Outflow=7.66 cfs 32,485 cf

Reach 4R: 12" RCP Avg. Flow Depth=1.00' Max Vel=3.26 fps Inflow=3.34 cfs 10,352 cf
12.0" Round Pipe n=0.013 L=240.0' S=0.0040 '/' Capacity=2.25 cfs Outflow=2.30 cfs 10,342 cf

Reach 5R: 15" RCP Avg. Flow Depth=0.82' Max Vel=5.01 fps Inflow=4.31 cfs 13,670 cf
15.0" Round Pipe n=0.013 L=240.0' S=0.0075 '/' Capacity=5.59 cfs Outflow=4.15 cfs 13,661 cf

Reach 6R: 18" RCP Avg. Flow Depth=0.85' Max Vel=4.48 fps Inflow=4.68 cfs 14,937 cf
18.0" Round Pipe n=0.013 L=204.0' S=0.0051 '/' Capacity=7.54 cfs Outflow=4.52 cfs 14,927 cf

Reach 7R: 18" RCP Avg. Flow Depth=1.50' Max Vel=6.77 fps Inflow=15.29 cfs 48,970 cf
18.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=10.50 cfs Outflow=10.71 cfs 48,967 cf

Reach 8R: 24" RCP Avg. Flow Depth=1.31' Max Vel=6.68 fps Inflow=14.65 cfs 62,628 cf
24.0" Round Pipe n=0.013 L=107.0' S=0.0071 '/' Capacity=19.07 cfs Outflow=14.51 cfs 62,615 cf

Reach 9R: 21" RCP Avg. Flow Depth=1.13' Max Vel=7.23 fps Inflow=11.91 cfs 66,981 cf
21.0" Round Pipe n=0.013 L=30.0' S=0.0100 '/' Capacity=15.85 cfs Outflow=11.91 cfs 66,977 cf

Reach 10R: DESIGN POINT #4 Inflow=23.86 cfs 111,724 cf
Outflow=23.86 cfs 111,724 cf

Reach 11R: 18" RCP Avg. Flow Depth=1.04' Max Vel=7.57 fps Inflow=9.95 cfs 30,975 cf
18.0" Round Pipe n=0.013 L=80.0' S=0.0131 '/' Capacity=12.03 cfs Outflow=9.84 cfs 30,970 cf

Reach 12R: 18" RCP Avg. Flow Depth=0.58' Max Vel=9.67 fps Inflow=6.16 cfs 28,097 cf
18.0" Round Pipe n=0.013 L=60.0' S=0.0333 '/' Capacity=19.18 cfs Outflow=6.16 cfs 28,097 cf

Reach 13R: 12" RCP Avg. Flow Depth=0.53' Max Vel=3.38 fps Inflow=1.49 cfs 4,720 cf
12.0" Round Pipe n=0.013 L=370.0' S=0.0053 '/' Capacity=2.59 cfs Outflow=1.37 cfs 4,712 cf

Reach 14R: 24" RCP Avg. Flow Depth=1.62' Max Vel=5.80 fps Inflow=15.86 cfs 67,327 cf
24.0" Round Pipe n=0.013 L=30.0' S=0.0050 '/' Capacity=16.00 cfs Outflow=15.83 cfs 67,322 cf

Reach 15R: 10" CLAY Avg. Flow Depth=0.83' Max Vel=4.20 fps Inflow=2.47 cfs 7,805 cf
10.0" Round Pipe n=0.013 L=490.0' S=0.0084 '/' Capacity=2.01 cfs Outflow=2.07 cfs 7,793 cf

Reach 16R: DESIGN POINT #3 Inflow=18.53 cfs 62,171 cf
Outflow=18.53 cfs 62,171 cf

Pond 1P: POND #1 Peak Elev=98.27' Storage=15,305 cf Inflow=9.73 cfs 54,499 cf
Discarded=0.27 cfs 15,591 cf Primary=6.31 cfs 36,491 cf Outflow=6.58 cfs 52,082 cf

Pond 3P: POND #3 Peak Elev=96.49' Storage=9,635 cf Inflow=15.83 cfs 67,322 cf
Outflow=11.91 cfs 66,981 cf

Pond 5P: POND #2 Peak Elev=96.23' Storage=10,149 cf Inflow=13.53 cfs 42,413 cf
Discarded=0.26 cfs 14,156 cf Primary=6.16 cfs 28,097 cf Outflow=6.42 cfs 42,253 cf

Pond 15P: RC Peak Elev=93.81' Storage=673 cf Inflow=0.51 cfs 1,803 cf
Discarded=0.02 cfs 917 cf Primary=0.25 cfs 403 cf Outflow=0.26 cfs 1,321 cf

Summary for Subcatchment 1A: Bank Roof

Runoff = 0.51 cfs @ 12.07 hrs, Volume= 1,803 cf, Depth> 6.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	3,300	98	Bank Roof
	3,300		100.00% Impervious Area

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

Summary for Subcatchment 1S: Bank Parking Lot

Runoff = 5.14 cfs @ 12.07 hrs, Volume= 16,490 cf, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
22,000	98	Paved parking & roofs
14,670	74	>75% Grass cover, Good, HSG C
36,670	88	Weighted Average
14,670		40.01% Pervious Area
22,000		59.99% Impervious Area

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

Summary for Subcatchment 2S: 2

Runoff = 5.06 cfs @ 12.07 hrs, Volume= 15,735 cf, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
11,778	98	Paved parking & roofs
28,582	74	>75% Grass cover, Good, HSG C
540	98	Paved parking & roofs
40,900	81	Weighted Average
28,582		69.88% Pervious Area
12,318		30.12% Impervious Area

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

Summary for Subcatchment 3S: 3

Runoff = 2.04 cfs @ 12.07 hrs, Volume= 6,440 cf, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	7,060	98	
*	8,216	74	
	15,276	85	Weighted Average
	8,216		53.78% Pervious Area
	7,060		46.22% Impervious Area

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

Summary for Subcatchment 4S: 4

Runoff = 3.34 cfs @ 12.07 hrs, Volume= 10,352 cf, Depth> 4.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	7,160	98	
*	20,401	74	
	27,561	80	Weighted Average
	20,401		74.02% Pervious Area
	7,160		25.98% Impervious Area

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

Summary for Subcatchment 5S: 5

Runoff = 4.31 cfs @ 12.07 hrs, Volume= 13,670 cf, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	15,290	98	
*	16,436	74	
	31,726	86	Weighted Average
	16,436		51.81% Pervious Area
	15,290		48.19% Impervious Area

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

Summary for Subcatchment 6S: 6

Runoff = 10.94 cfs @ 12.07 hrs, Volume= 34,043 cf, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	26,890	98	
*	61,600	74	
	88,490	81	Weighted Average
	61,600		69.61% Pervious Area
	26,890		30.39% Impervious Area

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

Summary for Subcatchment 7S: 7

Runoff = 14.46 cfs @ 12.08 hrs, Volume= 44,747 cf, Depth> 3.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	8,590	98	
	73,262	74	>75% Grass cover, Good, HSG C
	53,368	73	Woods, Fair, HSG C
	135,220	75	Weighted Average
	126,630		93.65% Pervious Area
	8,590		6.35% Impervious Area

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

Summary for Subcatchment 8S: 8

Runoff = 4.68 cfs @ 12.07 hrs, Volume= 14,937 cf, Depth> 5.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	17,990	98	
*	15,937	74	
	33,927	87	Weighted Average
	15,937		46.97% Pervious Area
	17,990		53.03% Impervious Area

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

Summary for Subcatchment 9S: 9

Runoff = 9.95 cfs @ 12.07 hrs, Volume= 30,975 cf, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	22,490	98	
*	58,026	74	
	80,516	81	Weighted Average
	58,026		72.07% Pervious Area
	22,490		27.93% Impervious Area

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

Summary for Subcatchment 10S: 10

Runoff = 3.70 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth> 3.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	6,648	74	
*	28,872	74	
	35,520	74	Weighted Average
	35,520		100.00% Pervious Area

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

Summary for Subcatchment 11S: 11

Runoff = 16.83 cfs @ 12.07 hrs, Volume= 54,378 cf, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	71,670	98	
*	43,932	74	
*	2,825	73	
	118,427	89	Weighted Average
	46,757		39.48% Pervious Area
	71,670		60.52% Impervious Area

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

Summary for Subcatchment 12S: 12

Runoff = 2.47 cfs @ 12.07 hrs, Volume= 7,805 cf, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	8,870	98	Pvmt
*	9,645	74	grass
	18,515	85	Weighted Average
	9,645		52.09% Pervious Area
	8,870		47.91% Impervious Area

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

Summary for Subcatchment 13S: 13

Runoff = 1.49 cfs @ 12.07 hrs, Volume= 4,720 cf, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	5,560	98	
*	5,394	74	
	10,954	86	Weighted Average
	5,394		49.24% Pervious Area
	5,560		50.76% Impervious Area

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

Summary for Subcatchment 16S: 2A

Runoff = 1.79 cfs @ 12.08 hrs, Volume= 5,528 cf, Depth> 3.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
17,160	74	>75% Grass cover, Good, HSG C
17,160		100.00% Pervious Area

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

Summary for Subcatchment 17S: landscape

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 1,008 cf, Depth> 3.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

Area (sf)	CN	Description
3,128	74	>75% Grass cover, Good, HSG C
3,128		100.00% Pervious Area

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

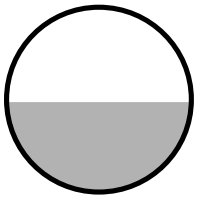
Summary for Reach 1R: 18" RCP

Inflow Area = 143,995 sf, 36.00% Impervious, Inflow Depth > 3.16" for 100 Year Event event
Inflow = 6.45 cfs @ 12.55 hrs, Volume= 37,902 cf
Outflow = 6.44 cfs @ 12.55 hrs, Volume= 37,902 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.58 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 0.4 min

Peak Storage= 51 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.56 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0167 '/'
Inlet Invert= 94.00', Outlet Invert= 93.00'



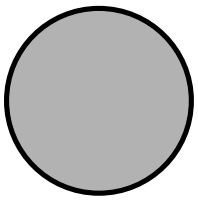
Summary for Reach 2R: 18" RCP

Inflow Area = 120,407 sf, 40.31% Impervious, Inflow Depth > 4.88" for 100 Year Event event
Inflow = 12.61 cfs @ 12.09 hrs, Volume= 48,975 cf
Outflow = 7.94 cfs @ 12.05 hrs, Volume= 48,971 cf, Atten= 37%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 0.3 min

Peak Storage= 62 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.94 cfs

18.0" Round Pipe
n= 0.013
Length= 35.0' Slope= 0.0057 '/'
Inlet Invert= 95.65', Outlet Invert= 95.45'



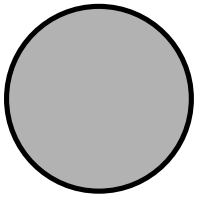
Summary for Reach 3R: 18" RCP

Inflow Area = 83,737 sf, 31.69% Impervious, Inflow Depth > 4.66" for 100 Year Event event
Inflow = 9.25 cfs @ 12.08 hrs, Volume= 32,516 cf
Outflow = 7.66 cfs @ 12.11 hrs, Volume= 32,485 cf, Atten= 17%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.77 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 3.0 min

Peak Storage= 601 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.43 cfs

18.0" Round Pipe
n= 0.013
Length= 340.0' Slope= 0.0050 '/'
Inlet Invert= 97.05', Outlet Invert= 95.35'



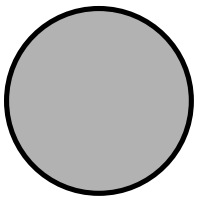
Summary for Reach 4R: 12" RCP

Inflow Area = 27,561 sf, 25.98% Impervious, Inflow Depth > 4.51" for 100 Year Event event
Inflow = 3.34 cfs @ 12.07 hrs, Volume= 10,352 cf
Outflow = 2.30 cfs @ 12.30 hrs, Volume= 10,342 cf, Atten= 31%, Lag= 13.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.37 fps, Avg. Travel Time= 2.9 min

Peak Storage= 188 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.25 cfs

12.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0040 '/'
Inlet Invert= 98.01', Outlet Invert= 97.05'



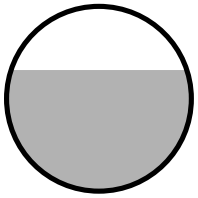
Summary for Reach 5R: 15" RCP

Inflow Area = 31,726 sf, 48.19% Impervious, Inflow Depth > 5.17" for 100 Year Event event
Inflow = 4.31 cfs @ 12.07 hrs, Volume= 13,670 cf
Outflow = 4.15 cfs @ 12.10 hrs, Volume= 13,661 cf, Atten= 4%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.01 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 2.3 min

Peak Storage= 204 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.59 cfs

15.0" Round Pipe
n= 0.013
Length= 240.0' Slope= 0.0075 '/'
Inlet Invert= 96.16', Outlet Invert= 94.36'



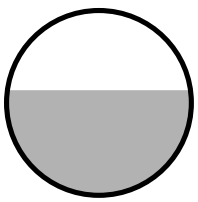
Summary for Reach 6R: 18" RCP

Inflow Area = 33,927 sf, 53.03% Impervious, Inflow Depth > 5.28" for 100 Year Event event
Inflow = 4.68 cfs @ 12.07 hrs, Volume= 14,937 cf
Outflow = 4.52 cfs @ 12.10 hrs, Volume= 14,927 cf, Atten= 3%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.48 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 2.2 min

Peak Storage= 211 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.54 cfs

18.0" Round Pipe
n= 0.013
Length= 204.0' Slope= 0.0051 '/'
Inlet Invert= 95.35', Outlet Invert= 94.30'



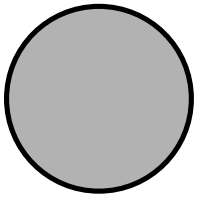
Summary for Reach 7R: 18" RCP

Inflow Area = 122,417 sf, 36.66% Impervious, Inflow Depth > 4.80" for 100 Year Event event
Inflow = 15.29 cfs @ 12.08 hrs, Volume= 48,970 cf
Outflow = 10.71 cfs @ 12.30 hrs, Volume= 48,967 cf, Atten= 30%, Lag= 13.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.69 fps, Avg. Travel Time= 0.2 min

Peak Storage= 53 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.50 cfs

18.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 94.20', Outlet Invert= 93.90'



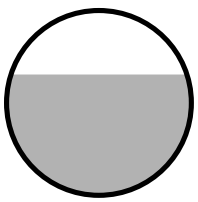
Summary for Reach 8R: 24" RCP

Inflow Area = 154,143 sf, 39.04% Impervious, Inflow Depth > 4.88" for 100 Year Event event
Inflow = 14.65 cfs @ 12.10 hrs, Volume= 62,628 cf
Outflow = 14.51 cfs @ 12.11 hrs, Volume= 62,615 cf, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.68 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 0.7 min

Peak Storage= 233 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.31'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.07 cfs

24.0" Round Pipe
n= 0.013
Length= 107.0' Slope= 0.0071 '/'
Inlet Invert= 93.61', Outlet Invert= 92.85'



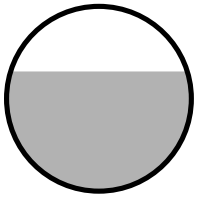
Summary for Reach 9R: 21" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 4.87" for 100 Year Event event
Inflow = 11.91 cfs @ 12.31 hrs, Volume= 66,981 cf
Outflow = 11.91 cfs @ 12.31 hrs, Volume= 66,977 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.23 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.93 fps, Avg. Travel Time= 0.2 min

Peak Storage= 49 cf @ 12.31 hrs
Average Depth at Peak Storage= 1.13'
Bank-Full Depth= 1.75' Flow Area= 2.4 sf, Capacity= 15.85 cfs

21.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 92.30', Outlet Invert= 92.00'



Summary for Reach 10R: DESIGN POINT #4

Inflow Area = 300,317 sf, 24.75% Impervious, Inflow Depth > 4.46" for 100 Year Event event
Inflow = 23.86 cfs @ 12.09 hrs, Volume= 111,724 cf
Outflow = 23.86 cfs @ 12.09 hrs, Volume= 111,724 cf, Atten= 0%, Lag= 0.0 min

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

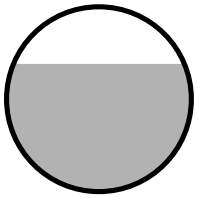
Summary for Reach 11R: 18" RCP

Inflow Area = 80,516 sf, 27.93% Impervious, Inflow Depth > 4.62" for 100 Year Event event
Inflow = 9.95 cfs @ 12.07 hrs, Volume= 30,975 cf
Outflow = 9.84 cfs @ 12.08 hrs, Volume= 30,970 cf, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.57 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.74 fps, Avg. Travel Time= 0.5 min

Peak Storage= 104 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.04'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.03 cfs

18.0" Round Pipe
n= 0.013
Length= 80.0' Slope= 0.0131 '/'
Inlet Invert= 94.05', Outlet Invert= 93.00'



