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

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):

1861 Shawmut Ave. (a. Street Address) | New Bedford (b. City/Town) | 02747 (c. Zip Code)

Latitude and Longitude: 41d40'36" (d. Latitude) | 70d58'03" (e. Longitude)

124 (f. Assessors Map/Plat Number) | 27 (g. Parcel /Lot Number)

2. Applicant:

Anthony R. (a. First Name) | DeCosta (b. Last Name)

dba A-1 Asphalt Company (c. Organization)

1861 Shawmut Avenue (d. Street Address)

New Bedford (e. City/Town) | MA (f. State) | 02747 (g. Zip Code)

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

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

Anthony R. (a. First Name) | DeCosta (b. Last Name)

c. Organization

same (d. Street Address)

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

h. Phone Number | i. Fax Number | j. Email address

4. Representative (if any):

Rick (a. First Name) | Charon, P.E. (b. Last Name)

Charon Associates, Inc. - Engineers (c. Company)

323 Neck Road (d. Street Address)

Rochester (e. City/Town) | MA (f. State) | 02770 (g. Zip Code)

508-763-8362 (h. Phone Number) | i. Fax Number | charonengineers@comcast.net (j. Email address)

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

$7,985.00 (a. Total Fee Paid) | $487.50 (b. State Fee Paid) | $7,497.50 (c. City/Town Fee Paid)

FEB 29 2016

A. General Information (continued)

6. General Project Description:

Improvements to soil & aggregate re-cycling facility to mitigate noise and control dust; movement of soil stockpiles to 50' away from bordering wetlands; provision of minimum 10-ft. wide grass strips at limits of alteration; and provision of drainage swales to convey storm water to new sediment forebay to be added to existing retention basin.

7a. Project Type Checklist:

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

7b. Is any portion of the proposed activity eligible to be treated as a 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:

2. Limited Project

8. Property recorded at the Registry of Deeds for:

Bristol	
a. County	b. Certificate # (if registered land)
5664	309
c. Book	d. Page Number

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.

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	None 1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

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

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☒ Bordering Land Subject to Flooding	None 1. square feet	2. square feet
	3. cubic feet of flood storage lost	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 1. Name of Waterway (if available)	

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: None 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.

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)

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

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

	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.

N/A
a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

N/A
a. number of new stream crossings

b. number of replacement stream crossings

C. Other Applicable Standards and Requirements

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://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/online_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
100 Hartwell Street, Suite 230
West Boylston, MA 01583

Mass. GIS:
2/16/2016

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

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.d, 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).*

1. 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

   3. ☐ 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

      (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

   d. 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

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* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/dfwele/dfw/nhesp/nhesp.htm, regulatory review tab). 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)

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

2. 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 or hand delivery of NOI to either:

South Shore - Cohasset to Rhode Island, 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

North Shore - Hull to New Hampshire:

Division of Marine Fisheries - North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930

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.

3. 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

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 designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

a. ☐ Yes ☒ No

5. 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

6. 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

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

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

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.

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.

Plan of Site Improvements Prepared for Anthony R. DeCosta
a. Plan Title

Charon Associates, Inc.-Engineers
b. Prepared By

Richard J. Charon, P.E.
c. Signed and Stamped by

Feb. 26, 2016
d. Final Revision Date

1" = 40 ft.
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:

19755	2/26/16
2. Municipal Check Number	3. Check date
19754	2/26/16
4. State Check Number	5. Check date
A-1 ASPHALT CO., INC.	
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.

Anthony De Costa	2/27/16
1. Signature of Applicant	2. Date
3. Signature of Property Owner (if different)	4. Date
	2/29/16
5. Signature of Representative (if any)	6. Date

