

PROJECT NARRATIVE & STORMWATER ANALYSIS

Proposed Site Plan

**100 Duchaine Boulevard (Assessors Map 134 Lot 5)
New Bedford, Massachusetts 02745**

Project Summary

The project area associated with this proposed development is located at the southern terminus of Duchaine Boulevard in the New Bedford Business Park in northern New Bedford. The site is comprised tax parcel Lot 5 on Assessor's Map 134, and consists of approximately 7.26+/- acres. The proposed project area is comprised of the majority of the total parcel area, but does not include the steeply inclined portion of land leading to the western side of Phillips Road. Much of the parcel area, including the entire proposed project area, is located in the city's Industrial C zoning district. The site currently contains a large concrete foundation that is the remains of a warehouse style building with associated parking, loading, and landscaped areas. Access to the site is gained from a looped road off of Duchaine Boulevard, over which access easements have been provided.

The applicant is seeking permission to provide parking, loading, and drainage improvements to the project site, in addition to a newly constructed 28,000 S.F. warehouse and distribution building. The applicant is proposing to install sixteen (16) loading docks on the east side of the proposed building, and to provide an additional forty (40) trailer parking spaces throughout the site. Proposed improvements also include twenty-seven (27) new employee parking spaces. In order to attenuate the increased stormwater runoff generated by the proposed impervious site coverage and to provide the appropriate level of water quality treatment, additional stormwater management practices have been proposed. Proposed structural BMP's include sediment forebays and infiltration basins.

Methodology

Drainage computations were performed using the Natural Resources Conservation Services (NRCS) TR-20 method and HydroCAD® Drainage Calculation Software to determine the change in the existing and post-development runoff rates from each drainage area for the 2-, 10-, and 100-year 24 hour storm events. The limits of the work proposed to complete the project fall within an area subject to protection by the Wetlands Protection Act, therefore, compliance with DEP Stormwater Management Standards is required. Sketches of the existing and proposed watershed areas, HydroCAD® Report, and copies of the calculation sheets are included as appendices to this report.

Existing Conditions

The soils underlying the site are identified in the Natural Resources Conservation Service (NRCS) Soil Survey of Bristol County (*see Exhibit D*). The site soils are classified as 306C (Paxton fine sandy loam, 8-15 percent slopes, very stony, Hydrologic Soil Group: "C") and 602 (Urban Land, HSG: "Unranked")

Stormwater Management Overview

Existing Conditions:

The project site has been divided into eleven existing subcatchment drainage areas, which discharge to three design points. The design points chosen for this site are the limit of the bordering vegetated wetlands located within the east central portion of the site and the BVW to the northern edge of the site. A number of depressions located inside the site parking lot, which discharge runoff through culverts either directly toward the BVW or toward an existing stormwater "wet basin" at the south end of the site via a piped drainage system, have been incorporated into the existing drainage model. Although these basins are wetland resource areas, they do provide peak rate attenuation for runoff which is directed to them. Existing outlet controls within the wet basin have been incorporated into the model, and the outflow from the pond is combined with the runoff toward the BVW to provide a total flow to the design points.

Proposed Conditions:

Under proposed conditions, eleven subcatchment areas have been included in the drainage model. New paved areas to be added to the existing parking area and the newly proposed building sheds runoff overland toward two proposed infiltration basins, located between the existing driveway and the proposed paved area. Pretreatment is achieved through two sediment forebays at each basin. The new paved areas in front (north) of the existing building, where the proposed loading docks are located, shed runoff toward two proposed infiltration basins, located between the existing roadway and the proposed paved areas. Each of these basins is pretreated through two sediment forebays. A series of trench drains located in front of the proposed loading docks collect stormwater runoff and directs it to deep sump manhole structures, which discharge to one of two proposed 11,000 gallon pump chambers, which will discharge runoff toward the two infiltration basins between the road and the paved areas. Each of these infiltration basins will then discharge toward another proposed infiltration basin, located between the existing driveway and the bordering vegetated wetland surrounding the site. Each of these basins is also designed to collect runoff from direct runoff from portions of the proposed paved surface.

The proposed infiltration basins have been designed in accordance with the DEP Stormwater Handbook. In accordance with the Stormwater Handbook, the rate mitigation facilities have been engineered to reduce post-development runoff rates from pre-development conditions.