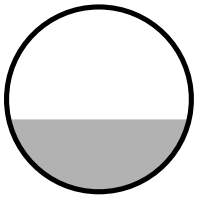
Summary for Reach 12R: 18" RCP

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth = 2.91" for 100 Year Event event
Inflow = 6.16 cfs @ 12.25 hrs, Volume= 28,097 cf
Outflow = 6.16 cfs @ 12.25 hrs, Volume= 28,097 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.01 fps, Avg. Travel Time= 0.2 min

Peak Storage= 38 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 19.18 cfs

18.0" Round Pipe
n= 0.013
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 92.00', Outlet Invert= 90.00'



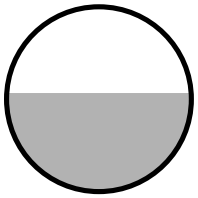
Summary for Reach 13R: 12" RCP

Inflow Area = 10,954 sf, 50.76% Impervious, Inflow Depth > 5.17" for 100 Year Event event
Inflow = 1.49 cfs @ 12.07 hrs, Volume= 4,720 cf
Outflow = 1.37 cfs @ 12.13 hrs, Volume= 4,712 cf, Atten= 8%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 5.3 min

Peak Storage= 157 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.59 cfs

12.0" Round Pipe
n= 0.013
Length= 370.0' Slope= 0.0053 '/'
Inlet Invert= 94.90', Outlet Invert= 92.95'



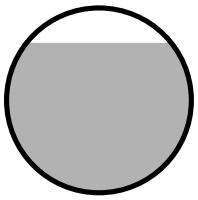
Summary for Reach 14R: 24" RCP

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 4.89" for 100 Year Event event
Inflow = 15.86 cfs @ 12.12 hrs, Volume= 67,327 cf
Outflow = 15.83 cfs @ 12.12 hrs, Volume= 67,322 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.80 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.2 min

Peak Storage= 82 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.62'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 16.00 cfs

24.0" Round Pipe
n= 0.013
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 92.65', Outlet Invert= 92.50'



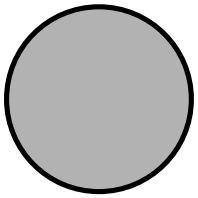
Summary for Reach 15R: 10" CLAY

Inflow Area = 18,515 sf, 47.91% Impervious, Inflow Depth > 5.06" for 100 Year Event event
Inflow = 2.47 cfs @ 12.07 hrs, Volume= 7,805 cf
Outflow = 2.07 cfs @ 12.16 hrs, Volume= 7,793 cf, Atten= 16%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.20 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.64 fps, Avg. Travel Time= 5.0 min

Peak Storage= 270 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 2.01 cfs

10.0" Round Pipe
n= 0.013
Length= 490.0' Slope= 0.0084 '/'
Inlet Invert= 89.23', Outlet Invert= 85.10'



Summary for Reach 16R: DESIGN POINT #3

Inflow Area = 136,942 sf, 58.81% Impervious, Inflow Depth > 5.45" for 100 Year Event event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 62,171 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 62,171 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 1P: POND #1

Inflow Area = 137,567 sf, 35.28% Impervious, Inflow Depth > 4.75" for 100 Year Event event
Inflow = 9.73 cfs @ 12.08 hrs, Volume= 54,499 cf
Outflow = 6.58 cfs @ 12.56 hrs, Volume= 52,082 cf, Atten= 32%, Lag= 28.7 min
Discarded = 0.27 cfs @ 9.10 hrs, Volume= 15,591 cf
Primary = 6.31 cfs @ 12.56 hrs, Volume= 36,491 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 98.27' @ 12.56 hrs Surf.Area= 5,325 sf Storage= 15,305 cf

Plug-Flow detention time= 69.0 min calculated for 52,082 cf (96% of inflow)
Center-of-Mass det. time= 44.1 min (848.0 - 803.9)

Volume	Invert	Avail.Storage	Storage Description
#1	95.40'	11,746 cf	**Custom Stage Data (Irregular)**Listed below 18,638 cf Overall - 6,891 cf Embedded = 11,746 cf
#2	95.90'	6,891 cf	**StormTech SC-740** x 150 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		18,638 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
95.40	5,325	292.0	0	0	5,325
98.90	5,325	292.0	18,638	18,638	6,347

Device	Routing	Invert	Outlet Devices
#1	Primary	95.90'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	96.30'	**11.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	95.40'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.27 cfs @ 9.10 hrs HW=95.44' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.27 cfs)

Primary OutFlow Max=6.30 cfs @ 12.56 hrs HW=98.27' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 2.40 cfs @ 6.87 fps)
└**2=Orifice/Grate** (Orifice Controls 3.91 cfs @ 5.92 fps)

Summary for Pond 3P: POND #3

Inflow Area = 165,097 sf, 39.81% Impervious, Inflow Depth > 4.89" for 100 Year Event event
Inflow = 15.83 cfs @ 12.12 hrs, Volume= 67,322 cf
Outflow = 11.91 cfs @ 12.31 hrs, Volume= 66,981 cf, Atten= 25%, Lag= 11.5 min
Primary = 11.91 cfs @ 12.31 hrs, Volume= 66,981 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 96.49' @ 12.31 hrs Surf.Area= 3,695 sf Storage= 9,635 cf

Plug-Flow detention time= 14.9 min calculated for 66,981 cf (99% of inflow)
Center-of-Mass det. time= 11.7 min (812.0 - 800.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.50'	11,508 cf	**Custom Stage Data (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
92.50	1,307	189.0	0	0	1,307
93.00	1,547	197.0	713	713	1,571
94.00	2,058	212.0	1,796	2,509	2,100
95.00	2,607	230.0	2,327	4,836	2,771
96.00	3,363	261.0	2,977	7,813	4,007
97.00	4,037	277.0	3,695	11,508	4,743

Device	Routing	Invert	Outlet Devices
#1	Primary	92.50'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 4.0' Crest Height
#3	Primary	96.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.89 cfs @ 12.31 hrs HW=96.48' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 4.96 cfs @ 9.09 fps)
├**2=Sharp-Crested Rectangular Weir** (Weir Controls 6.93 cfs @ 5.55 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 5P: POND #2

Inflow Area = 116,036 sf, 19.38% Impervious, Inflow Depth > 4.39" for 100 Year Event event
Inflow = 13.53 cfs @ 12.08 hrs, Volume= 42,413 cf
Outflow = 6.42 cfs @ 12.25 hrs, Volume= 42,253 cf, Atten= 53%, Lag= 10.3 min
Discarded = 0.26 cfs @ 9.80 hrs, Volume= 14,156 cf
Primary = 6.16 cfs @ 12.25 hrs, Volume= 28,097 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 96.23' @ 12.25 hrs Surf.Area= 5,143 sf Storage= 10,149 cf

Plug-Flow detention time= 42.1 min calculated for 42,165 cf (99% of inflow)
Center-of-Mass det. time= 39.7 min (849.8 - 810.1)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	22,353 cf	**Custom Stage Data (Irregular)**Listed below 61,716 cf Overall - 5,834 cf Embedded = 55,882 cf x 40.0% Voids
#2	93.50'	5,834 cf	**StormTech SC-740** x 127 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		28,187 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
93.00	5,143	340.0	0	0	5,143
105.00	5,143	340.0	61,716	61,716	9,223

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**9.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	94.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	93.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.26 cfs @ 9.80 hrs HW=93.12' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=6.16 cfs @ 12.25 hrs HW=96.23' (Free Discharge)
├**1=Orifice/Grate** (Orifice Controls 3.26 cfs @ 7.39 fps)
└**2=Orifice/Grate** (Orifice Controls 2.90 cfs @ 6.56 fps)

Summary for Pond 15P: RC

Inflow Area = 3,300 sf,100.00% Impervious, Inflow Depth > 6.56" for 100 Year Event event
Inflow = 0.51 cfs @ 12.07 hrs, Volume= 1,803 cf
Outflow = 0.26 cfs @ 12.26 hrs, Volume= 1,321 cf, Atten= 49%, Lag= 11.4 min
Discarded = 0.02 cfs @ 10.25 hrs, Volume= 917 cf
Primary = 0.25 cfs @ 12.26 hrs, Volume= 403 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 93.81' @ 12.26 hrs Surf.Area= 200 sf Storage= 673 cf

Plug-Flow detention time= 187.2 min calculated for 1,318 cf (73% of inflow)
Center-of-Mass det. time= 97.7 min (839.8 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	320 cf	**Custom Stage Data (Irregular)**Listed below 800 cf Overall x 40.0% Voids
#2	91.00'	368 cf	**StormTech SC-740** x 8 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		688 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
90.00	200	60.0	0	0	200
94.00	200	60.0	800	800	440

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	90.00'	**2.160 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 10.25 hrs HW=91.00' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.23 cfs @ 12.26 hrs HW=93.80' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.23 cfs @ 1.87 fps)

GRAPHIC SCALE

0 50 100 200

(IN FEET)

1 inch = 100 ft.

DRAINAGE CONTROL POINT (TYPICAL)

DCP # 2

3 SUBCATCHMENT AREA (TYPICAL)

EXISTING SUBCATCHMENT AREAS NORTHSIDE FARM NEW BEDFORD, MA

CAVANARO CONSULTING
687 MAIN STREET
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

ESC DRAWING NO.

SCALE : AS SHOWN	DESIGNED BY : BPS	PROJECT NO. : 5005
DATE : 5/10/06	DRAWN BY : BPS	FILENAME: 5005/dwg/prelim/SUBCATCH
SURVEY : GC/JS	CHECKED BY : JCC	SHEET NO. 1 OF 1

REV. 9/26/06
REV. 7/14/08

SUBCATCHMENT AREAS CONTRIBUTING TO BVW TYP.

NORTH

GRAPHIC SCALE

0 50 100 200

(IN FEET)
1 inch = 100 ft.

DRAINAGE CONTROL POINT (TYPICAL)
DCP # 2

3 SUBCATCHMENT AREA (TYPICAL)

DCP # 1
DCP # 2
DCP # 3
DCP # 4

VICTORIA STREET

PROPOSED SUBCATCHMENT AREAS NORTHSIDE FARM NEW BEDFORD, MA

CAVANARO CONSULTING
687 MAIN STREET
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

PSC DRAWING NO.

SCALE : AS SHOWN	DESIGNED BY : BPS	PROJECT NO. : 5005
DATE : 5/10/06	DRAWN BY : BPS	FILENAME: 5005/dwg/prelim/SUBCATCH
SURVEY : GC/JS	CHECKED BY : JCC	SHEET NO. 1 OF 1

REV. 7/25/08
REV. 7/14/06

APPENDIX C

Deed Information

BK 7734 PG 340
08/29/05 12:49 DOC. 28350
Bristol Co. S.D.

QUITCLAIM DEED

Confirmation Quitclaim Deed – The purpose of this deed is to correct and confirm that certain Quitclaim Deed dated July 27, 2005 and recorded August 4, 2005 in Book No. 7693, Page 340 at the Bristol County, Southern District, Registry of Deeds, which Quitclaim Deed was not signed by Nicola J. DiFelice, Trustees of SHAW'S REALTY TRUST.

NOW THEREOFORE, we, Paul G. Rowan, William H. Arnold and Nicola J. DiFelice, Trustees of SHAW'S REALTY TRUST u/d/t dated August 31, 1970, as amended, recorded with Bristol County North Registry of Deeds in Book 1672, Page 385, and filed with the Bristol County South District of the Land Court as Document No. 34727, having a usual place of business at 750 West Center Street, West Bridgewater, MA 02379, for consideration paid in the amount of $1,400,000, hereby grant to NEW BEDFORD COUSINS LLC, a Massachusetts limited liability company, having a usual place of business at 14 Howard Street, Rockland, Plymouth County, Massachusetts, with Quitclaim Covenants, the land with any buildings or structures thereon located on Acushnet Avenue and Phillips Road, New Bedford, Bristol County, Massachusetts and more particularly bounded and described on Exhibit A attached hereto and incorporated herein.

The within described premises are hereby granted subject to the restriction that no part thereof shall be used or occupied (a) as a supermarket (which shall be defined as any store or department containing at least 3,000 square feet of floor area, including aisle space and storage, primarily devoted to the retail sale of food for off-premises consumption; (b) for the sale of fresh or frozen meat, fish or poultry or produce for off-premises consumption; or (c) for the parking of any motor vehicles in connection with the restricted operations. This restriction shall be a burden upon the property, shall run with the land for a period of ten (10) years from the date hereof, and shall be for the benefit of Grantor, and Grantor's successors, assigns and affiliates, and for the benefit of and appurtenant to each and every part of the properties within a three (3) mile radius of the above described property now owned or leased or hereafter owned or leased by Grantor, its successors, assigns and affiliates, including, without limitation, the property more particularly described on Exhibit B, attached hereto and incorporated herein by this reference. For purposes of the preceding sentence, "affiliates" shall mean a branch, division, parent or subsidiary of Grantor, its successor or assigns, or any company in which Grantor, its successors or assigns own (directly or indirectly) five percent (5%) or more of the voting stock or interest or which is a company that owns (directly or indirectly) five percent (5%) or more of the voting stock or interest of Grantor, its successors and assigns. If in any judicial proceeding a court shall hold that the duration or scope of this restriction is unreasonable under circumstances then existing, the parties, and their respective successors, assigns and affiliates, agree that the maximum allowable duration or scope reasonable under the circumstances shall be substituted for the duration or scope stated in this restriction.

For Grantor's title see deed dated November 25, 1991 recorded in Book 2733, Page 346 and Deeds dated April 16, 1992 recorded in Book 2801, Page 74 and Book 2801, Page 72, at the

Bristol County, Southern District, Registry of Deeds.

Witness our hands and seals this 9th day of August, 2005.

SHAW'S REALTY TRUST

By: _____
Paul G. Rowan, Trustee

By: _____
William H. Arnold, Trustee

By: _____
Nicola J. DiFelice, Trustee

STATE OF IDAHO)
) ss:
COUNTY OF ADA)

SWORN TO AND SUBSCRIBED before me this 9th day of Aug., 2005, by William H. Arnold and Paul G. Rowan, Trustees for the Shaw's Realty Trust, a Massachusetts business trust, on behalf of the trust.

WITNESS MY HAND and official seal hereto affixed the day, month and year in this certificate first above written.

My commission expires:

10/28/10

R. A. LEONE NOTARY PUBLIC STATE OF IDAHO

R A Leone
NOTARY PUBLIC
Residing at: Boise, Idaho

STATE OF MASSACHUSETTS)
) ss:
COUNTY OF Plymouth)

SWORN TO AND SUBSCRIBED before me this 23 day of August, 2005, by Nicola J. DiFelice, Trustee for the Shaw's Realty Trust, a Massachusetts business trust, on behalf of the trust.

WITNESS MY HAND and official seal hereto affixed the day, month and year in this certificate first above written.

My commission expires:

07/23/2010

Marie S. Latour
NOTARY PUBLIC
Residing at: W. Bridgewater, Mass

MARIE S. LATOUR
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires
July 23, 2010

EXHIBIT A

Parcel 1 – 2924 Acushnet Avenue

Beginning at a point on the easterly side of Acushnet Avenue, being the northwesterly point of land to be described in line of land now or formerly of Sun Oil Company;

thence S 89°14'40" E in line of said land of Sun Oil Company, 100.66 feet to a point;

thence N 6°53'00" E in line of said land of Sun Oil Company, 156.96 feet to land now or formerly of Charles H. Wilkinson, et ux;

thence in line of said land N 84°40'10" E, 78.74 feet;

thence in line of said land N 5°7'30" W, 45 feet to land now or formerly of Lillian M. Kirby;

thence in line of said Kirby land N 84°40'10" E, 70.5 feet to land now or formerly of Pardon H. Devoll, III, et ux;

thence in line of said Dovoll land S 5°7'30", 150 feet to a point;

thence N 84°40'10" E, 118.87 feet to land described as Parcel A on plan hereinafter mentioned;

thence S 5°7'30" E, 200 feet to a point;

thence S 84°40'10" W. 292.53 feet to a point;

thence N 14°25'00" W, 109.91 feet to a point;

thence Westerly 100.88 feet to the east line of Acushnet Avenue to a point for a corner;

thence N 6°53'00" E, 44.12 feet to the point of beginning.

Containing 1 acre, more or less.

Said lot is described as Parcel B on Subdivision of Land in New Bedford belonging to Abiah C. Devoll, Tr., dated August 5, 1968 and recorded in the Bristol County (S.D.) Registry of Deed in Book 82, Page 70, to which reference may be had for a more particular description.

Parcel 2 - 972 Phillips Road

Northerly by Parcel A on Plan of Land hereinafter mentioned, 118.87 feet;

thence Easterly by land now or formerly of Adrin Realty Trust, 150.

thence Southerly by land now or formerly of Charles S. Devoll, 118.87 feet;

thence Westerly by land now or formerly of Charles S. Devoll, 150.00 feet;

Containing 17,831 square feet, more or less and being shown as Parcel B on Plan of Land in New Bedford belonging to Pardon H. Devoll, III and Lucille C. Devoll, dated July 8, 1991. Said plan is recorded in the Bristol County (S.D.) Registry of Deeds in Book 128, Page 79.