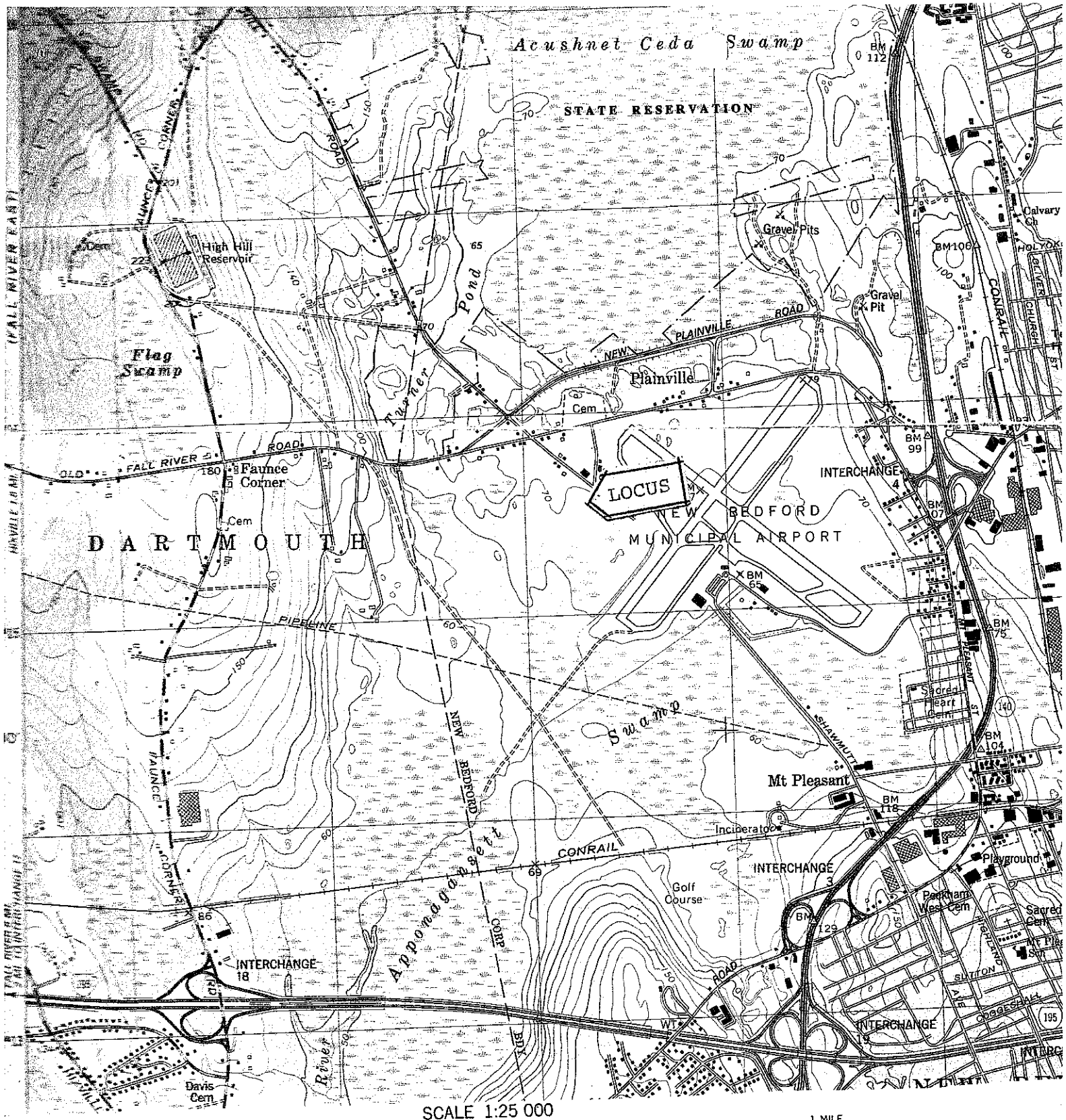
COMMONWEALTH OF MASSACHUSETTS
RICHARD J. CHARON
No. 28789
REGISTERED PROFESSIONAL ENGINEER

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.


Acushnet Ceda Swamp
STATE RESERVATION
Gravel Pits
Calvary Ch
High Hill Reservoir
Flag Swamp
Turner Pond
Gravel Pit
NEW PLAINVILLE ROAD
Plainville
Cem
OLD FALL RIVER ROAD
Faunce Corner
LOCUS
NEW BEDFORD MUNICIPAL AIRPORT
INTERCHANGE 4
DARTMOUTH
PIPELINE
Swamp
Sacred Heart Cem
Mt Pleasant
Incinerator
CONRAIL
INTERCHANGE 3
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1° 23 M
UTM GRID AND 1979 MAG DECLINATION AT CENTE
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STAND
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE
NEW BEDFORD NORTH, MASS.
N4137.5—W7052.5/7.5
1979

_____ Administrative Assistant to the Board of Assessors of the City of New Bedford, 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.

Date: 3/1/2016

PLANNING
MAR 01 2016
DEPARTMENT

SUBJECT PROPERTY: MAP 124 LOT 27

LOCATION 1861 Shawmut Avenue

OWNER'S NAME Anthony DaCosta

MAILING ADDRESS 1861 Shawmut Ave, New Bedford 02747

CONTACT PERSON Rick Charon

TELEPHONE NUMBER 508-763-8362

REASON FOR REQUEST

Notice of Intent for Conservation Commission

March 1, 2016
Dear Applicant,

Please find below the List of Abutters within 300 feet of the property known as 1861 Shawmut Avenue (124-27). 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
124-160	1856 SHAWMUT AVE -1858	LUCAS JARED R, 1856 SHAWMUT AVENUE DARTMOUTH, MA 02747
124-161	1860 SHAWMUT AVE	AZEVEDO COLLEEN M, AZEVEDO JESSICA L 1860 SHAWMUT AVENUE DARTMOUTH, MA 02747
124-162 NS	SHAWMUT AVE	BUTLER JAMES E JR, P O BOX 344 POCONO PINES, PA 18350
124-77 WS	SHAWMUT AVE	CITY OF NEW BEDFORD, AIRPORT COMMISSION 133 WILLIAM ST NEW BEDFORD, MA 02740
124-150	1914 SHAWMUT AVE	KUMMER JACQUELINE E, 1914 SHAWMUT AVENUE DARTMOUTH, MA 02747
124-27	1861 SHAWMUT AVE	DECOSTA ANTHONY R, 1861 SHAWMUT AVE NEW BEDFORD, MA 02747
124-26 WS-R	SHAWMUT AVE	COUNTY OF BRISTOL, CONSERVATION NEW BEDFORD, MA 02740
124-25	1871 SHAWMUT AVE	WEST MICHAEL, WEST MARY ANN 543 STATE ROAD DARTMOUTH, MA 02747-1803
124-116 ~~25~~	~~1852~~ SHAWMUT AVE	~~BRIDGE-WATER STATE COLLEGE, (DCAM)~~ City of New Bedford/ New Bedford Redevelopment 131 ~~SUMMER STREET~~ William St. ~~BRIDGEWATER, MA 02325~~ New Bedford, MA 02740
124-48	1878 SHAWMUT AVE	WELCH THOMAS J, WELCH ANDREA M 1878 SHAWMUT AVENUE NEW BEDFORD, MA 02745
124-34	1868 SHAWMUT AVE	ROY ANDREW, 1868 SHAWMUT AVENUE DARTMOUTH, MA 02747

PLAINVILLE RD
WAREHAM ST
CHILMARK ST
HOLLISTON ST
CHARLTON ST
MARSHFIELD ST
POLOCZ BLVD
SHAWMUT AVE
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Legend
Water
Site
Abutters
City Border
N

CAI Charon Associates, Inc.