Stormwater Management Standards

Standard 1:

- Under proposed conditions, there will be no new untreated discharges or erosion in wetland areas. Drainage outfalls from the two infiltration basins which discharge toward the existing BVW are provided with rip-rap spillways to help control velocity and erosion at the outlet. Stormwater discharges have been held below erodible velocities. This standard has been met.

Standard 2:

- The design of the stormwater system was designed for the post-development conditions to handle all storms' peak discharges and runoff volume to include the 2 and 10-year storm events. An evaluation of peak discharges from the 100-year storm 24-hour storm event demonstrates that although a small increase in the peak discharge rate occurs, the discharge will not result in increased off-site flooding due to the short duration of increased rate and the overall reduced volume of runoff. The site drainage system was designed in consideration of the structural standards and techniques of the Best Management Practices (BMP) and Low Impact Development (LID) outlined in the "Stormwater Management Handbook".

Standard 3:

- The proposed infiltration basins have been designed to recharge some of the anticipated stormwater runoff from all of the new impervious area and from some of the existing impervious area. The required Recharge Volume has been calculated using the Static Method and calculations are provided in **Exhibit G**. We note that the required Recharge Volume was calculated for the entire impervious area on-site, including existing paved areas as well as the newly proposed paved and roof areas. As a partial re-development project, this Standard is required to be met to the maximum extent practicable for these existing areas. The proposed design, however, provides the required recharge volume within the proposed basins. Drawdown Calculations have also been provided in **Exhibit H**. This standard has been met.

Standard 4:

- The proposed stormwater management systems for this project have been designed to remove 80% of the average annual post construction load of Total Suspended Solids in accordance with this standard, as shown in calculations provided in **Exhibit J**. Suitable practices for source control and pollution prevention have been identified in a long-term pollution prevention plan in **Exhibit M**. Structural BMPs have been designed to capture the required water quality volume (**Exhibit I**) determined in accordance with the Stormwater Handbook. We again note that a significant amount of the total on-site post-development impervious area is

from existing impervious ground cover. As a partial redevelopment project, runoff from these areas is required to be treated to the maximum extent practicable. Although the water quality volume provided in the proposed infiltration BMPs exceeds the required volume based upon the new impervious area, it does not fully comply with the required volume based on the total impervious site area. Given the existing drainage system elevation and the groundwater conditions on-site, providing additional water quality volume for the runoff from the existing impervious areas is not practicable. This standard has been met.

Standard 5:

- As a recycling facility, the proposed use is a Land Use with Higher Potential Pollutant Load. Stormwater discharges are proposed to be treated by the specific structural BMPs determined to be suitable for treating runoff from such land uses. Sediment Forebays and Infiltration Basins are appropriate BMPs for use with Land Uses with Higher Potential Pollutant Load. Stormwater treatment has been designed to provide 44% TSS removal prior to discharge to the infiltration BMPs, and BMPs have been designed to treat 1.0 inch of runoff times the total new impervious area at the post-development site. This standard has been met

Standard 6:

- The site does not discharge within the Zone II or IWPA of a public water supply, nor does it discharge near or to any critical areas. This standard does not apply.

Standard 7:

- This project is a partial re-development project. Much of the site is currently paved or covered with impervious cover. Those areas where new impervious coverage is proposed have been designed to meet all of the required Stormwater Standards. Those areas where existing impervious is proposed to remain will be allowed to maintain existing drainage patterns, where much of the runoff from the existing parking lot area is directed through an existing piped drainage system to several existing stormwater basin resource areas throughout the site, which attenuates the runoff prior to discharge to the BVW. Due to the water table present on-site, it is not feasible to fully meet all Standards for the existing impervious conditions.

Standard 8:

- We have provided for Construction Period Pollution in accordance with the regulations. A formal Construction Period Pollution Prevention Plan will be submitted prior to construction.

Standard 9:

- A long-term operation and maintenance plan has been prepared to ensure that stormwater management systems function as designed. (***Exhibit L***)

Standard 10:

- We are not proposing any illicit discharges as defined in the Stormwater Management Regulations. See attached letter in ***Exhibit N***