Parcel 3

Parcel I

BEGINNING at the southwest corner thereof at a point in the easterly line of Acushnet Avenue and at the northwest corner of land now or formerly of Addison F. Russell.

thence NORTH 17° 22' 00" EAST in said easterly line of Acushnet Avenue, one hundred fourteen and 52/100 (114.52) feet to a point;

thence NORTHERLY and EASTERLY still in said easterly line of Acushnet Avenue in an arc of a circle having a radius of four hundred (400) feet, a distance of one hundred thirty-seven and 28/100 (137.28) feet to Parcel B as shown on plan of land hereinafter mentioned;

thence NORTH 89° 09' 00" EAST by last named parcel one hundred forty-seven and 52/100 (147.52) feet to land now or formerly of Alfred Thomas;

thence SOUTH 14° 06' 00" EAST by last named land two hundred forty-one and 32/100 (241.32) feet to said Russell land; and

thence SOUTH 83° 58' 00" WEST by last named land one hundred fifty-two and 46/100 (152.46) feet to said easterly lien of Acushnet Avenue and the point of beginning.

CONTAINING 37,211 square feet, more or less, and being Parcel C on plan entitled "Subdivision of Land in New Bedford, Mass. Belonging to Odelle Chapdelaine, Scale 1" 40', November 10, 1975", and recorded with Bristol County Registry of Deeds, Southern District in Plan Book 96, Page 23.

Parcel II

Beginning at the intersection of the easterly line of Acushnet Avenue and the southerly line of Phillips Road and running S. 6° 53' W. bounding westerly on Acushnet Avenue 175.00 feet to the principal point of beginning of the parcel herein conveyed; thence N. 38° 49' 38" W. along line of lands retained by Grantor 100.50 feet to a point on line of lands now or formerly of Abiah C.

Devoll; thence S. 6° 53' W. along said Devoll lands 119.14 feet to a point; thence S. 89° 41' 40" E. along said Devoll lands 100.66 feet to a point in the easterly line of Acushnet Avenue; thence N. 6° 53' E. along said easterly line of Acushnet Avenue 120.67 feet to a point and place of beginning.

Parcel III

Beginning at a point in the easterly line of Acushnet Avenue, distant southerly therein three hundred thirty-nine and 79/100 (339.79) feet form the southerly line of Phillips Road;

1. Thence due easterly in a straight line a distance of one hundred 88/100 (100.88) feet to a point

2. Thence S. 14° 25' 00" E. in a straight line a distance of one hundred nine and 91/100 (109.91) feet to a point;

3. Thence N. 84° 40' 10" E. in a straight line a distance of two hundred ninety-two and 53/100 (292.53) feet to a point;

4. Thence N. 5° 7' 30" W. in the westerly line of a contemplated street extended a distance of three hundred (300) feet to a point;

5. Thence N. 84° 40' 10" E. in a straight line, said line being in the southerly line of land now or formerly belonging to Lillian M. and Marcel L. Spirlet and of land belonging to David and Julia Costa a distance of four hundred twenty-five and 48/100 (425.48) feet, more or less, to a point in the westerly line of land now or formerly belonging to Whites Farms, Inc.;

6. Thence S. 19° 25' 00" E. in said westerly line of Whites Farms, Inc., a distance of six hundred thirty (630) feet more or less to a point in the northerly line of Arnoff Street;

7. Thence S. 84° 35' 00" W. in said northerly line of Arnoff Street a distance of eight hundred forty-six and 63/100 (846.63) feet more or less, to a point;

8. Thence N. 14° 25' 00" W. in the easterly line of land now or formerly belonging to Odelie Chapdelaine a distance of four hundred eight (408) feet more or less, to a point;

9. Thence due west in the northerly line of said Odelie Chapdelaine a distance of eighty-seven and 78/100 (87.78) feet to a point in the easterly line of Acushnet Avenue;

10. Thence northerly in said line of Acushnet Avenue, N. 6° 53' 00" E. a distance of twenty and 15/100 (20.15) feet to the point of beginning. recorded in Plan Book 82 Page 70.

Said land being described as Parcel "A" on the plan drawn by the E. J. Engineering Co., Inc. of the New Bedford, Mass., dated August 5, 1968.

Containing 8 acres and 150.53 square rods.

Parcel IV:

Beginning at a point in the southerly line of Phillips Road distant easterly therein three hundred thirty-nine and 04/100 (339.04) feet more or less from the easterly line of Acushnet Avenue;

Thence S. 5° 7' 30" E. in a straight line a distance of one hundred fifty (150) feet more or less to a point;

Thence N. 84° 40' 10" E. in a straight line a distance of fifty (50) feet more or less to a point;

Thence N. 5° 7' 30" W. in a straight line a distance of one hundred fifty (150) feet more or less to a point in the southerly line of Phillips Road;

Thence 84° 40' 10" in said southerly line of Phillips Road a distance of fifty (50) feet to the point of beginning.

Containing 7500 square feet.

Being the same premises noted on the plan drawn by E. J. Engineering Co., Inc. dated August 5, 1968 as contemplated street 50' wide. recorded in Plan Book 82 Page 70.

Meaning and intending to convey and hereby conveying all contiguous land of the Grantor located Southerly of Phillips road, Easterly of Acushnet Avenue and Northerly of Arnoft Street however the same may be bounded or described including the fee in any abutting ways.

EXHIBIT B

A certain parcel of land situated on the Southeasterly side of Kings Highway in the City of New Bedford, the County of Bristol, and the Commonwealth of Massachusetts, being more particularly bounded and described as follows:

Beginning at a point, said point being a Massachusetts Highway bound at the intersection of the Easterly sideline of the State Highway Route #140 with the Southeasterly sideline of said Kings Highway;

Thence N 32°-07'-55" E, 583.11 feet along the Southeasterly sideline of said Kings Highway to a point;

Thence S 57°-56'-23" E, 276.00 feet to a point;

Thence S 10°-08'-29" E, 360.00 feet to a point;

Thence S 58°-32'-07" E, 37.59 feet to a point;

Thence S 08°-00'-10" E, 411.29 feet to a point;

Thence N 81°-59'-50" E, 412.48 feet to a point on the Westerly sideline of a Consolidated Rail Corp. Right of Way;

The last five courses being by land now or formerly of Dark Realty Trust;

Thence S 08°-00'-10" E, 522.19 feet, by the Westerly sideline of said Consolidated Rail Corp. Right of Way to a point;

Thence S 87°-11'-31" W, 892.89 feet by land now or formerly of the City of New Bedford to a point on the Easterly sideline of said State Highway Route #140;

Thence N 17°-33'-20" W, 473.83 feet along the Easterly sideline of said State Highway to a Massachusetts Highway bound;

Thence along a curve as it deflects to the right, having a radius of 12,850.00 feet, an arc length of 506.35 feet by the Easterly sideline of said State Highway to the Massachusetts Highway bound at the point of beginning.

Containing 20.98 acres and being shown on a plan entitled, "Plan of land in New Bedford, Massachusetts surveyed for Northwest Associates" Scale 1" = 80' and dated December 30, 1986 by Tibbetts Engineering Corp.

Being the same premises conveyed from John I. Paulding, Inc. to R. F. M. Corp. by deed dated June 9, 1983 recorded in the Bristol County Southern District Registry of Deeds in Book 1864, Page 1154.

For Grantor's Title, see deed dated June 9, 1983 recorded in the Bristol County Southern District Registry of Deeds in Book 1864, Page 1154; see also Certificate of Change of Name recorded in said Registry of Deeds in Book 1886, Page 871.

APPENDIX D

Certified Abutters List

City of New Bedford

REQUEST *for a* CERTIFIED ABUTTERS LIST

This information is needed so that an official abutters list as required by MA General Law may be created and used in notifying abutters. You, as applicant, are responsible for picking up and paying for the certified abutters list from the assessor's office (city hall, room #109).

SUBJECT PROPERTY			
MAP #	130D	LOT(S)#	See attached
ADDRESS:	Northside Farm Subdivision - Declan Dr., Horseshoe Rd, Monson St., Northside Dr.		
OWNER INFORMATION			
NAME:	New Bedford Cousins LLC		
MAILING ADDRESS:	P.O. Box 36, Scituate MA 02066		
APPLICANT/CONTACT PERSON INFORMATION			
NAME (IF DIFFERENT):	Brendan Sullivan		
MAILING ADDRESS (IF DIFFERENT):	P.O. Box 5175, Norwell, MA 02061		
TELEPHONE #	781-659-8187		
EMAIL ADDRESS:	bsullivan@cavanaroconsulting.com		

REASON FOR THIS REQUEST: ***Check appropriate***	
	ZONING BOARD OF APPEALS APPLICATION
	PLANNING BOARD APPLICATION
X	CONSERVATION COMMISSION APPLICATION
	LICENSING BOARD APPLICATION
	OTHER (*Please explain*):

PLANNING DEPARTMENT JAN 20 2016

Once obtained, the Certified List of Abutters must be attached to this Certification Letter.

Submit this form to the Planning Division Room 303 in City Hall, 133 William Street. You, as applicant, are responsible for picking up and paying for the certified abutters list from the assessor's office (city hall, room #109).

Official Use Only:

As Administrative Assistant to the City of New Bedford's Board of Assessors, I do hereby certify that the names and addresses as identified on the attached "abutters list" are duly recorded and appear on the most recent tax.

Carlos Amado — Printed Name

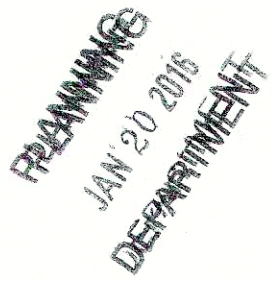
Carlos Amado — Signature

1/22/2016 — Date

38 records found

Parcel ID	Owner Name	Location	LUC
130D 117	NEW BEDFORD COUSINS LLC	ES ACUSHNET AVE	132
130D 402	NEW BEDFORD COUSINS LLC	NS ARNOFF ST	132
130D 380	NEW BEDFORD COUSINS LLC	NS DECLAN DR	130
130D 381	NEW BEDFORD COUSINS LLC	NS DECLAN DR	130
130D 382	NEW BEDFORD COUSINS LLC	NS DECLAN DR	130
130D 407	NEW BEDFORD COUSINS LLC	SS DECLAN DR	130
130D 408	NEW BEDFORD COUSINS LLC	SS DECLAN DR	130
130D 409	NEW BEDFORD COUSINS LLC	SS DECLAN DR	130
130D 410	NEW BEDFORD COUSINS LLC	SS DECLAN DR	130
130D 411	NEW BEDFORD COUSINS LLC	WS DECLAN DR	130
130D 379	NEW BEDFORD COUSINS LLC	WS DECLAN DR	130
130D 398	NEW BEDFORD COUSINS LLC	ES HORSESHOE RD	130
130D 399	NEW BEDFORD COUSINS LLC	ES HORSESHOE RD	130
130D 400	NEW BEDFORD COUSINS LLC	ES HORSESHOE RD	130
130D 401	NEW BEDFORD COUSINS LLC	ES HORSESHOE RD	130
130D 397	NEW BEDFORD COUSINS LLC	NE HORSESHOE RD	130
130D 395	NEW BEDFORD COUSINS LLC	NS HORSESHOE RD	130
130D 396	NEW BEDFORD COUSINS LLC	NS HORSESHOE RD	130
130D 412	NEW BEDFORD COUSINS LLC	NS HORSESHOE RD	130
130D 419	NEW BEDFORD COUSINS LLC	NS HORSESHOE RD	130
130D 403	NEW BEDFORD COUSINS LLC	SE HORSESHOE RD	130
130D 404	NEW BEDFORD COUSINS LLC	SS HORSESHOE RD	130
130D 405	NEW BEDFORD COUSINS LLC	SS HORSESHOE RD	130
130D 406	NEW BEDFORD COUSINS LLC	SS HORSESHOE RD	130
130D 416	NEW BEDFORD COUSINS LLC	WS HORSESHOE RD	130

130D 417	NEW BEDFORD COUSINS LLC	WS HORSESHOE RD	130
130D 418	NEW BEDFORD COUSINS LLC	WS HORSESHOE RD	130
130D 413	NEW BEDFORD COUSINS LLC	ES MONSON ST	130
130D 414	NEW BEDFORD COUSINS LLC	ES MONSON ST	130
130D 415	NEW BEDFORD COUSINS LLC	ES MONSON ST	130
130D 393	NEW BEDFORD COUSINS LLC	WS MONSON ST	130
130D 383	NEW BEDFORD COUSINS LLC	WS MONSON ST	130
130D 384	NEW BEDFORD COUSINS LLC	WS MONSON ST	130
130D 394	NEW BEDFORD COUSINS LLC	NS NORTHSIDE DR	130
130D 392	NEW BEDFORD COUSINS LLC	NS NORTHSIDE DR	130
130D 385	NEW BEDFORD COUSINS LLC	SS NORTHSIDE DR	130
130D 386	NEW BEDFORD COUSINS LLC	SS NORTHSIDE DR	130
130D 387	NEW BEDFORD COUSINS LLC	SS NORTHSIDE DR	130



January 20, 2016
Dear Applicant,

Please find below the List of Abutters within 100 feet of the property known as Northside Farm Subdivision-Declan Drive, Horseshoe Road, Monson Street, and Northside Drive (130D-117, 402, 380, 381, 382, 407, 408, 409, 410, 411, 379, 398, 399, 400, 401, 397, 395, 396, 412, 419, 403, 404, 405, 406, 416, 417, 418, 413, 414, 415, 393, 383, 384, 394, 392, 385, 386, & 387). The current ownership listed herein must be checked and verified by the City of New Bedford Assessor's Office. Following said verification, the list shall be considered a Certified List of Abutters.

Please note that multiple listed properties with identical owner name and mailing address shall be considered duplicates, and shall require only 1 mailing. Additionally, City of New Bedford-Owned properties shall not require mailed notice.

Parcel	Location	Owner and Mailing Address
130D-400 ES	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-394 NS	NORTHSIDE DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-392 NS	NORTHSIDE DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-272	910 PHILLIPS RD	MEDEIROS KEVIN "TRUSTEE", MEDEIROS JESSICA "TRUSTEE" 910 PHILLIPS ROAD NEW BEDFORD, MA 02745
130B-168	2857 ACUSHNET AVE	RAFFA VINCENT, 3570 ACUSHNET AVE NEW BEDFORD, MA 02745
130D-136	2856 ACUSHNET AVE	2856 ACUSHNET AVENUE LLC, 2856 ACUSHNET AVENUE NEW BEDFORD, MA 02745
130D-140 SS	ARNOFF ST	GARDEN RESTAURANT INC, C/O M BOBOLA P O BOX D 12 FAIRHAVEN, MA 02719
130D-141 SS	ARNOFF ST	GARDEN RESTAURANT INC, C/O M BOBOLA FAIRHAVEN, MA 02719 - 0720
130D-165	6 MONSON ST	PACHECO TAMMY, C/O LEMAIRE TAMMY 967 VICTORIA STREET NEW BEDFORD, MA 02745
130D-142 SS	ARNOFF ST	GARDEN RESTAURANT INC, C/O M BOBOLA P O BOX D 12 FAIRHAVEN, MA 02719
130D-143 SS	ARNOFF ST	~~CABRAL BERNARDO J "TRUSTEE", MONSON STREET NOMINEE TRUST~~ ~~31 GARRISON ROAD~~ Paul + Tammy Lemaire NEW BEDFORD, MA 02745 967 Victoria St.
130D-415 ES	MONSON ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-416 WS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066

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Parcel	Location	Owner and Mailing Address
130D-389	2926 ACUSHNET AVE	SOUTHERN MASS CREDIT UNION, 123 ALDEN ROAD FAIRHAVEN, MA 02719
130D-163	947 VICTORIA ST	LANGLOIS MICHAEL M, PATISTEA JOYCE S 947 VICTORIA STREET NEW BEDFORD, MA 02745
130D-161	939 VICTORIA ST	VIEIRA RICHARD G, VIEIRA LINDA 15 MARIAL DRIVE SO DARTMOUTH, MA 02748
130D-410	S DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-411	WS DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-409	S DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-408	S DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130B-244	2883 ACUSHNET AVE - 2901	CARVALHO EVELYN F "TRUSTEE", EVELYN F CARVALHO REALTY TRUST 232 LAWRENCE STREET NEW BEDFORD, MA 02745
130D-150	S ARNOFF ST	WHITE WALTER D, 867 MIDDLE ROAD ACUSHNET, MA 02743
130D-407	S DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-117	S ACUSHNET AVE	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-379	WS DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-376	919 VICTORIA ST	DEMELO ALTINO, 919 VICTORIA ST NEW BEDFORD, MA 02745

January 20, 2016
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Parcel	Location	Owner and Mailing Address
130D-406 SS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-405 SS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-247	2904 ACUSHNET AVE	BURGESS KEVIN, 2904 ACUSHNET AVENUE NEW BEDFORD, MA 02745
130D-380 NS	DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-382 NS	DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-381 NS	DECLAN DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-404 SS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130B-320	2907 ACUSHNET AVE ~ 2917	CARVALHO EVELYN F "TRS", EVELYN F CARVALHO REALTY TRUST 232 LAWRENCE STREET NEW BEDFORD, MA 02745 - 1418
130D-248	2914 ACUSHNET AVE	MEUNIER NEIL A, MEUNIER ERICA S 2914 ACUSHNET AVENUE NEW BEDFORD, MA 02745
130D-383 WS	MONSON ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-412 NS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-387 SS	NORTHSIDE DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-403 SE	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066