Consulting Engineers

323 Neck Road
Rochester, MA 02770
Phone: 508-763-8362
Fax: 508-763-9582

STORM DRAINAGE REPORT

SITE IMPROVEMENTS
1861 SHAWMUT AVENUE
NEW BEDFORD, MASSACHUSETTS

February 25, 2016

RECEIVED
FEB 29 2016

Prepared by: Charon Associates Inc. – Engineers
323 Neck Road, Rochester, MA 02770

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    B. Long-Term Maintenance Plan

1.: PROJECT NARRATIVE

PROJECT NARRATIVE

1.0 INTRODUCTION

The proposed work site is a 9.6-acre parcel on the southwesterly side of Shawmut Avenue, bounded by N.B. Airport property on its easterly and southerly sides and by conservation land and private property on the westerly and northerly sides. The upland portion of the site is mostly cleared land in use as a soil and aggregate re-cycling facility, with a gravel parking and equipment storage area, staging area and material stockpiles. Vegetated wetlands classified as wooded marsh and wooded bog cover the rear quarter of the parcel and extend along the easterly side.

The applicant, Anthony R. DeCosta doing business as A-1 Asphalt Company, proposes to (1) make improvements to mitigate noise and control dust at the entrance to the facility; (2) move stockpiles at least 50 feet from the edge of wetlands; (3) provide minimum 10-ft. wide grass strips at the limits of site alteration; and (4) provide drainage swales to convey storm water to a new sediment forebay to be added to the existing retention basin.

The drainage swales will have stone checkdams on the sloped sections to reduce flow velocity, and the sediment forebay will provide the pre-treatment required for the treatment system to achieve 80% TSS removal. The grassy areas will be vegetated with clover mix, fescues and perennial rye grasses.

2.0 EXISTING CONDITIONS

The upland portion of the property contains soil stockpiles that have exposed soil in the active sections and slopes vegetated with weeds and grasses in the inactive areas, gravel haul roads, a staging area for processing aggregate and soil, and a parking and equipment storage area – all of which are located behind a security fence that is set back at least 60 feet from the roadway, with a grove of trees and grass surfaces. The owner's residence is situated by the road at the northwest corner of the lot.

According to the New Bedford FEMA community panel #25005C0387F dated July 7, 2009, the upland portion of the site is located in Zone X (areas of minimal flooding). A review of the Massachusetts Natural Heritage Estimated Habitat Map on the Mass. GIS website indicates that the site does not lie within an estimated habitat or priority habitat of endangered species.

Bristol County soil maps indicate Windsor and Merrimac soil associations within the project area, both of which are hydrologic soil group A. Test pit data indicates deep coarse sand with an estimated high groundwater table at 108" based on water encountered and with an absence of redoximorphic indicators.

3.0 DESCRIPTION OF WORK

The proposed improvements will include (1) sound mitigation by installing a 10-ft. high earthen berm between the processing equipment and the street; (2) dust control by providing a 25-ft. trap stone mud trap followed by a 75-ft. paved apron at Shawmut Avenue, including a storm water treatment system; (3) removal of existing soil stockpile from the 50-ft. setback from wetlands and placement of large stones as markers along the limits to prevent future encroachments, with revised stockpile slopes at 4 vertical to 10 horizontal; (4) provision of a grassy strip at the limit of the disturbance that is at least 10 feet wide; and (5) provision of new vegetated swales and a new sediment forebay connected to the retention basin constructed under a prior order of conditions.

3.1 Storm water Management

The storm water management system for the project is designed in accordance with the Department of Environmental Protection's Storm Water Management policy and Best Management Practices (BMP). The proposed drainage system will collect runoff from the paved entrance driveway and convey it to a sediment forebay and a retention pond where it will infiltrate into the ground.

Runoff numbers used in the stormwater calculations for the pre- and post- conditions are: gravel haul roads, parking & storage areas and corrals (CN=76), re-seeded grassed surfaces with 75% cover (CN= 39), retention pond surface (CN=98), exposed soil stockpile area (CN=77).

The stormwater management system will remove 80% of the average annual load of total suspended solids (TSS) from the newly-developed area. The storm water management system will be inspected and maintained regularly to ensure proper functioning. There will be no increase in storm water runoff rates to the existing design points as a result of the proposed project. See attached spreadsheet and drainage report.

4.0 EROSION AND SEDIMENTATION CONTROLS

Erosion and sedimentation controls will be installed where noted to augment the existing rubble walls and to protect the newly planted grass strips and swales. These controls will consist of Curlex straw wattles installed uphill from the walls and the vegetated strips. Erosion and sedimentation controls will be left in place after construction and allowed to mulch down. Erosion will be monitored after each significant rainfall event exceeding the 2-year storm volume and repairs made as needed until a fully vegetated grass surface is achieved.

5.0 CONSTRUCTION SEQUENCE

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

5.1 Installation of Erosion & Mud/Dust Controls

Erosion and sedimentation controls will be installed at the limits of the work area located within 25 feet of the wetlands and at the new entrance as shown on the drawings prior to the commencement of construction. The paved apron at Shawmut Ave. and the mud trap will be installed at the project entrance along with the storm water basins and shrubs on both sides of the driveway.

5.2 Clearing & Chipping - Not applicable to this site.

5.3 Fencing & Screening

The existing security fence and entrance gates will remain, and existing trees on the roadway side of the fence will remain except as needed for the storm water basins.

5.4 Rough Grading

The soil stockpiles will be removed from the areas within 50 feet of the edge of the wetlands and the remaining stockpiles will be re-graded to a maximum slope of 40% (4 vertical to 10 horizontal). Boulders at least 3-ft. high will be placed at the base of the stockpiles to delineate the 50-ft. setback and the area between the boulders and the rubble stone wall will be graded to provide a 1% slope to the rear of the site. The new sediment forebay will be excavated at the rear of the site and the two storm water collection swales will be installed leading to the sediment forebay. Topsoils consisting of a minimum of 4 inches of screened loam will be spread over the new grass strips and within drainage swales.

5.5 Drainage System Construction

Install the new vegetated drainage swales, stone check dams and sediment forebay with connection to the existing retention basin. These elements will upgrade the retention basin to provide minimum acceptable TSS removal of 80%.

5.6 Utility Installation

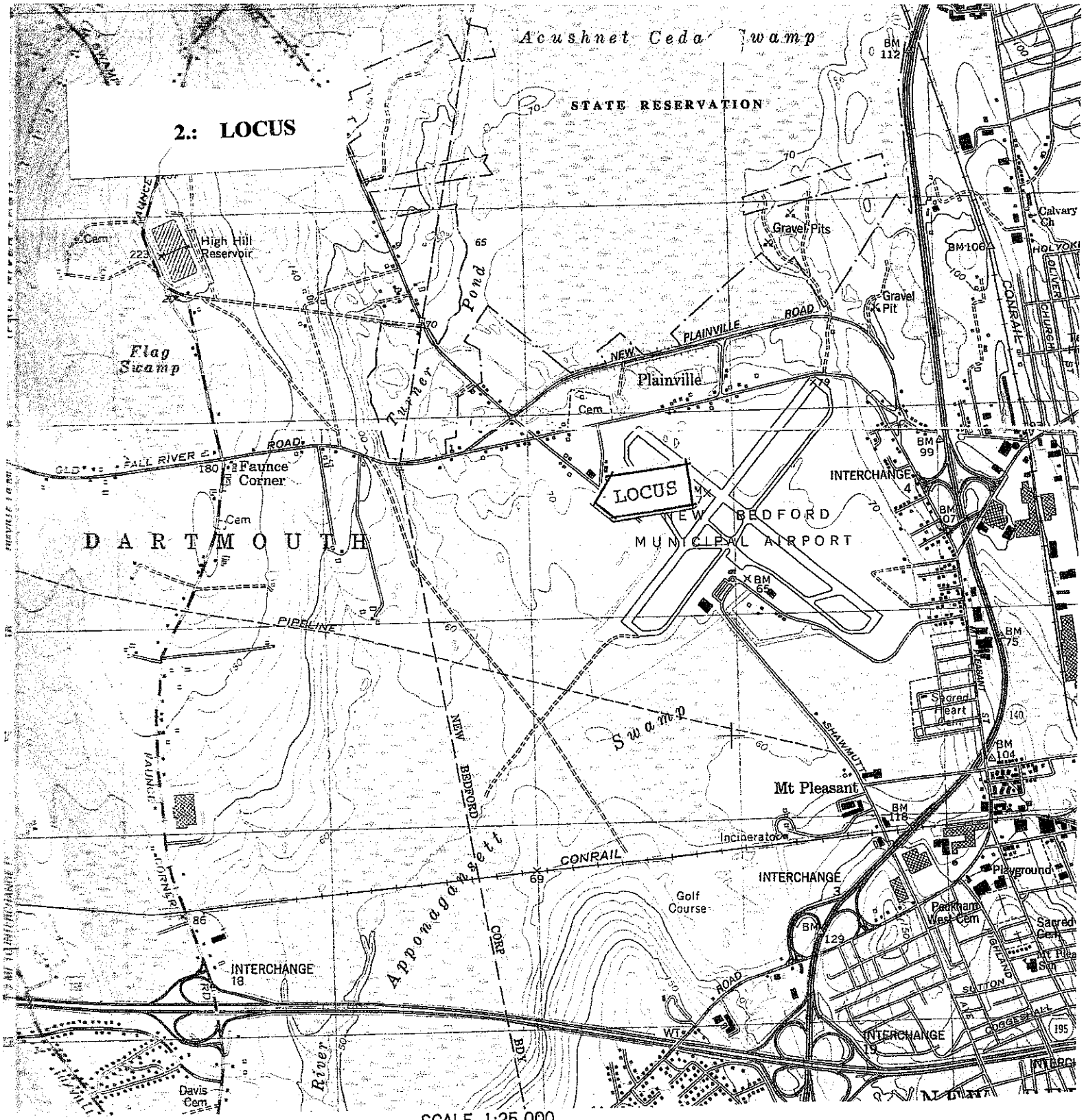
No utilities are proposed.