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Parcel	Location	Owner and Mailing Address
130D-402 NS	ARNOFF ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-419 NS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-413 ES	MONSON ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-384 WS	MONSON ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-386 SS	NORTHSIDE DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-418 WS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-414 ES	MONSON ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-401 ES	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-385 SS	NORTHSIDE DR	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-417 WS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-399 ES	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-393 WS	MONSON ST	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-395 NS	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066

January 20, 2016
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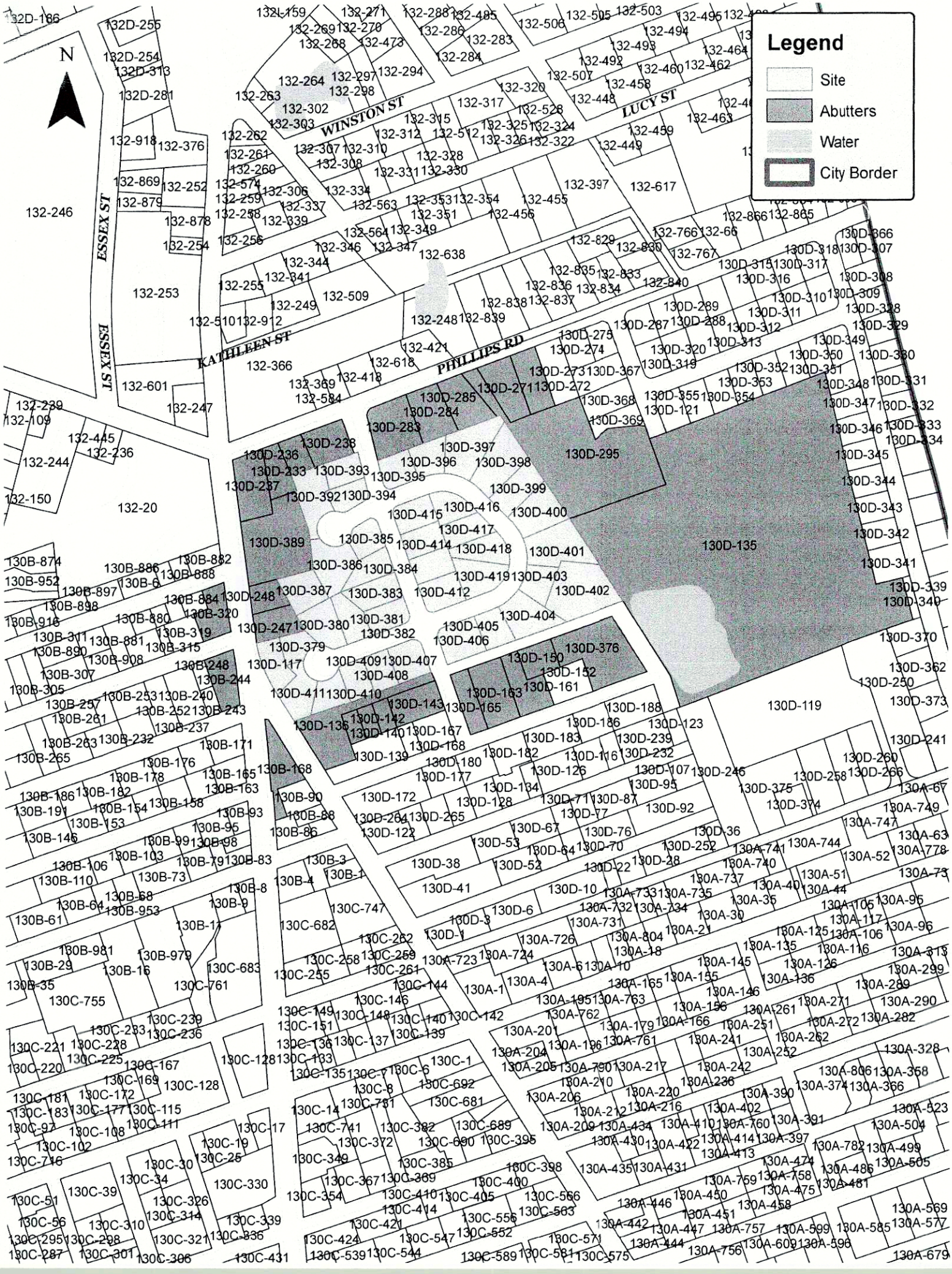
Parcel	Location	Owner and Mailing Address
130D-237	2942 ACUSHNET AVE	LEISAM REALTY LLC, 2942 ACUSHNET AVENUE NEW BEDFORD, MA 02745
130D-233	982 PHILLIPS RD	WILKINSON CORA A, 982 PHILLIPS RD NEW BEDFORD, MA 02745
130D-396	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-236	980 PHILLIPS RD	MOURA DOMINGOS D, MOURA LINDA J 980 PHILLIPS ROAD NEW BEDFORD, MA 02745
130D-398	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-238	972 PHILLIPS RD	WILDE LEE ANNE, 972 PHILLIPS ROAD NEW BEDFORD, MA 02745
130D-397	HORSESHOE RD	NEW BEDFORD COUSINS LLC, P O BOX 36 SCITUATE, MA 02066
130D-283	954 PHILLIPS RD	FRENETTE EMILE R, 954 PHILLIPS RD NEW BEDFORD, MA 02745
130D-284	942 PHILLIPS RD	ALBANO JOAO, ALBANO GRACE 942 PHILLIPS ROAD NEW BEDFORD, MA 02745
130D-285	934 PHILLIPS RD	MARTINS GEORGE, MARTINS ELIZABETH M 934 PHILLIPS RD NEW BEDFORD, MA 02745
130D-135	221 FITZGERALD DR	221 FITZGERALD DRIVE LLC, C/O HEARTLAND BANK #370043914 14125 CLAYTON ROAD CHESTERFIELD, MO 63017
130D-295	250 FITZGERALD DR	KNOWLES RYAN M, KNOWLES KATHRINE R CONSTANT- 250 FITZGERALD DRIVE NEW BEDFORD, MA 02745
130D-271	918 PHILLIPS RD	BARRIGAS FRANK L, BARRIGAS NATERCIA M 918 PHILLIPS RD NEW BEDFORD, MA 02745


Legend
Site
Abutters
Water
City Border
N
ESSEX ST
WINSTON ST
LUCY ST
KATHLEEN ST
PHILLIPS RD

APPENDIX E

2006 Order of Conditions

COPY

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number: SE49-578

BK 8290 PG 98
08/29/06 08:29 DOC. 27245
Bristol Co. S.D.

A. General Information

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

From: New Bedford
1. Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

a. First Name	b. Last Name	c. Company
		New Bedford Cousins

14 Howard Street
d. Mailing Address

e. City/Town	f. State	g. Zip Code
Rockland	MA	02370

4. Property Owner (if different from applicant):

a. First Name	b. Last Name	c. Company

d. Mailing Address

e. City/Town	f. State	g. Zip Code

5. Project Location:

a. Street Address	b. City/Town
Phillips Road	New Bedford

c. Assessors Map/Plat Number	d. Parcel/Lot Number
130D	117, 118, 243, 244, 249, & 286

Latitude and Longitude, if known (**note:** electronic filers will click for GIS locator):

e. Latitude	f. Longitude

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

a. County	b. Certificate (if registered land)
Bristol	

c. Book	d. Page
7734	340

7. Dates:

a. Date Notice of Intent Filed	b. Date Public Hearing Closed	c. Date of Issuance
5/25/06	8/8/06	8/28/06

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

Plan to Accompany Notice of Intent (sheets 1 through 5 of 5)
a. Plan Title

b. Prepared By	c. Signed and Stamped by
Cavanaro Consulting	John C. Cavanaro, PE

	e. Scale
(Shts 1 & 5, rev. date 7/14/06; Shts 2 & 3 rev. date 7/27/06; Sht 4 rev. date 7/27/06).	1"=50'

f. Additional Plan or Document Title	g. Date
Stormwater Drainage Calculations	Revised 7/14/06

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number: SE49-578

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act. Check all that apply:

a. ☐ Public Water Supply
b. ☐ Land Containing Shellfish
c. ☒ Prevention of Pollution
d. ☒ Private Water Supply
e. ☒ Fisheries
f. ☒ Protection of Wildlife Habitat
g. ☒ Groundwater Supply
h. ☒ Storm Damage Prevention
i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect these interests, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

3. ☒ Buffer Zone Impacts: Shortest distance between limit of project disturbance and wetland boundary (if available) — 25' a. linear feet

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. cu.yd dredged	f. cu.yd dredged		

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number: SE49-578

B. Findings (cont.)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. cu.yd dredged	d. cu.yd dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. c/y nourishmt.	d. c/y nourishmt.
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. c/y nourishmt.	d. c/y nourishmt
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. cu.yd dredged	d. cu.yd dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. cu.yd dredged	b. cu.yd dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:
SE49-578

C. General Conditions Under Massachusetts Wetlands Protection Act

(only applicable to approved projects)

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.

2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.

3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.

4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.

5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.

6. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

7. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

8. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to this Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

9. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MA DEP"]

"File Number SE49-578 "

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

SE49-578

C. General Conditions Under Massachusetts Wetlands Protection Act

10. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before DEP.

11. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

12. The work shall conform to the plans and special conditions referenced in this order.

13. Any change to the plans identified in Condition #12 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

14. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

15. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

16. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

17. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

18. All work associated with this Order is required to comply with the Massachusetts Stormwater Policy Standards.

Special Conditions:

If you need more space for additional conditions, select box to attach a text document ☒

SEE ATTACHED SPECIAL CONDITIONS 19 THROUGH 51

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number: SE49-578

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☐ Yes ☐ No
2. The _____ hereby finds (check one that applies):
   Conservation Commission
3. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

   _____ _____
   a. Municipal Ordinance or Bylaw b. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

4. ☐ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

   _____ _____
   a. Municipal Ordinance or Bylaw b. Citation

   The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

If you need more space for additional conditions, select box to attach a text document ☐

c. The special conditions relating to municipal ordinance or bylaw are as follows:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number: SE49-578

E. Issuance

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.
Please indicate the number of members who will sign this form:
This Order must be signed by a majority of the Conservation Commission.

8/28/06
1. Date of Issuance

4
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Notary Acknowledgement

Commonwealth of Massachusetts County of Bristol

On this 8th Day of August Month 2006 Year

Before me, the undersigned Notary Public, personally appeared John P. Gurney Name of Document Signer

proved to me through satisfactory evidence of identification, which was/were personal Knowledge Description of evidence of identification

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.

As member of New Bedford City/Town Conservation Commission

JANE MEDEIROS FRIEDMAN
Notary Public
Commonwealth of Massachusetts
My Commission Expires Jun 21, 2007

Signature of Notary Public

Jane Medeiros Friedman
Printed Name of Notary Public

June 21, 2007
My Commission Expires (Date)

Place notary seal and/or any stamp above

This Order is issued to the applicant as follows:

☐ by hand delivery on

Date

☒ by certified mail, return receipt requested, on 8/28/06

Date

#7003 1010 0001 5591 3767

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

SE49-578

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant. Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, § 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Section G, Recording Information is available on the following page.

Environmental Stewardship Department/
New Bedford Conservation Commission

City of New Bedford
Scott W. Lang, Mayor

SPECIAL CONDITIONS
SE49-578
New Bedford Cousins, LLC
Northside Farm
Phillips Road
Map 130-D, Lots 117, 118, 243, 244, 249 & 286

19. No activity shall occur prior to obtaining all necessary and required permits, licenses, and approvals; and until copies of the same have been furnished to the Conservation Commission.

20. Any design modifications, alterations, amendments, or additions shall be subject to the approval of the New Bedford Conservation Commission. Requests for any changes shall be made in writing and shall be accompanied by a revised plan.

21. No modification to surface features, drainage or topography shall be permitted except as indicated by this Order of Conditions.

22. Contours shall remain unchanged except as permitted by this Order of Conditions.

23. There shall be no construction other than that proposed by the Notice of Intent and included on the submitted plan.

24. Immediately upon completion of the exterior construction and grading, permanent stabilization landscaping shall be carried out in order to minimize erosion.

25. All wet areas not to be altered shall be kept clear of rubbish, debris, and construction material.

26. All exposed soil or subsoil shall be replanted with vegetation such as grass, groundcover or shrubs so as to minimize erosion and siltation.

27. There shall be minimum disruption of existing grades and vegetation in order to minimize erosion.

28. No runoff shall be caused to drain on to adjoining property or on any public ways.

29. All excess material shall be removed from the site.

30. The owners shall notify the Conservation Commission of the work-start date prior to its commencement so that regular inspections may be made.

31. All work performed in accordance with said plans and this Order of Conditions shall be in compliance with the state building and/or plumbing code.

32. The Inspector and/or the Commission members shall have the right to enter upon the land for the purpose of the inspection and/or the taking of pictures to determine and evaluate compliance with this order.

33. The design engineer will certify, in writing, that this project has been complete in accordance with the above Order of Conditions before the Certificate of Compliance will be issued.

34. All facilities and equipment shall be continually operated and maintained so as to comply with this order of conditions and M.G.L. Ch. 131, S 40, the Wetlands Protection Act.

35. Certain conditions, such as maintenance or monitoring are on-going and are not to expire at the end of three years or with the issuance of a Certificate of Compliance.

36. This order of Conditions shall apply to any successor in interest or successor in control.

37. Any changes required by any other board or authority may require a new filing with the Conservation Commission.

38. At the discretion of the Conservation Commission, the applicant may be required to file with any or all of the following agencies:

The Department of Environmental Protection
Army Corps of Engineers
Coastal Zone Management
Division of Waterways

39. The Conservation Commission and/or the City of New Bedford shall not be responsible or liable for the construction, the operation, or the maintenance of any part of this project and does not warrant the safety of the same.

40. Any fill and/or construction materials shall be placed in upland areas.

41. Any mitigation and resource protection devices and measures, e.g. hay bales, siltation fence, etc., are to be installed prior to initiation of any work under this Order of Conditions. The Conservation Agent shall be notified when in place for inspection and verification. No work to be undertaken under the Order of Conditions until written or verbal approval is received from the Conservation Commission or its Agent.

42. In accordance with Condition number thirteen (13), no activity shall take place until the applicant has furnished written documentation that the plans on file with

the Conservation Commission are consistent with permits and approvals of other Town Boards.

43. Prior to any construction, an on-site inspection is to be held between the proposed contractor, the engineer, and the Conservation Commission Agent to go over the sequence of construction and all other restrictions and requirements as noted on the Order of Conditions. A written construction schedule to be received at that time.

44. All erosion control barriers shall be constructed of snow fencing, silt fencing and staked hay bales and clearly depicted on the plans, and placement shall be inspected both pre and post construction by Agent

45. Any changes in proposed drainage patterns will require written approval by the Conservation Commission.

46. Wetland flagging to remain in place until the project has been completed and Certificate of Compliance issued.

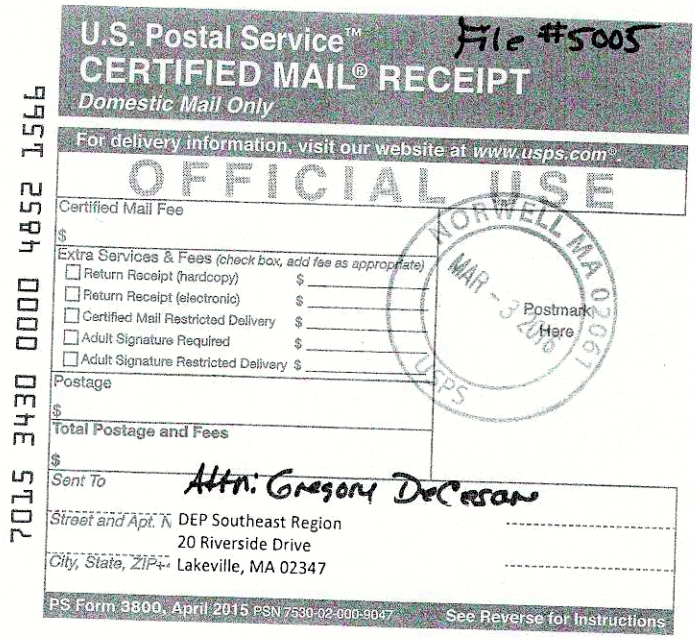
47. Notice of Intent, Order of Conditions and plans shall be retained on the site during construction and made available to all contractors.

48. All conditions are on going and do not expire until the issuance of a Certificate of Compliance.

49. The design engineer will certify, with an as-built plan, that this project has been complete in accordance with the above Order of Conditions before the certificate of Compliance will be issued.