5.7 Roadway Paving

Provide bituminous pavement to extend 75 feet between the existing entrance gate and the edge of pavement on Shawmut Avenue. Install minimum 2.5" binder plus 1.5" top course.

5.8 Site Stabilization

The final phase of the project is the restoration and stabilization of all exposed surfaces. Disturbed areas will be hydro-seeded with an erosion control seed mix. In the event that weather conditions prevent final restoration, temporary erosion and sedimentation measures will be employed until the weather is suitable for restoration. A final inspection will ensure that the project site is cleared of all project debris and that erosion and sedimentation controls are functioning properly.


2.: LOCUS
Acushnet Cedar Swamp
STATE RESERVATION
High Hill Reservoir
Flag Swamp
Turner Pond
Gravel Pits
Gravel Pit
Calvary Ch
NEW PLAINVILLE ROAD
Plainville
Cem
FALL RIVER ROAD
Faunce Corner
LOCUS
INTERCHANGE 4
NEW BEDFORD MUNICIPAL AIRPORT
DARTMOUTH
PIPELINE
Swamp
Sacred Heart Cem
SHAWMUT
Mt Pleasant
Incinerator
CONRAIL
INTERCHANGE 3
Playground
Golf Course
Parkham West Cem
Sacred Cem
Appongansett
NEW BEDFORD CORP BDY
INTERCHANGE 18
INTERCHANGE 19
SUTTON
Davis Cem
River
SCALE 1:25 000
1 MILE
7000 FEET
1 KILOMETER
MN
GN
15°
267 MILS
1°
23 M
CONTOUR INTERVAL 10 FEET
DEPTH CURVES AND SOUNDINGS IN FEET— DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 3.7 FEET
NEW BEDFORD NORTH, MASS.
N4137.5—W7052.5/7.5
1979
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STAND
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA
TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE

3. ON-SITE STORMWATER ANALYSIS

3.A: Methodology

The HydroCAD, Stormwater Modeling System computer program by Applied Microcomputer Systems, was used to develop stormwater runoff rates and volumes for the existing and proposed conditions at the Site. The software uses National Resource Conservation Service (NRCS) methodology. The NRCS method is based on rainfall observations which were used to develop the Intensity-Duration-Frequency relationship or IDF curve. By studying the Weather Bureau's Rainfall Frequency Atlases, the NRCS determined that four "mass curves" could be used to represent the characteristics of the rainfall distribution throughout the country. The mass curve is a dimensionless distribution of rainfall over time, which indicates the fraction of the rainfall event that occurs at a given time within a 24-hour precipitation event. The mass curve was developed by separating the IDF data into individual 30-minute increments within the 24-hour storm period. The largest 30-minute increments were then placed at the middle of the hypothetical storm, which is 12 hours. The second largest increment was placed next to the largest and so on until the entire 24-hour curve was developed. The benefit of the NRCS method is that the curve contains depth information for all events up to 24 hours. This results in a storm that builds steadily in intensity, reaching a peak at 12 hours, when the intensity recedes until the 24-hour period is reached. This synthetic distribution develops peak rates for storms of varying durations and intensities. The NRCS distribution provides a cumulative rainfall at any point in time and allows volume dependent routing runoff calculations to occur.

The HydroCAD software is a hydrograph generation and routing program similar to TR 20. The HydroCAD software has the additional capability to describe shallow concentrated flow. The "NEH-4 Upland Method" included in the HydroCAD software is applicable for conditions which occur in the headwaters of a watershed up to 2,000 acres. The NEH-4 Upland Method allows the Time of Concentration (Tc) to reflect ground conditions such as overland flow, grassed waterways, paved areas and upland gullies. The Tc is the time required for water to flow from the most hydraulically distant point on a runoff area to the measurement or collection point. This results in a model that more accurately reflects the ground surface, for shallow concentrated flow conditions, than TR-55 which is limited to distinguishing only paved and unpaved surfaces. The mathematical procedure for calculating the Tc is the same except that the additional velocity factors are introduced. Applied Microcomputer Systems estimates that the program is more precise than TR 55 for calculating Tc and the runoff accuracy is within 1% of TR 20. Calculations for pre and post development conditions for the 2, 10, 25, and 100 year, 24-hour storms were generated.

The curve numbers (CNs) and times of concentration for the existing and proposed catchment areas are based on the soil type and the cover conditions at the site. The existing conditions survey was used for the calculations. Additionally, the NRCS Soil Survey, supplemented by on-site soil evaluations were used to determine soil classification. SCS soil associations are shown on the pre- and post-development drainage catchment plans.

The objectives of the proposed stormwater management design is to match or reduce where possible the peak flow rate and volume tributary to the storm drain in Alden Road. The HydroCAD software was used to analyze the existing peak flow rates and volume amounts released from the site during the 24-hour storm period. The existing surface conditions are such that runoff from the site will decrease as a result of the proposed development due to the construction of the subsurface storage system.

Existing Drainage System

The existing site is tributary to the bordering wetlands on the southerly and easterly sides of the parcel. The USDA Soil Conservation Service soil maps report the soils to be class A soils (Windsor and Merrimac associations). These soils are sandy and excessively drained.

Proposed Drainage System

The proposed drainage improvements include installation of a storm water treatment system with a retention basin at the entrance driveway and the completion of work on the storm water collection and treatment system that was permitted in 2000 under file number SE 49-294.

Summary of Results

Peak flow rates for the post-development conditions are less than the pre-development conditions for the 2, 10, 25 and 100 year, 24 hour design storms with grass cover at 50% or more, reflecting the minimum acceptable vegetative cover after full growth is achieved. Table 1 shows the summary of the peak flow rates and the volumes during the 24-hour storm periods studied.

Table 1
197 New Boston Road,
Fairhaven, Ma
PRE/POST HYDROLOGY

STORM EVENT (YEARS)	DESIGN POINT	PRE DEVELOPMENT		POST DEVLOPMENT	
		PEAK RUNOFF (CFS)	PEAK VOLUME (AF)	PEAK RUNOFF (CFS)	PEAK VOLUME (AF)
2	1-EAST	0.05	0.005	0.24*	0.015
10	1-EAST	0.13	0.011	0.38*	0.024
25	1-EAST	0.18	0.015	0.47*	0.030
100	1-EAST	0.29	0.024	0.63*	0.041

- *** Denotes runoff flowing into retention basin where 100% of volume infiltrates to ground.**

3.B.1.: HydroCAD Stormwater Analysis: Existing & Proposed Conditions- See end of report for HydroCAD data sheets for the storm events summarized above.

4.A.: Stormwater Standards & TSS Removal Tabulation

1. Standard 1: All stormwater from the developed site will be treated in accordance with best management practices and erosion control measures will be implemented.

2. Standard 2: Post-development peak discharge rates will not exceed pre-development peak discharge rates.

3. Standard 3: The annual recharge to groundwater for the post-development site approximates the annual recharge for the pre-development condition. New impervious area is 1,900 sq.ft. at the entrance driveway.
   For hydrologic group A (sand), Rawls rate, K = 8.27 inches/hour for HSG A
   Recharge volume Rv = F x impervious area
   = (0.60"/12) x (1,900 SF impervious area)
   = 95 cu.ft.;
   Drawdown Time = Rv / (K)(Bottom Area)=
   = 95 cu.ft./(0.60"/12 ft./hr.)(420 sf)
   = 95 cu.ft. / 21 cu.ft./hr.
   = 4.5 hours << 72 hours

4. Standard 4: Required water quality volume, Vwq = (Dwq/12) x (Aimp)
   = (1"/12) x (1,900 SF)
   = 158 cu.ft.
   Infiltration basins with sediment forebay provides 80% TSS removal.
   (See TSS Calculation Worksheet)

5. Standard 5: Not applicable.

6. Standard 6: Not applicable.

7. Standard 7: Not applicable.

8. Standard 8: A stormwater pollution and prevention plan is being prepared to control erosion during the construction process and will be submitted for review prior to start of construction.

9. Standard 9: See item 4.B below for the maintenance plan.

10. Standard 10: See the Illicit Discharge Compliance Statement.

4.B: Long-Term Maintenance Plan:

1. Stormwater system owner responsible for maintenance:

   Anthony R. DeCosta
   1861 Shawmut Ave., New Bedford, MA 02747

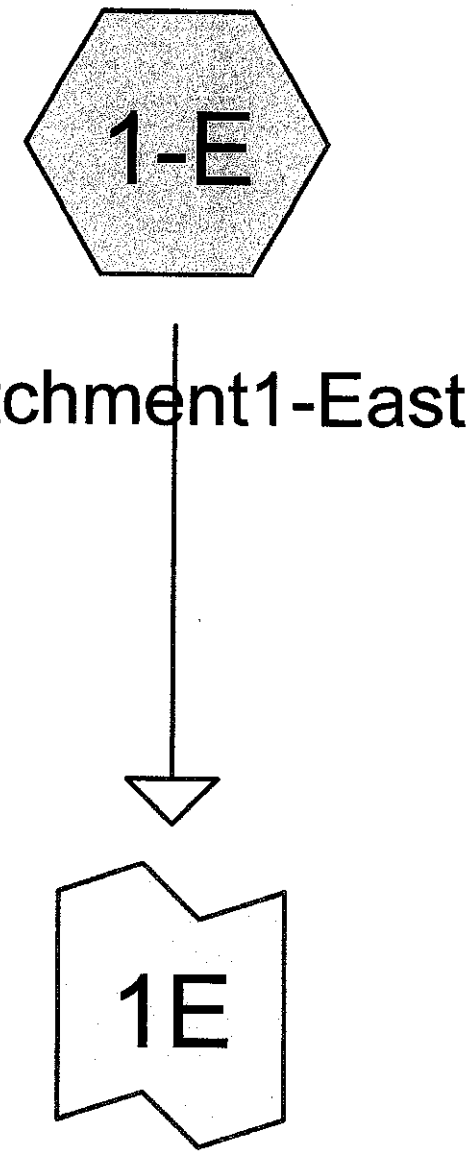
   The New Bedford Conservation Commission shall be informed of any change in ownership.

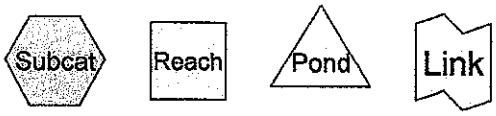
2. Inspection and maintenance schedule:

   a) Swales and infiltration basins shall be cleared of leaves and debris every 3 months.

   b) Vegetative grass cover shall be inspected and repaired after significant rainfalls events until full coverage is achieved. Full coverage shall be 75% grass cover or more.

   b) Plantings shall be inspected at least twice per year. Unhealthy plants shall be replaced.