50. *This plan is for the construction of the roadway and drainage system in the Buffer Zone. Individual Notices of Intent shall be submitted for the construction of the single family dwellings in the Buffer Zone*

51. Upon completion of construction, a split rail fence shall be installed along the hay bale/silt fence line within the Buffer Zone to establish a permanent no disturbance boundary in perpetuity. A sign/placard shall be placed on the fence stating that: *"a protected conservation area exists beyond this fence and is to remain undisturbed per Order of the New Bedford Conservation Commission".* Work on the developed side of the split rail fence requires the permission of the Conservation Commission wherever such work falls within the 100' Buffer Zone.



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City, State, ZIP+ Lakeville, MA 02347

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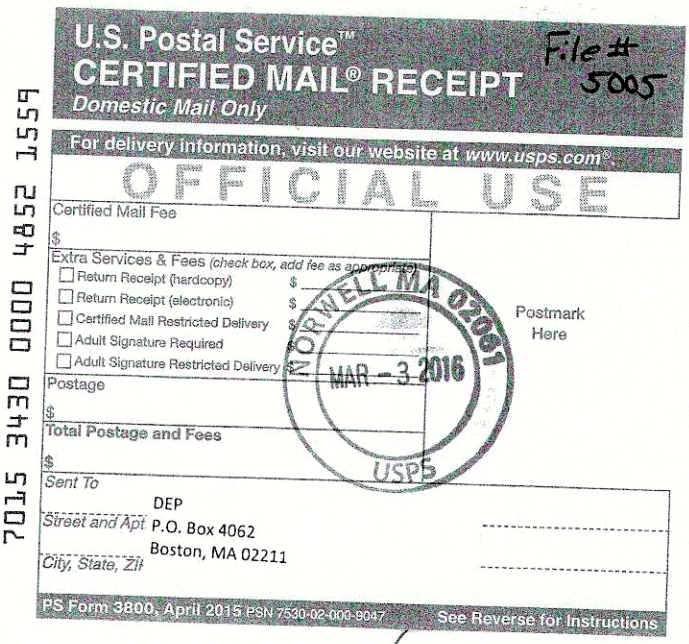

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City, State, ZI

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SECTION VII

PROJECT PLANS

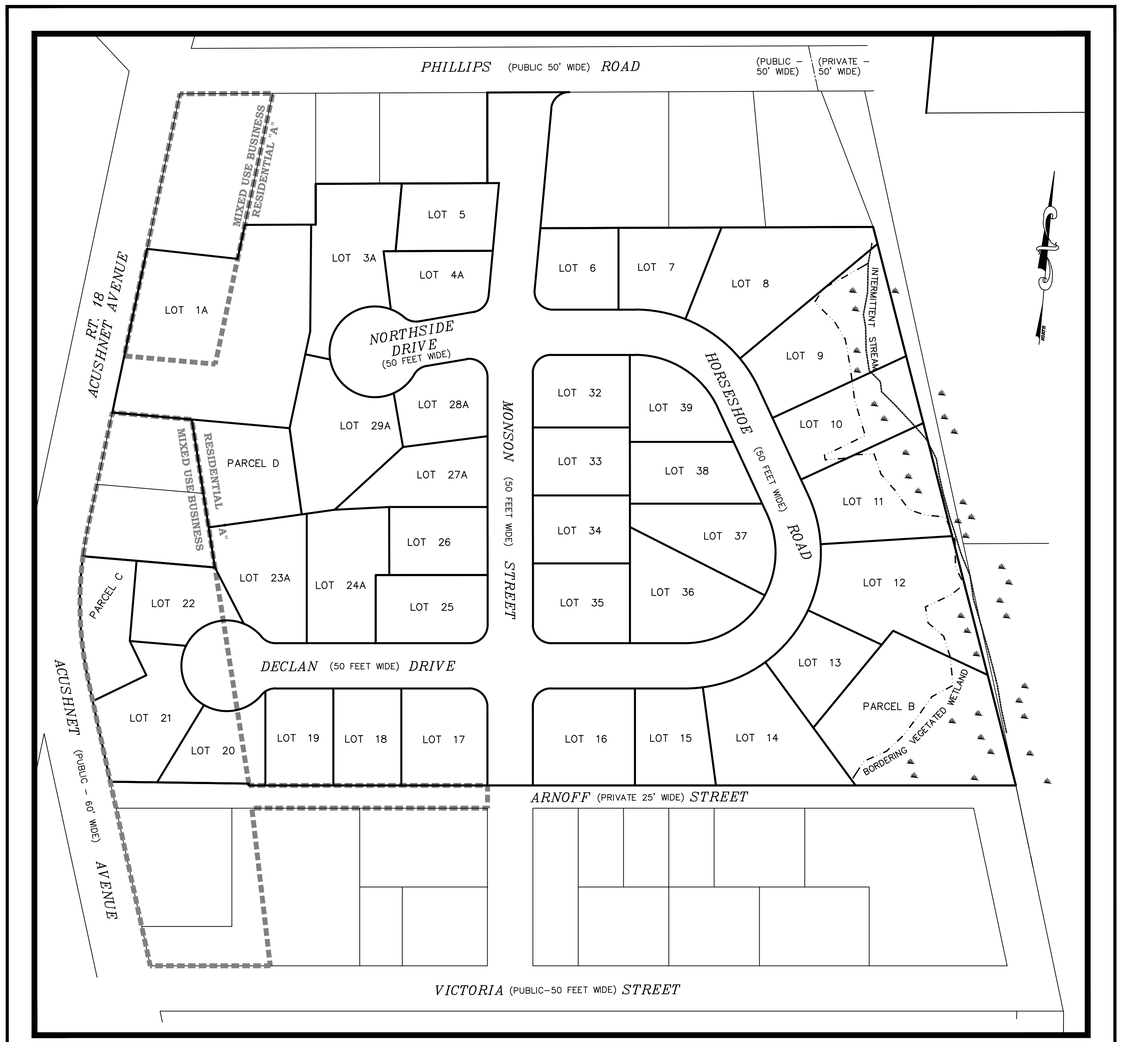
SITE PLAN
TO ACCOMPANY NOTICE OF INTENT
NORTHSIDE FARM
NEW BEDFORD, MA 02745

SITE SUMMARY:

OWNER/APPLICANT: NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066

ASSESSORS INFORMATION: MAP 130 BLOCK D LOTS 117, 379-387, 392-419

ZONING DISTRICT: RESIDENTIAL A & MIXED USE BUSINESS



LOCUS PLAN:
SCALE: 1" = 80'

SHEET INDEX:

DRAWING REVISIONS

REVISION	DATE	DESCRIPTION

GENERAL NOTES:

1. THE SUBJECT PARCEL IS SHOWN AS LOTS 117, 379–387 AND 392–419 ON THE CITY OF NEW BEDFORD'S ASSESSOR'S PLAT 130–D.

2. THE VERTICAL DATUM IS THE NEW BEDFORD CITY DATUM.

3. LOCUS LIES WITHIN ZONE "C" AS SHOWN ON FIRM PERFORMED AT THIS TIME.COMMUNITY PANEL #255216 0005B REVISED JULY 16, 2014

4. BORDERING VEGETATED WETLANDS AND INLAND BANK FLAGS WERE SET BY JOHN ZIMMER, P.W.S. IN NOVEMBER 2016.

PLAN REFERENCES:

LAND COURT PLAN #23553–A

PLAN BK\PG:
146\104
133\34
130\30
128\79
121\138
121\110
96\23
85\07
82\70
19\49

BOARD OF SURVEY PLAN #'S:
24, 39, 39B, 39C, 80

MASS HIGHWAY DEPT. FIELD BOOK #'S:
23040 & 27586

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
No. 41322
REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
CIVIL
No. 41358
REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

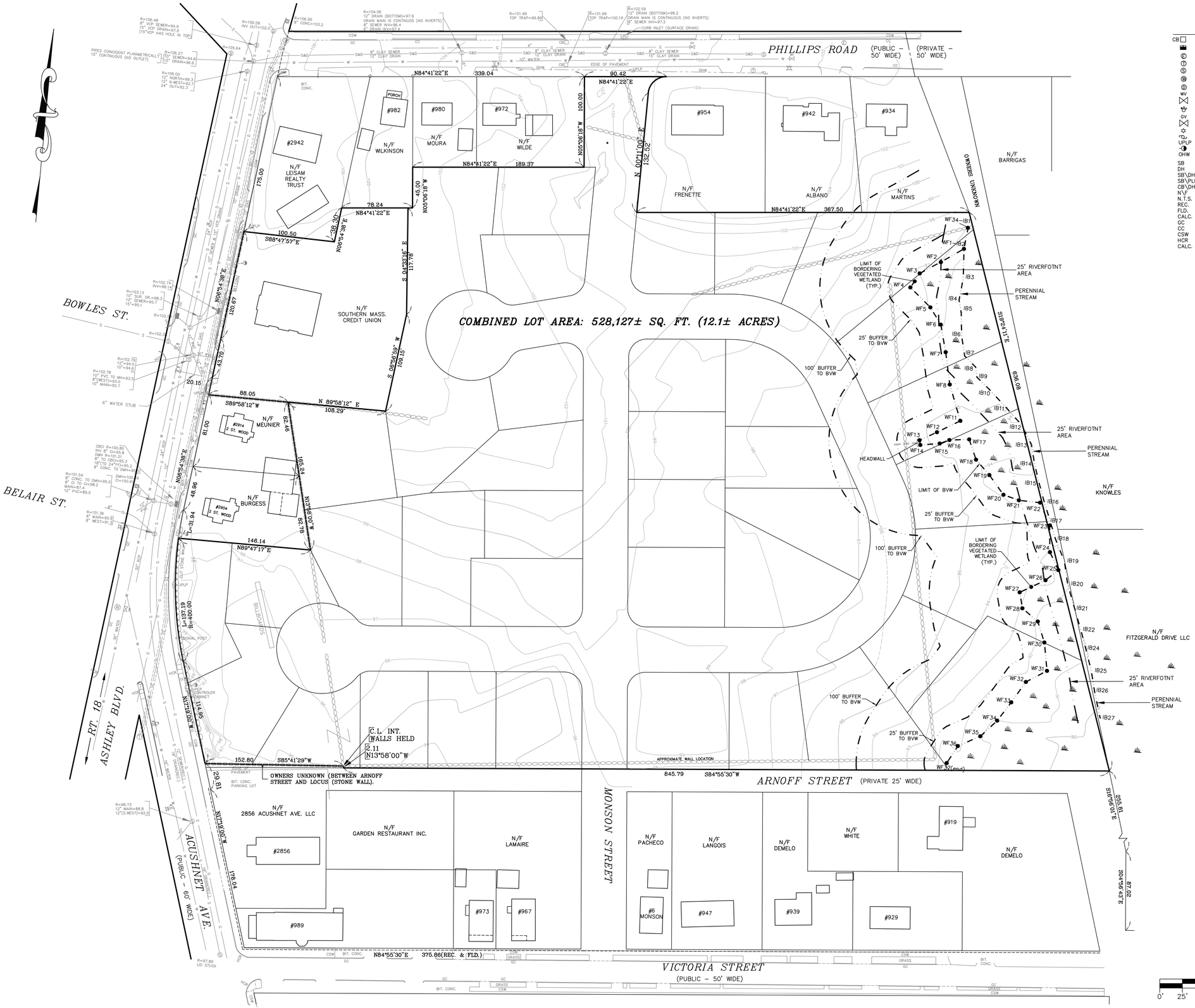
NORTHSIDE FARM
TITLE SHEET

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

OWNER/APPLICANT:

NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO. TS
SCALE : AS SHOWN	
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 1 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



LEGEND

CB	CATCH BASIN
	CATCH BASIN & CURB INLET
E	ELECTRIC MANHOLE
T	TELEPHONE MANHOLE
S	SEWER MANHOLE
W	WATER MANHOLE
D	DRAIN MANHOLE
WV	WATER VALVE
	WATER SHUT OFF
GV	GAS VALVE
	LIGHT POLE
	UTILITY POLE
UPLP	UTILITY POLE & LIGHT POLE
	GUY ANCHOR
OHW	OVERHEAD WIRE
SB	STONE BOUND
DH	DRILL HOLE
SB\DH	STONE BOUND WITH DRILL HOLE
SB\PLUG	STONE BOUND WITH PLUG
CB\DH	CONC. BOUND WITH DRILL HOLE
N\F	NOW OR FORMERLY
N.T.S.	NOT TO SCALE
REC.	RECORD QUANTITY
FLD.	FIELD MEASURED QUANTITY
CALC.	CALCULATED QUANTITY
GC	GRANITE CURB
CC	CONCRETE CURB
CSW	CONCRETE SIDEWALK
HCR	HANDICAP RAMP
CALC.	CALCULATED QUANTITY

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

OWNER OF RECORD:

NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066
DEED BOOK: 7734, PAGE: 340

GENERAL NOTES:

1. THE VERTICAL DATUM IS THE NEW BEDFORD CITY DATUM.

2. UTILITIES LOCATIONS AS SHOWN RESULT FROM A FIELD FIELD SURVEY AS WELL AS COMPILED RECORD INFORMATION.

3. LOCUS LIES WITHIN ZONE "X" AS SHOWN ON FIRM COMMUNITY PANEL #25005C0383G PANEL 383 OF 550 REVISED JULY 16, 2014.

4. BORDERING VEGETATED WETLANDS FLAGS AND INTERMITTENT STREAM FLAGS WERE SET BY JOHN ZIMMER, P.W.S. IN NOVEMBER 2015.

5. A COMPLETE ENCROACHMENT SURVEY WAS NOT PERFORMED AT THIS TIME.

PLAN REFERENCES:

LAND COURT PLAN #23553–A

PLAN BK\PG:

146\104	128\79	96\23
133\34	121\138	85\07
130\30	121\110	82\70

BOARD OF SURVEY PLAN #'S: 24, 39, 39B, 39C, 80

MASS HIGHWAY DEPT. FIELD BOOK #'S: 23040 & 27586

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
No. 46922
REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
CIVIL
No. 41358
REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM
EXISTING CONDITIONS

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

OWNER/APPLICANT:

NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO. EC
SCALE : AS SHOWN	
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 2 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\DEFF_NS ECON

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

GENERAL NOTES:

1. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN IS BASED ON AN INSTRUMENT SURVEY PERFORMED BY CAVANARO CONSULTING USING INFORMATION COMPILED FROM AVAILABLE ASSESSOR'S MAPS AND RECORDED DEED INFORMATION.

2. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATION PRIOR TO EARTH REMOVAL.

3. PROPOSED GAS SERVICE CONNECTION SHALL BE INSTALLED BY THE LOCAL GAS SERVICE PROVIDER. CONSTRUCTION DETAILS OF THE GAS CONNECTION ARE AVAILABLE AT THE GAS COMPANY.

LEGEND

- PROPERTY LINE
- TEC — PROPOSED TELEPHONE, ELECTRIC & CABLE
- G — EXISTING GAS LINE
- G — PROPOSED GAS LINE
- W — EXISTING WATER LINE
- W — PROPOSED WATER LINE
- S — EXISTING SEWER LINE
- S — PROPOSED SEWER LINE
- D — EXISTING DRAIN LINE
- D — PROPOSED DRAIN LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING DRAIN MANHOLE
- PROPOSED DRAIN MANHOLE
- TREE LINE
- TYP. — TYPICAL
- CLDI — CEMENT LINED DUCTILE IRON
- TBA — TO BE ABANDONED
- PROPOSED THRUST BLOCK

COMMONWEALTH OF MASSACHUSETTS — BRENDAN P. SULLIVAN No. 41322 — REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS — BRENDAN P. SULLIVAN CIVIL No. 41358 — REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM

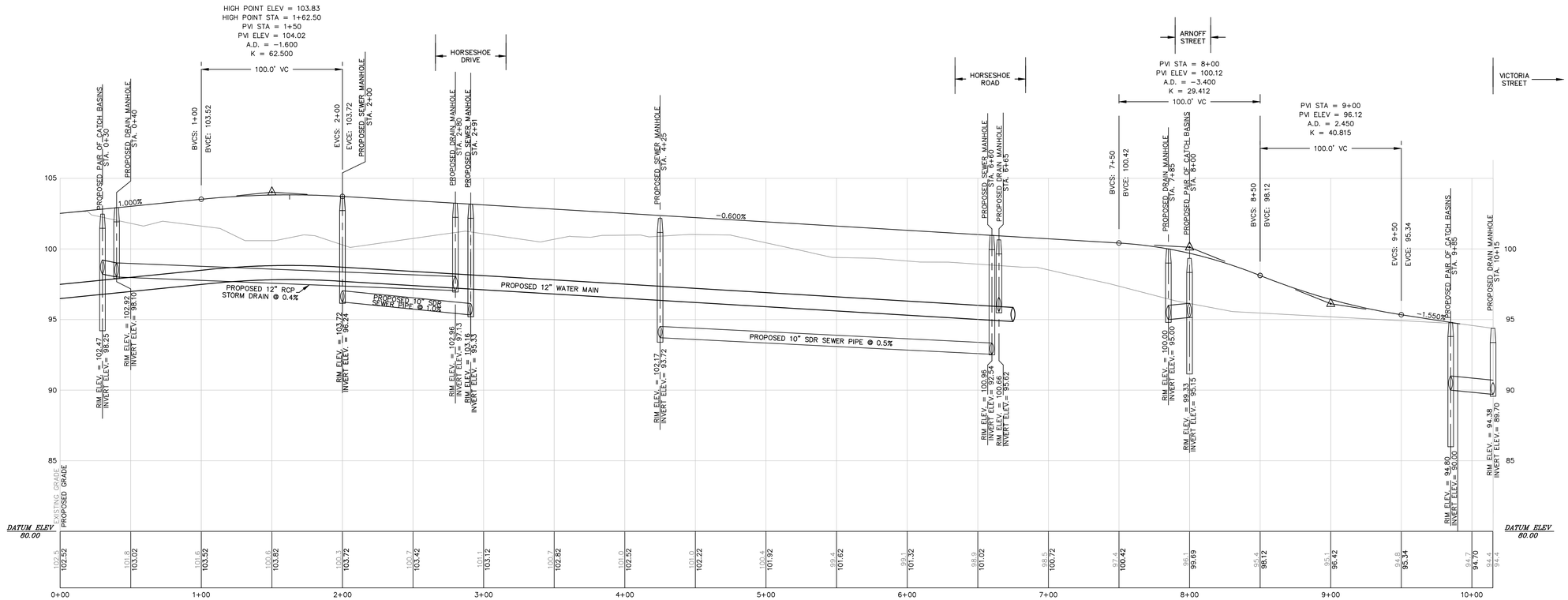
GRADING & DRAINAGE

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

OWNER/APPLICANT:

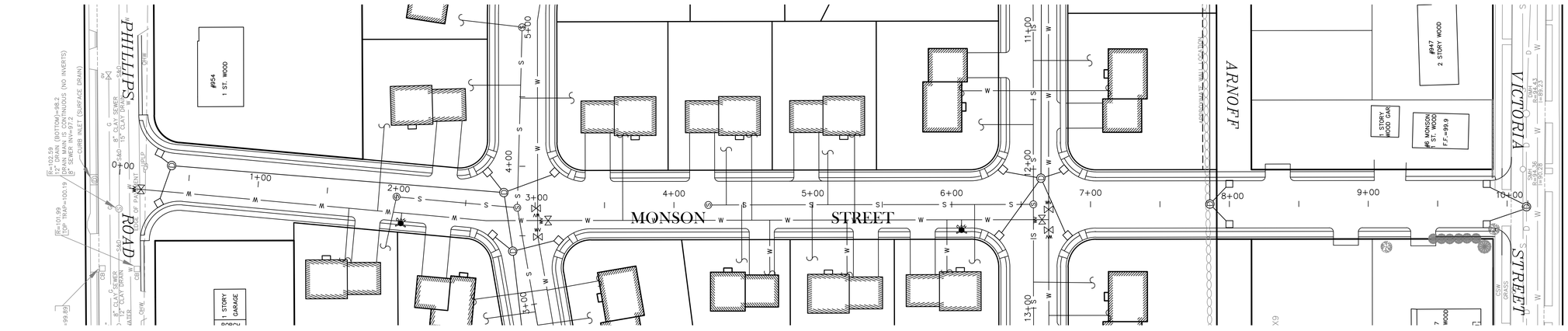
NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO. GD
SCALE : AS SHOWN	
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 3 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



PROFILE - MONSON STREET

SCALE
HORIZONTAL 1" = 40'
VERTICAL 1" = 4'



PLAN - MONSON STREET

SCALE
1" = 40'

NORTH

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

GENERAL NOTES:

1. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN IS BASED ON AN INSTRUMENT SURVEY PERFORMED BY CAVANARO CONSULTING USING INFORMATION COMPILED FROM AVAILABLE ASSESSOR'S MAPS AND RECORDED DEED INFORMATION.

2. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATION PRIOR TO EARTH REMOVAL.

3. PROPOSED GAS SERVICE CONNECTION SHALL BE INSTALLED BY THE LOCAL GAS SERVICE PROVIDER. CONSTRUCTION DETAILS OF THE GAS CONNECTION ARE AVAILABLE AT THE GAS COMPANY.

4. PROPOSED ELECTRICAL SERVICE CONNECTION FROM THE NEAREST UTILITY POLE SHALL BE INSTALLED BY THE LOCAL ELECTRIC SERVICE PROVIDER.

5. PROPOSED WATER SERVICE CONNECTION SHALL BE TO THE NEAREST MAIN LINE BRANCH IN ACCORDANCE WITH CITY OF NEW BEDFORD WATER DEPARTMENT STANDARDS.

6. ALL SANITARY SEWER CONNECTIONS SHALL BE REVIEWED AND APPROVED BY THE CITY OF NEW BEDFORD ENGINEERING DEPARTMENT PRIOR TO CONSTRUCTION.

LEGEND

	PROPERTY LINE
TEC	PROP. TELEPHONE, ELECTRIC & CABLE
G	EX GAS LINE
G	PROPOSED GAS LINE
W	EX WATER LINE
W	PROPOSED WATER LINE
S	EXISTING SEWER LINE
S	PROPOSED SEWER LINE
D	EXISTING DRAIN LINE
D	PROPOSED DRAIN LINE
	EXISTING HYDRANT
	PROPOSED HYDRANT
WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
	EXISTING CATCH BASIN
	PROPOSED CATCH BASIN
D	EXISTING DRAIN MANHOLE
D	PROPOSED DRAIN MANHOLE
	TREE LINE
TYP.	TYPICAL

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
No. 41322
REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
CIVIL
No. 41358
REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM

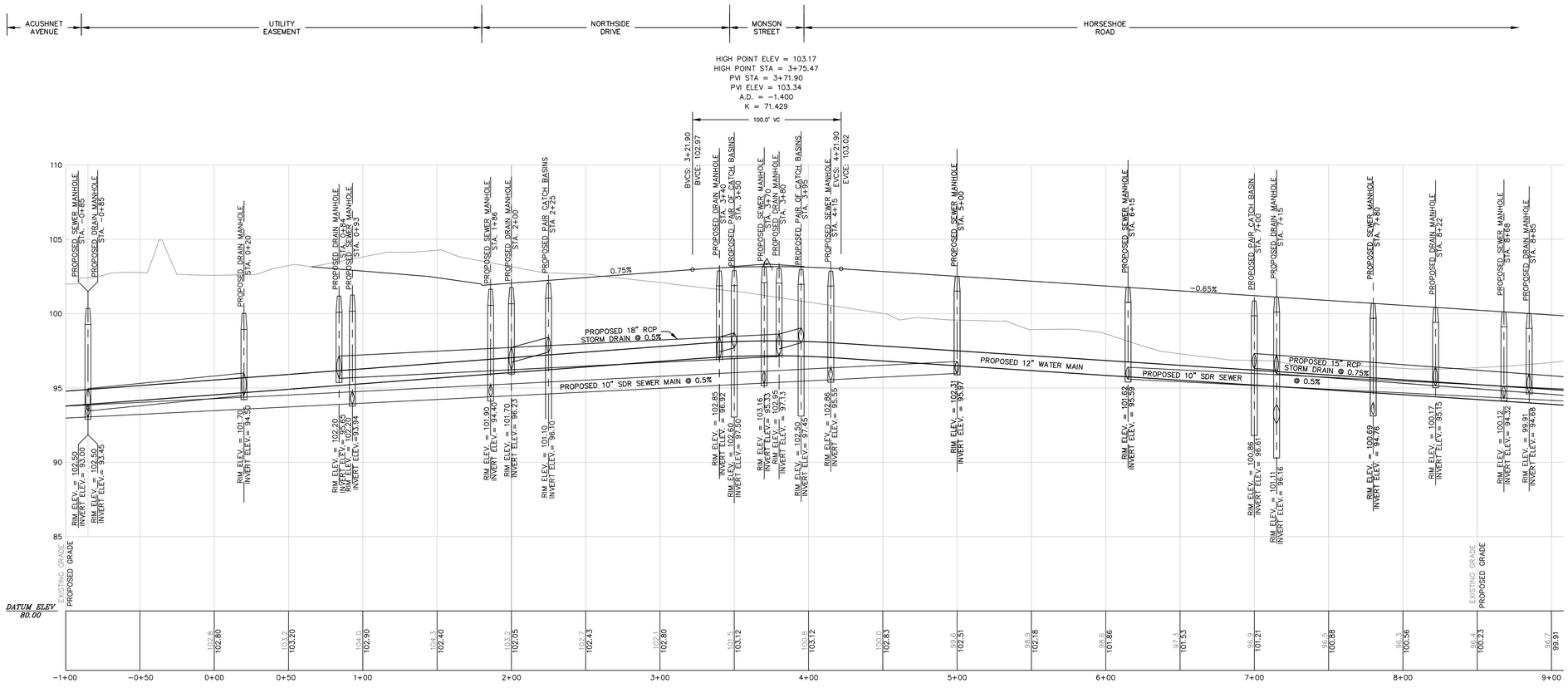
ROADWAY PROFILE 1

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

OWNER/APPLICANT:

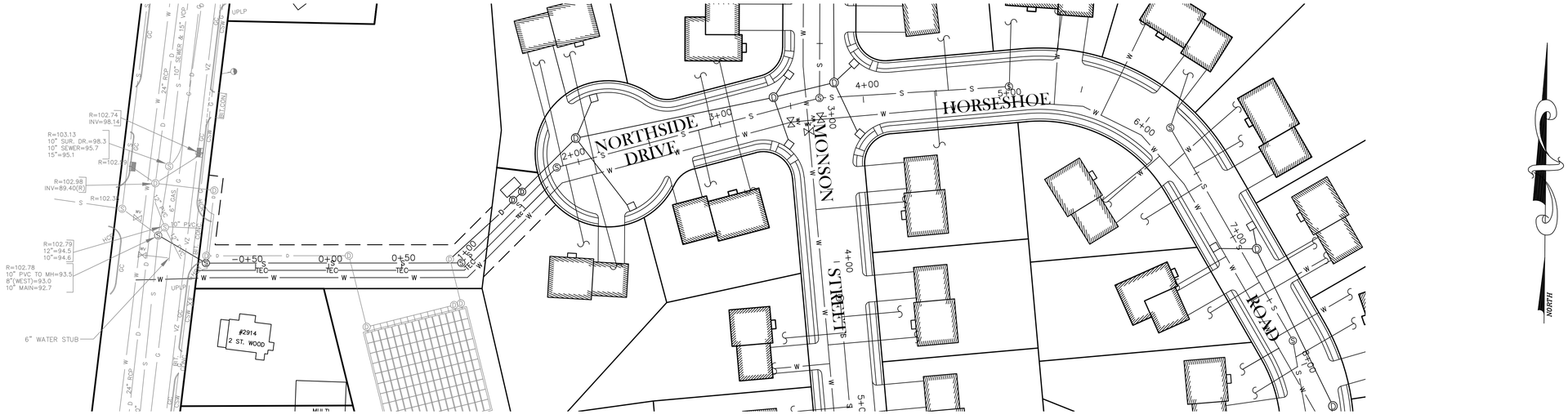
NEW BEDFORD COUSINS
P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO. RP1
SCALE : AS SHOWN	
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 4 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



PROFILE - NORTHSIDE DRIVE & HORSESHOE ROAD

SCALE
HORIZONTAL 1" = 40'
VERTICAL 1" = 4'



PLAN - NORTHSIDE DRIVE & HORSESHOE ROAD

SCALE
1" = 40'

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

GENERAL NOTES:

1. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN IS BASED ON AN INSTRUMENT SURVEY PERFORMED BY CAVANARO CONSULTING USING INFORMATION COMPILED FROM AVAILABLE ASSESSOR'S MAPS AND RECORDED DEED INFORMATION.

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3. PROPOSED GAS SERVICE CONNECTION SHALL BE INSTALLED BY THE LOCAL GAS SERVICE PROVIDER. CONSTRUCTION DETAILS OF THE GAS CONNECTION ARE AVAILABLE AT THE GAS COMPANY.

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5. PROPOSED WATER SERVICE CONNECTION SHALL BE TO THE NEAREST MAIN LINE BRANCH IN ACCORDANCE WITH CITY OF NEW BEDFORD WATER DEPARTMENT STANDARDS.

6. ALL SANITARY SEWER CONNECTIONS SHALL BE REVIEWED AND APPROVED BY THE CITY OF NEW BEDFORD ENGINEERING DEPARTMENT PRIOR TO CONSTRUCTION.

LEGEND

- PROPERTY LINE
- TEC — PROP. TELEPHONE, ELECTRIC & CABLE
- G — EX GAS LINE
- G — PROPOSED GAS LINE
- W — EX WATER LINE
- W — PROPOSED WATER LINE
- S — EXISTING SEWER LINE
- S — PROPOSED SEWER LINE
- D — EXISTING DRAIN LINE
- D — PROPOSED DRAIN LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING WATER VALVE
- WV — PROPOSED WATER VALVE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING DRAIN MANHOLE
- PROPOSED DRAIN MANHOLE
- TREE LINE
- TYP. — TYPICAL

BRENDAN P. SULLIVAN No. 41358 REGISTERED PROFESSIONAL LAND SURVEYOR
COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN CIVIL No. 41358 REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

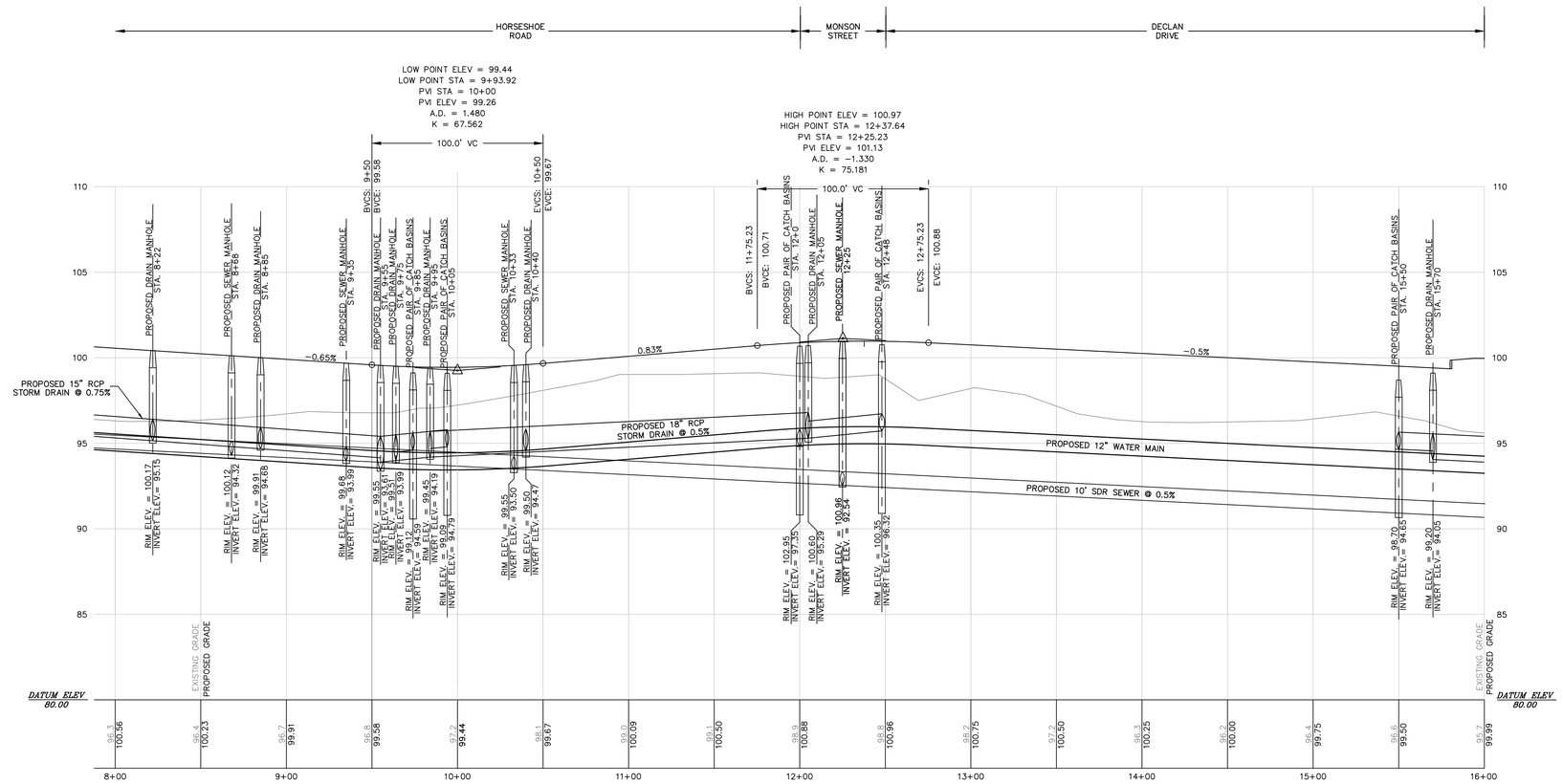
NORTHSIDE FARM
ROADWAY PROFILE 1

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

OWNER/APPLICANT:

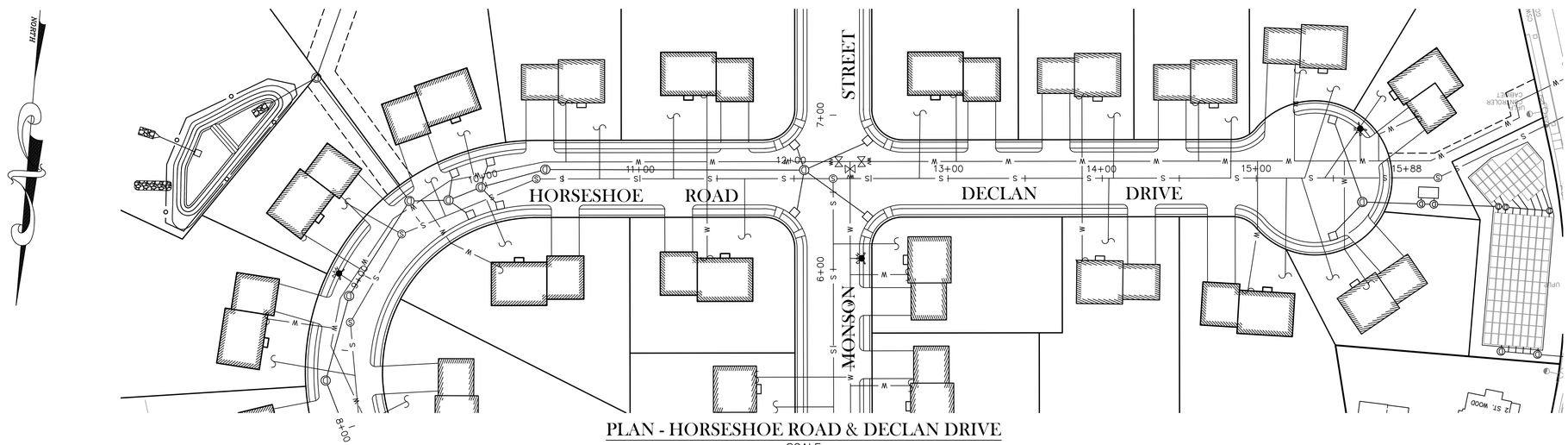
NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO.
SCALE : AS SHOWN	RP2
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 5 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



PROFILE - HORSESHOE ROAD & DECLAN DRIVE

SCALE
HORIZONTAL 1" = 40'
VERTICAL 1" = 4'



PLAN - HORSESHOE ROAD & DECLAN DRIVE

SCALE
1" = 40'

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

GENERAL NOTES:

1. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN IS BASED ON AN INSTRUMENT SURVEY PERFORMED BY CAVANARO CONSULTING USING INFORMATION COMPILED FROM AVAILABLE ASSESSOR'S MAPS AND RECORDED DEED INFORMATION.

2. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATION PRIOR TO EARTH REMOVAL.

3. PROPOSED GAS SERVICE CONNECTION SHALL BE INSTALLED BY THE LOCAL GAS SERVICE PROVIDER. CONSTRUCTION DETAILS OF THE GAS CONNECTION ARE AVAILABLE AT THE GAS COMPANY.

4. PROPOSED ELECTRICAL SERVICE CONNECTION FROM THE NEAREST UTILITY POLE SHALL BE INSTALLED BY THE LOCAL ELECTRIC SERVICE PROVIDER.

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LEGEND

- PROPERTY LINE
- TEC — PROP. TELEPHONE, ELECTRIC & CABLE
- G — EX GAS LINE
- G — PROPOSED GAS LINE
- W — EX WATER LINE
- W — PROPOSED WATER LINE
- S — EXISTING SEWER LINE
- S — PROPOSED SEWER LINE
- D — EXISTING DRAIN LINE
- D — PROPOSED DRAIN LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING WATER VALVE
- WV — PROPOSED WATER VALVE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- (D) EXISTING DRAIN MANHOLE
- (D) PROPOSED DRAIN MANHOLE
- TREE LINE
- TYP. TYPICAL

COMMONWEALTH OF MASSACHUSETTS — BRENDAN P. SULLIVAN No. 41358 REGISTERED PROFESSIONAL LAND SURVEYOR
COMMONWEALTH OF MASSACHUSETTS — BRENDAN P. SULLIVAN CIVIL No. 41358 REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM

ROADWAY PROFILE 3

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687 MAIN STREET
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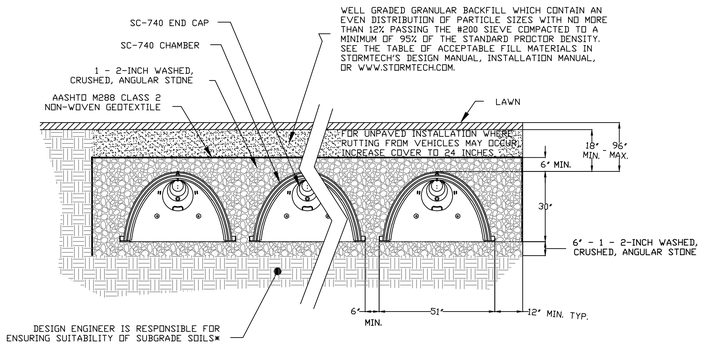
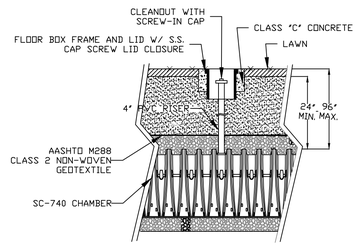
P.O. BOX 36
SCITUATE, MA 02066

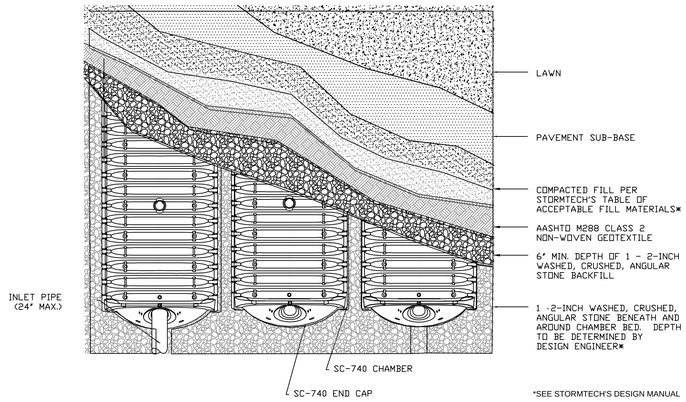
PROJECT NO. : 5005	DRAWING NO.
SCALE : AS SHOWN	**RP3**
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 6 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



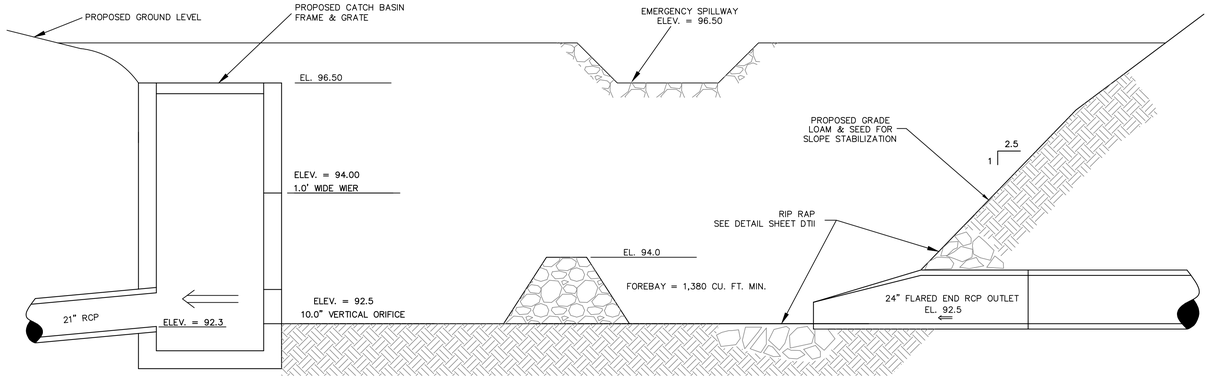
STORMTECH SC-740 CHAMBER SYSTEM
TYPICAL CROSS SECTION DETAIL
NOT TO SCALE



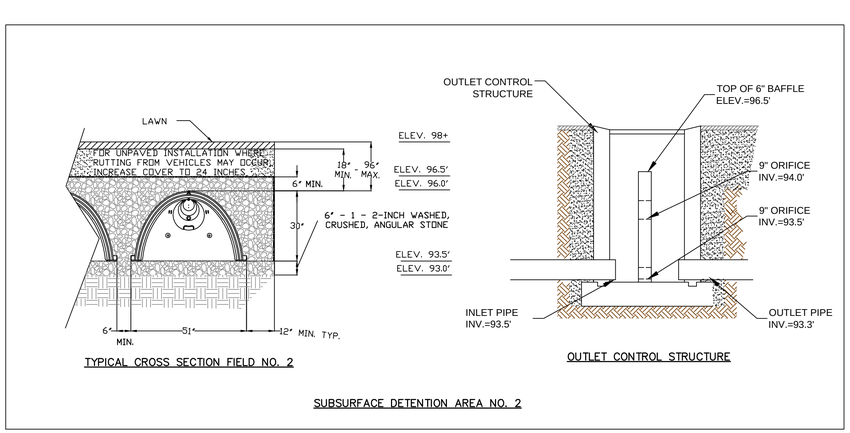
STORMTECH SC-740 CHAMBER SYSTEM
INSPECTION PORT DETAIL
NOT TO SCALE



STORMTECH SC-740 CHAMBER SYSTEM
PLAN VIEW DETAIL
NOT TO SCALE



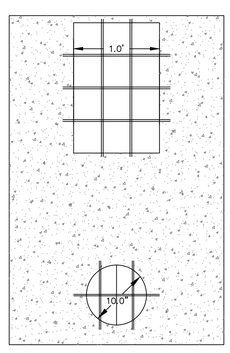
DETENTION POND 3 – CROSS SECTION



TYPICAL CROSS SECTION FIELD NO. 2

OUTLET CONTROL STRUCTURE

SUBSURFACE DETENTION AREA NO. 2



DRAINAGE STRUCTURE – FRONT VIEW
NOT TO SCALE

Stormwater Operation and Maintenance Plan
Northside Farm Subdivision-New Bedford, MA

As part of any infrastructure improvement the system must be maintained in order to work properly. The following is an operation and maintenance plan to upkeep the proposed non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management policy and in accordance with the approved design drawings.

Street Sweeping

All streets and sidewalks shall be swept at a minimum once a year and after a major storm event to remove pollutants which can accumulate on road and sidewalks.

Catch Basin Cleaning

All catch basins shall be cleaned and inspected in late winter or early spring after the snow melts. Inspections should include the gutter inlet stone, frame and grate, pipe, structure itself and the trap for damage and or repair.

Detention Basins

All detention basins shall be inspected at least once a year to ensure that the basins are operating as intended. Inspections conducted at intervals during and after storm events will help to determine if the basin is meeting the expected detention times. The outlet structure should be inspected for evidence of clogging or outflow release velocities that are greater than design flow. Potential problems that should be checked include: subsidence, erosion, cracking or tree growth on the embankment; damage to the emergency spillway; sediment accumulation around the outlet; inadequacy of the inlet/outlet channel erosion control measures and erosion within the basin and banks. Any necessary repairs should be made immediately. During inspections, changes to the detention basin or the contributing watershed should be noted, as these may affect basin performance.

The upper-stage side slopes, embankment and emergency spillway should be mowed at least twice a year. Trash and debris should also be removed at this time. Sediment should be removed from the basin as necessary, and at least once every five years.

Dry Wells

Dry wells should be inspected after every major storm event in the first few months after construction to ensure proper stabilization and function. Thereafter, the dry well should be inspected once a year.

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

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G	PROPOSED GAS LINE
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W	PROPOSED WATER LINE
S	EXISTING SEWER LINE
S	PROPOSED SEWER LINE
D	EXISTING DRAIN LINE
D	PROPOSED DRAIN LINE
	EXISTING HYDRANT
	PROPOSED HYDRANT
	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
	EXISTING CATCH BASIN
	PROPOSED CATCH BASIN
	EXISTING DRAIN MANHOLE
	PROPOSED DRAIN MANHOLE
	TREE LINE
TYP.	TYPICAL

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN No. 41322
REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN CIVIL No. 41358
REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM
DETAIL SHEET I

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
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OWNER/APPLICANT:

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P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO. DTI
SCALE : AS SHOWN	
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DESIGNED BY : BPS	
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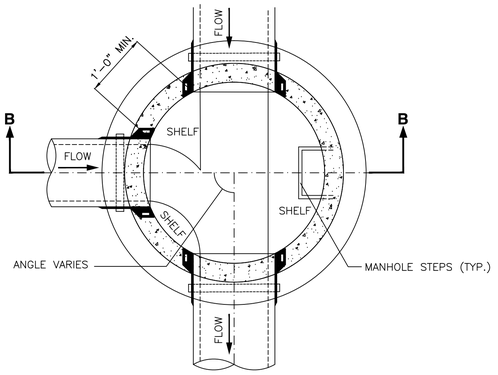
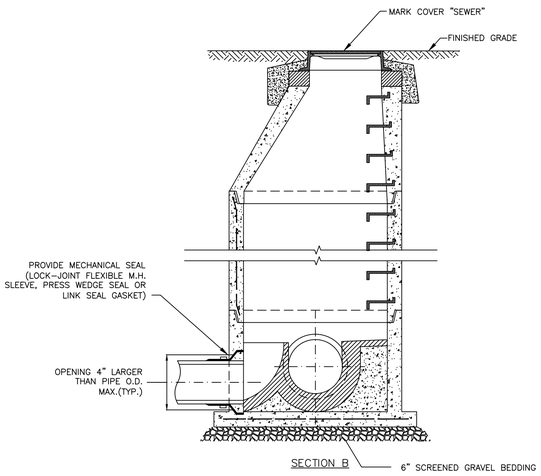
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



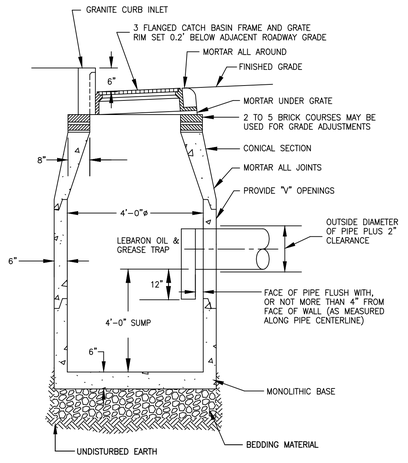
PLAN



PRECAST CONCRETE SEWER MANHOLE

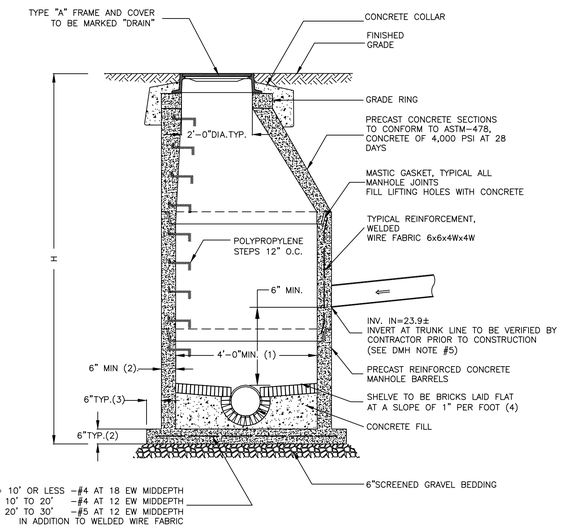
N.T.S.

LEBARON CAST IRON OIL AND GREASE TRAP TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.



DEEP SUMP CATCH BASIN

NOT TO SCALE

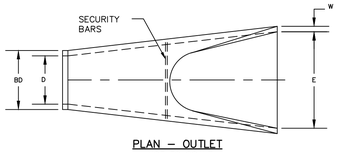


DRAINAGE MANHOLE

NOT TO SCALE

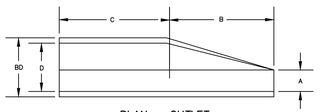
DRAINAGE MANHOLE NOTES:

1. 5'-0"DIAMETER FOR ALL MANHOLE DEPTHS GREATER THAN 20 FEET OR WHEN ORDERED BY THE ENGINEER.
2. 6" MIN. WALL THICKNESS AND 7 INCH MIN. BASE THICKNESS WITH 5'-0" DIAMETER MANHOLES.
3. 6 INCH LIP OPTIONAL UNLESS OTHERWISE NOTED.
4. CONCRETE INVERT AND SHELF MAY BE SUBSTITUTED IN STORM DRAIN MANHOLES AS DIRECTED BY THE ENGINEER.



PLAN – OUTLET

NOT TO SCALE



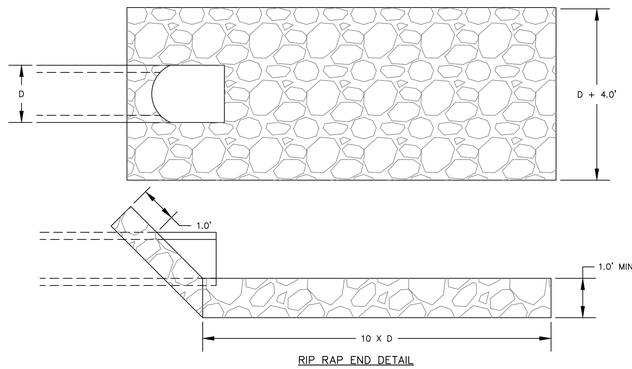
PLAN – OUTLET

NOT TO SCALE

FLARED END DIMENSIONS							
DIAMETER	A	B	BD	C	D	E	W
12"	4"	2'	1.7'	4'	4.5'		
24"	9.5"	3.6'	3.0'	2.5'	3.0'	2.0' 4.0'	2" 3"

PRECAST CONCRETE FLARED END DETAIL

NOT TO SCALE



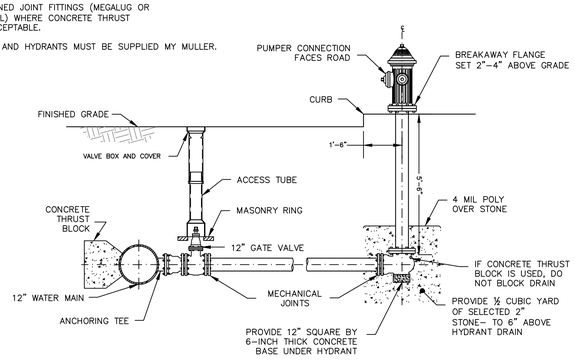
RIP RAP END DETAIL

NOT TO SCALE

SEWER AND DRAINAGE DETAILS

HYDRANT NOTES:

1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
2. USE RESTRAINED JOINT FITTINGS (MEGALUG OR APPROVED EQUAL) WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.
3. ALL FITTINGS AND HYDRANTS MUST BE SUPPLIED MY MULLER.



TYPICAL HYDRANT BRANCH ASSEMBLY

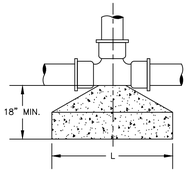
NOT TO SCALE

TYPICAL WATER MAIN TRENCH DETAIL

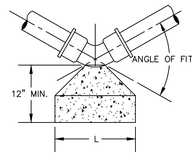
NOT TO SCALE

TYPICAL WATER GATE VALVE

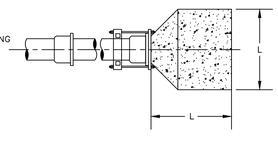
NOT TO SCALE



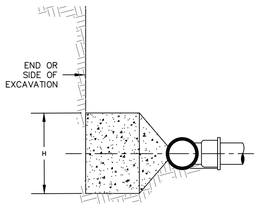
PLAN – TEE



PLAN – BEND



PLAN – DEAD END



TYPICAL SECTION

(FOR TEES, BENDS & DEAD ENDS)

THRUST BLOCK DIMENSIONS										
DIAMETER	TEE		1/4 BEND		1/8 BEND		1/16 BEND		DEAD END	
D	H	L	H	L	H	L	H	L	H	L
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	2'-0"
8"	1'-2"	1'-2"	1'-3"	1'-3"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	2'-0"
12"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	2'-6"	2'-6"

THRUST BLOCK NOTES:

1. CONCRETE SHALL BE 3,000 PSI
2. THRUST BLOCKS SHALL BEAR ON UNDISTURBED EARTH.
3. PIPE JOINTS SHALL NOT BE BLOCKED BY CEMENT.
4. DIMENSIONS SHOWN ARE MINIMUM DISTANCES.
5. GATE VALVES SHALL BE SET ON CONCRETE OR BLOCKING APPROVED BY ENGINEER.

CONCRETE THRUST BLOCKS

NOT TO SCALE

WATER LINE DETAILS

DRAWING REVISIONS		
ACTION	DATE	DESCRIPTION

GENERAL NOTES:

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W	PROPOSED WATER LINE
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S	PROPOSED SEWER LINE
D	EXISTING DRAIN LINE
D	PROPOSED DRAIN LINE
	EXISTING HYDRANT
	PROPOSED HYDRANT
	EXISTING WATER VALVE
	PROPOSED WATER VALVE
	EXISTING CATCH BASIN
	PROPOSED CATCH BASIN
	EXISTING DRAIN MANHOLE
	PROPOSED DRAIN MANHOLE
	TREE LINE
TYP.	TYPICAL

COMMONWEALTH OF MASSACHUSETTS BRENDAN P. SULLIVAN No. 41358 REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS BRENDAN P. SULLIVAN CIVIL No. 41358 REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM

DETAIL SHEET II

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
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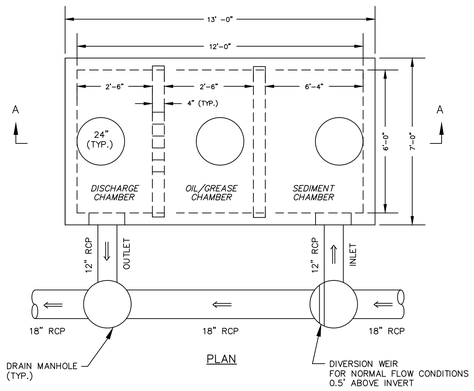
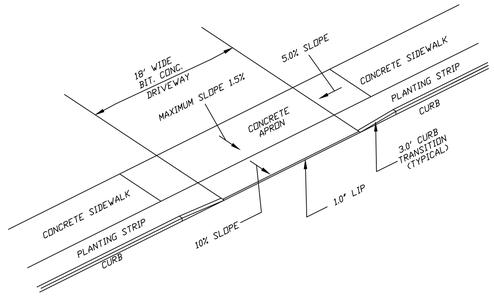
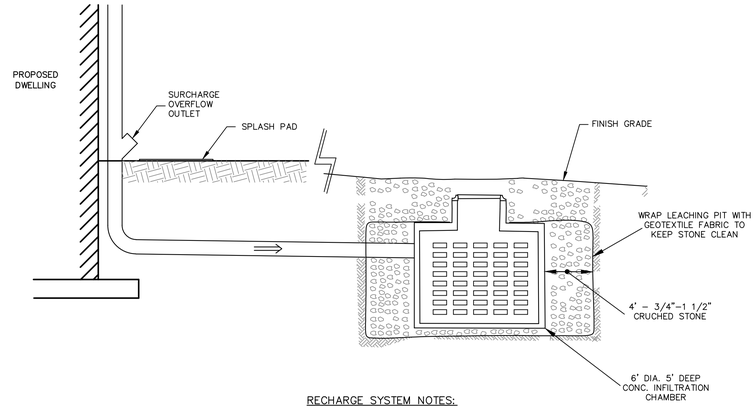
PROJECT NO. : 5005	DRAWING NO. DTII
SCALE : AS SHOWN	
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 8 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI



PLAN



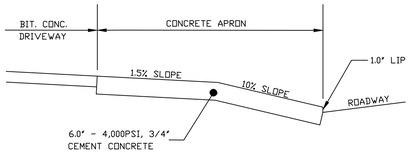


RECHARGE SYSTEM NOTES:

1. CONTRACTOR SHALL BACKFILL DRAINAGE PIPE & STRUCTURES WITH WELL COMPACTED GRAVEL MATERIAL SUITABLE FOR SUPPORT OF PAVEMENT AREA ABOVE PIPE & STRUCTURE.

PROFILE – STORM DRAIN RECHARGE SYSTEM

NOT TO SCALE

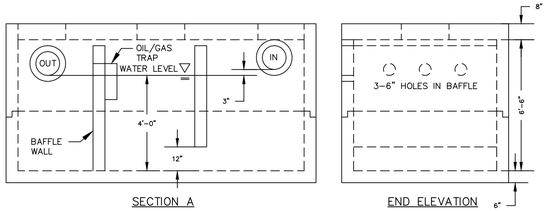


DRIVEWAY TYPICAL DETAIL

NOT TO SCALE

CONCRETE SIDEWALK NOTES NOTES:

1. SIDEWALKS SHALL BE 4,000 PSI 3/4" CEMENT CONCRETE.
2. CONCRETE SHALL BE 4.0" IN DEPTH AND 6.0" IN DEPTH AT DRIVEWAY LOCATIONS.
3. THE CONCRETE SHALL BE PLACED IN ALTERNATE SLABS 30 FEET IN LENGTH AND SEPARATED BY TRANSVERSE PREFORMED EXPANSION JOINT FILLER 1/2" IN THICKNESS.
4. ALL SIDEWALKS AND WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH A.D.A AND THE CITY OF NEW BEDFORD STANDARDS.



SECTION A

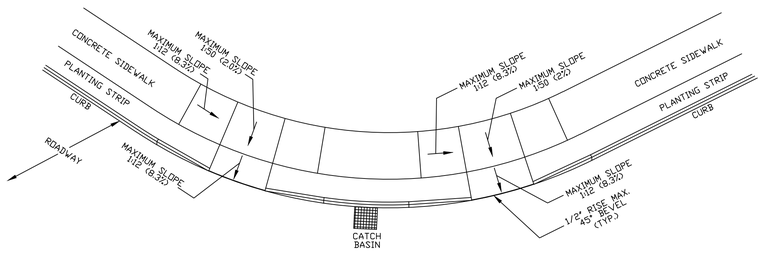
END ELEVATION

DESIGN NOTES:

1. CONCRETE SHALL BE 5,000 PSI @ 28 DAYS.
2. REINFORCING ASTM A-615 GRADE 60, 1" MIN. COVER.
3. HOLES TO BE CAST AS SHOWN.
4. CONSTRUCTION JOINTS SHALL BE SEALED WITH 1" DIAM. BUTYL RUBBER.
5. CEMENT: PORTLAND TYPE II PER ASTM C-150-81.
6. DESIGN LOADING SHALL CONFORM TO AASHTO H20-44.
7. UNIT SHALL HAVE A MINIMUM CAPACITY OF 3,000 GALLONS.

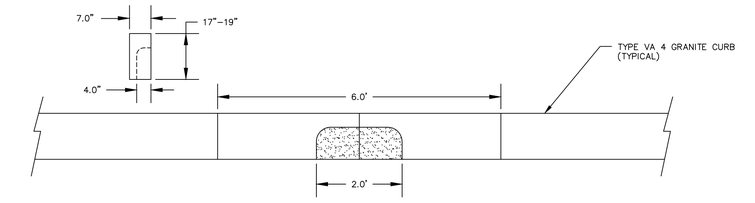
3,000 GALLON WATER QUALITY CONTROL STRUCTURE

NOT TO SCALE



WHEELCHAIR RAMP TYPICAL DETAIL

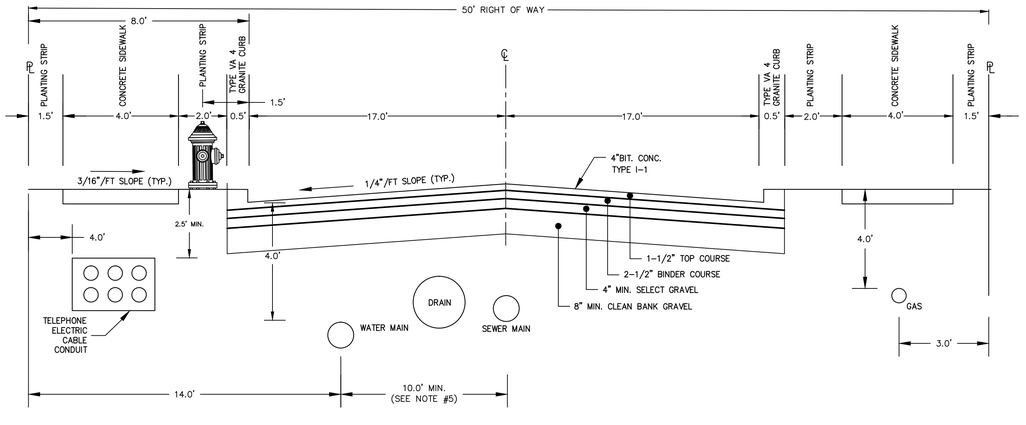
NOT TO SCALE



GRANITE CURB INLET DETAIL

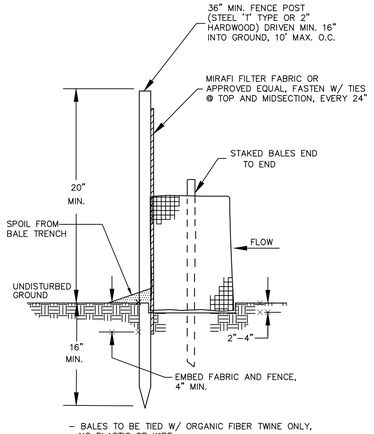
NOT TO SCALE

TO BE LOCATED AT EACH CATCH BASIN LOCATION



TYPICAL ROADWAY SECTION

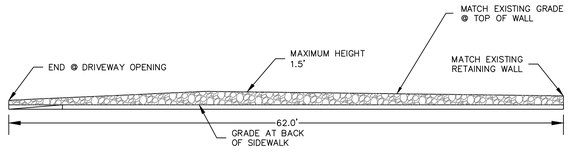
NOT TO SCALE

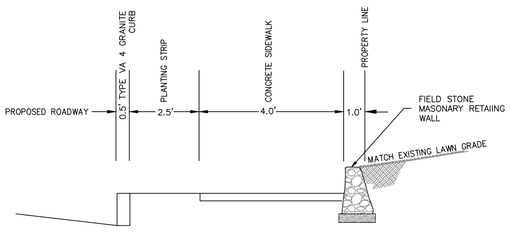


- BALES TO BE TIED W/ ORGANIC FIBER TWINE ONLY, NO PLASTIC OR WIRE.
- HAY BALES TO BE SECURED W/ MIN. TWO (2) 2"X2" WOOD STAKES PER BALE, DRIVEN 18" MIN. INTO GRADE.

HAYBALE WITH SILTFENCE

NOT TO SCALE





FIELD STONE MASONARY RETAINING WALL

AT STATION 9+25± TO 9+90± LEFT MONSON STREET

NOT TO SCALE

- FIELD STONE MASONRY RETAINING WALL SHALL BE CONSTRUCTED AS PER MASSACHUSETTS HIGHWAY DEPARTMENT DRAWING NO. 302.2

DRAWING REVISIONS

ACTION	DATE	DESCRIPTION

GENERAL NOTES:

1. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN IS BASED ON AN INSTRUMENT SURVEY PERFORMED BY CAVANARO CONSULTING USING INFORMATION COMPILED FROM AVAILABLE ASSESSOR'S MAPS AND RECORDED DEED INFORMATION.
2. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATION PRIOR TO EARTH REMOVAL.
3. PROPOSED GAS SERVICE CONNECTION SHALL BE INSTALLED BY THE LOCAL GAS SERVICE PROVIDER. CONSTRUCTION DETAILS OF THE GAS CONNECTION ARE AVAILABLE AT THE GAS COMPANY.
4. PROPOSED ELECTRICAL SERVICE CONNECTION FROM THE NEAREST UTILITY POLE SHALL BE INSTALLED BY THE LOCAL ELECTRIC SERVICE PROVIDER.
5. PROPOSED WATER SERVICE CONNECTION SHALL BE TO THE NEAREST MAIN LINE BRANCH IN ACCORDANCE WITH CITY OF NEW BEDFORD WATER DEPARTMENT STANDARDS.
6. ALL SANITARY SEWER CONNECTIONS SHALL BE REVIEWED AND APPROVED BY THE CITY OF NEW BEDFORD ENGINEERING DEPARTMENT PRIOR TO CONSTRUCTION.

LEGEND

	PROPERTY LINE
TEC	PROP. TELEPHONE, ELECTRIC & CABLE
G	EX GAS LINE
G	PROPOSED GAS LINE
W	EX WATER LINE
W	PROPOSED WATER LINE
S	EXISTING SEWER LINE
S	PROPOSED SEWER LINE
D	EXISTING DRAIN LINE
D	PROPOSED DRAIN LINE
	EXISTING HYDRANT
	PROPOSED HYDRANT
WV	EXISTING WATER VALVE
WV	PROPOSED WATER VALVE
	EXISTING CATCH BASIN
	PROPOSED CATCH BASIN
D	EXISTING DRAIN MANHOLE
D	PROPOSED DRAIN MANHOLE
	TREE LINE
TYP.	TYPICAL

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
No. 41358
REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS
BRENDAN P. SULLIVAN
CIVIL
No. 41358
REGISTERED PROFESSIONAL ENGINEER

PLAN TO ACCOMPANY NOTICE OF INTENT

NORTHSIDE FARM

DETAIL SHEET III

CAVANARO CONSULTING
687 MAIN STREET
P.O. BOX 5175
NORWELL, MASSACHUSETTS 02061
PHONE: 781.659.8187
FAX: 781.659.8186

OWNER/APPLICANT:

NEW BEDFORD COUSINS LLC
P.O. BOX 36
SCITUATE, MA 02066

PROJECT NO. : 5005	DRAWING NO.
SCALE : AS SHOWN	DTIII
DATE : 3/3/16	
DESIGNED BY : BPS	
DRAWN BY : BPS	SHEET NO. 9 OF 9
CHECKED BY : JCC	FILENAME: Z:\5005\DWG\NOI\NORTHSIDE FARM NOI