Routing Diagram for A1Asphalt-PRE
Prepared by Charon Associates, Inc.-Engineers, Printed 2/29/2016
HydroCAD® 10.00-15 s/n 02255 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 1-E: Catchment1-East

Runoff = 0.05 cfs @ 12.17 hrs, Volume= 0.005 af, Depth> 0.70"

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

Area (sf)	CN	Description
1,900	96	Gravel surface, HSG A
2,000	35	Brush, Fair, HSG A
3,900	65	Weighted Average
3,900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	25	0.0090	0.04		**Sheet Flow, Sheet flow over grassy wooded area** Woods: Light underbrush n= 0.400 P2= 3.40"
0.5	40	0.0090	1.42		**Shallow Concentrated Flow, S.C. Flow over grassy wooded are** Grassed Waterway Kv= 15.0 fps
10.0	65	Total			

Summary for Link 1E: Design Point 1E

Inflow Area = 0.090 ac, 0.00% Impervious, Inflow Depth > 0.70" for 2-Year Rainfall event
Inflow = 0.05 cfs @ 12.17 hrs, Volume= 0.005 af
Primary = 0.05 cfs @ 12.17 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment 1-E: Catchment1-East

Runoff = 0.13 cfs @ 12.16 hrs, Volume= 0.011 af, Depth> 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall Rainfall=4.80"

Area (sf)	CN	Description
1,900	96	Gravel surface, HSG A
2,000	35	Brush, Fair, HSG A
3,900	65	Weighted Average
3,900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	25	0.0090	0.04		**Sheet Flow, Sheet flow over grassy wooded area** Woods: Light underbrush n= 0.400 P2= 3.40"
0.5	40	0.0090	1.42		**Shallow Concentrated Flow, S.C. Flow over grassy wooded are** Grassed Waterway Kv= 15.0 fps
10.0	65	Total			

Summary for Link 1E: Design Point 1E

Inflow Area = 0.090 ac, 0.00% Impervious, Inflow Depth > 1.52" for 10-Year Rainfall event
Inflow = 0.13 cfs @ 12.16 hrs, Volume= 0.011 af
Primary = 0.13 cfs @ 12.16 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment 1-E: Catchment1-East

Runoff = 0.18 cfs @ 12.15 hrs, Volume= 0.015 af, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall Rainfall=5.60"

Area (sf)	CN	Description
1,900	96	Gravel surface, HSG A
2,000	35	Brush, Fair, HSG A
3,900	65	Weighted Average
3,900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	25	0.0090	0.04		**Sheet Flow, Sheet flow over grassy wooded area** Woods: Light underbrush n= 0.400 P2= 3.40"
0.5	40	0.0090	1.42		**Shallow Concentrated Flow, S.C. Flow over grassy wooded are** Grassed Waterway Kv= 15.0 fps
10.0	65	Total			

Summary for Link 1E: Design Point 1E

Inflow Area = 0.090 ac, 0.00% Impervious, Inflow Depth > 2.06" for 25-Year Rainfall event
Inflow = 0.18 cfs @ 12.15 hrs, Volume= 0.015 af
Primary = 0.18 cfs @ 12.15 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment 1-E: Catchment1-East

Runoff = 0.29 cfs @ 12.15 hrs, Volume= 0.024 af, Depth> 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall Rainfall=7.20"

Area (sf)	CN	Description
1,900	96	Gravel surface, HSG A
2,000	35	Brush, Fair, HSG A
3,900	65	Weighted Average
3,900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	25	0.0090	0.04		**Sheet Flow, Sheet flow over grassy wooded area** Woods: Light underbrush n= 0.400 P2= 3.40"
0.5	40	0.0090	1.42		**Shallow Concentrated Flow, S.C. Flow over grassy wooded are** Grassed Waterway Kv= 15.0 fps
10.0	65	Total			

Summary for Link 1E: Design Point 1E

Inflow Area = 0.090 ac, 0.00% Impervious, Inflow Depth > 3.25" for 100-Year Rainfall event
Inflow = 0.29 cfs @ 12.15 hrs, Volume= 0.024 af
Primary = 0.29 cfs @ 12.15 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment 1-W: Catchment1-East

Runoff = 0.24 cfs @ 12.01 hrs, Volume= 0.015 af, Depth> 2.01"

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

	Area (sf)	CN	Description
*	1,900	98	Paved driveway, HSG A
	1,070	98	Water Surface, 0% imp, HSG A
	930	49	50-75% Grass cover, Fair, HSG A
	3,900	86	Weighted Average
	2,000		51.28% Pervious Area
	1,900		48.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	10	0.0090	0.65		**Sheet Flow, Sheet flow over driveway** Smooth surfaces n= 0.011 P2= 3.40"
0.5	55	0.0090	1.93		**Shallow Concentrated Flow, S.C. Flow over driveway** Paved Kv= 20.3 fps
0.8	65	Total			

Summary for Pond 1P: Basin P-1

Inflow Area = 0.090 ac, 48.72% Impervious, Inflow Depth > 2.01" for 2-Year Rainfall event
Inflow = 0.24 cfs @ 12.01 hrs, Volume= 0.015 af
Outflow = 0.09 cfs @ 12.23 hrs, Volume= 0.015 af, Atten= 63%, Lag= 13.2 min
Discarded = 0.09 cfs @ 12.23 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 82.19' @ 12.23 hrs Surf.Area= 455 sf Storage= 84 cf

Plug-Flow detention time= 5.4 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 5.2 min (820.3 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	82.00'	1,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.00	420	0	0
84.00	780	1,200	1,200

Device	Routing	Invert	Outlet Devices
#1	Discarded	82.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.09 cfs @ 12.23 hrs HW=82.19' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Summary for Subcatchment 1-W: Catchment1-East

Runoff = 0.38 cfs @ 12.01 hrs, Volume= 0.024 af, Depth> 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall Rainfall=4.80"

	Area (sf)	CN	Description
*	1,900	98	Paved driveway, HSG A
	1,070	98	Water Surface, 0% imp, HSG A
	930	49	50-75% Grass cover, Fair, HSG A
	3,900	86	Weighted Average
	2,000		51.28% Pervious Area
	1,900		48.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	10	0.0090	0.65		**Sheet Flow, Sheet flow over driveway** Smooth surfaces n= 0.011 P2= 3.40"
0.5	55	0.0090	1.93		**Shallow Concentrated Flow, S.C. Flow over driveway** Paved Kv= 20.3 fps
0.8	65	Total			

Summary for Pond 1P: Basin P-1

Inflow Area = 0.090 ac, 48.72% Impervious, Inflow Depth > 3.28" for 10-Year Rainfall event
Inflow = 0.38 cfs @ 12.01 hrs, Volume= 0.024 af
Outflow = 0.10 cfs @ 12.36 hrs, Volume= 0.024 af, Atten= 75%, Lag= 20.7 min
Discarded = 0.10 cfs @ 12.36 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 82.47' @ 12.36 hrs Surf.Area= 505 sf Storage= 217 cf

Plug-Flow detention time= 12.7 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 12.5 min (813.7 - 801.2)

Volume	Invert	Avail.Storage	Storage Description
#1	82.00'	1,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.00	420	0	0
84.00	780	1,200	1,200

Device	Routing	Invert	Outlet Devices
#1	Discarded	82.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.10 cfs @ 12.36 hrs HW=82.47' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Summary for Subcatchment 1-W: Catchment1-East

Runoff = 0.47 cfs @ 12.01 hrs, Volume= 0.030 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall Rainfall=5.60"

	Area (sf)	CN	Description
*	1,900	98	Paved driveway, HSG A
	1,070	98	Water Surface, 0% imp, HSG A
	930	49	50-75% Grass cover, Fair, HSG A
	3,900	86	Weighted Average
	2,000		51.28% Pervious Area
	1,900		48.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	10	0.0090	0.65		**Sheet Flow, Sheet flow over driveway** Smooth surfaces n= 0.011 P2= 3.40"
0.5	55	0.0090	1.93		**Shallow Concentrated Flow, S.C. Flow over driveway** Paved Kv= 20.3 fps
0.8	65	Total			

Summary for Pond 1P: Basin P-1

Inflow Area = 0.090 ac, 48.72% Impervious, Inflow Depth > 4.03" for 25-Year Rainfall event
Inflow = 0.47 cfs @ 12.01 hrs, Volume= 0.030 af
Outflow = 0.10 cfs @ 12.39 hrs, Volume= 0.030 af, Atten= 78%, Lag= 22.8 min
Discarded = 0.10 cfs @ 12.39 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 82.64' @ 12.39 hrs Surf.Area= 535 sf Storage= 305 cf

Plug-Flow detention time= 17.6 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 17.5 min (812.8 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1	82.00'	1,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.00	420	0	0
84.00	780	1,200	1,200

Device	Routing	Invert	Outlet Devices
#1	Discarded	82.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.10 cfs @ 12.39 hrs HW=82.64' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Summary for Subcatchment 1-W: Catchment1-East

Runoff = 0.63 cfs @ 12.01 hrs, Volume= 0.041 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall Rainfall=7.20"

	Area (sf)	CN	Description
*	1,900	98	Paved driveway, HSG A
	1,070	98	Water Surface, 0% imp, HSG A
	930	49	50-75% Grass cover, Fair, HSG A
	3,900	86	Weighted Average
	2,000		51.28% Pervious Area
	1,900		48.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	10	0.0090	0.65		**Sheet Flow, Sheet flow over driveway** Smooth surfaces n= 0.011 P2= 3.40"
0.5	55	0.0090	1.93		**Shallow Concentrated Flow, S.C. Flow over driveway** Paved Kv= 20.3 fps
0.8	65	Total			

Summary for Pond 1P: Basin P-1

Inflow Area = 0.090 ac, 48.72% Impervious, Inflow Depth > 5.56" for 100-Year Rainfall event
Inflow = 0.63 cfs @ 12.01 hrs, Volume= 0.041 af
Outflow = 0.11 cfs @ 12.43 hrs, Volume= 0.041 af, Atten= 82%, Lag= 25.4 min
Discarded = 0.11 cfs @ 12.43 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 82.97' @ 12.43 hrs Surf.Area= 595 sf Storage= 492 cf

Plug-Flow detention time= 27.8 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 27.6 min (814.1 - 786.5)

Volume	Invert	Avail.Storage	Storage Description
#1	82.00'	1,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.00	420	0	0
84.00	780	1,200	1,200

Device	Routing	Invert	Outlet Devices
#1	Discarded	82.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.11 cfs @ 12.43 hrs HW=82.97' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: A. DeCosta, 1861 Shawmut Ave., New Bedford

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Basin	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **1861 Shawmut Ave., New Bedford**
Prepared By: **Charon Associates, Inc.**
Date: **2/25/2016**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection