South Coast Renewables, LLC

Site Suitability Application - BWP SW 01

Solid Waste Processing and Transfer Station
100 Duchaine Boulevard
New Bedford, Massachusetts 02745

February 2023

Prepared For:

South Coast Renewables, LLC
100 Duchaine Boulevard
New Bedford, Massachusetts 02745

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BWP SW 01 Site Suitability Report for a New Site Assignment

BWP SW 38 Site Suitability for a Major Modification of an Existing Site Assignment

Transmittal Number

Facility ID# (if known)

Instructions

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

BWP SW 01 Site Suitability Report for New Site Assignment:

The information requested on this application form must be supplied when filing an Application for a new Site Assignment pursuant to the provisions of the *Site Assignment Regulations for Solid Waste Management Facilities*, 310 CMR 16.00.

The form is divided into six parts that are to be completed as follows:

I. General Information: All Applicants complete Part I.

II. Facility Specific Criteria: Part II is divided into three sections,

II.A. For landfills,
II.B. For combustion facilities, and
II.C. For waste handling and processing facilities.

Applicants should complete only the appropriate section.

III. General Criteria: All Applicants complete Part III.

IV. Integrated Solid Waste Management: Complete Part IV only if the proposed facility is a landfill or combustion facility.

V. Waiver: Complete Part V only if a waiver is requested.

VI. Signatures and Certification: All Applicants must sign the application in Part VI.

BWP SW 38 Site Suitability Report for a Major Modification of a Site Assignment:

The information requested on this application form must be supplied when filing an Application for a major modification of an existing Site Assignment pursuant to the provisions of the *Site Assignment Regulations for Solid Waste Management Facilities* at 310 CMR 16. 22(2).

When applying for a Major Modification, the applicant need only complete those sections of the form that concern criteria affected by the major modification as determined in writing by the Department. The applicant shall obtain this written determination from the Solid Waste Section in the DEP Regional Office prior to completing and submitting this application.

General Information:

The Applicant should refer to the regulations themselves when completing the Application form. The Application form provides a format for presenting the information required to determine whether the site meets the criteria set forth in the Site Assignment Regulations themselves. The Application form is not a substitute for the regulations, and the Applicant is responsible for providing all the information relevant to evaluating the suitability of the site in accordance with 310 CMR 16.00.

Instructions (cont.)

The application form is annotated with section numbers, enclosed in {braces}, that reference sections in the regulations. These references are included to make it easier to consult the regulations for guidance in completing the application. The references are abbreviated in that, for example, 310 CMR 16.05(2) is written as {16.05(2)}.

Completing the Application Form:

This application form contains three types of questions or requests for information:

1) Requests that documents be attached (e.g., maps). Please attach these documents and note on the application form where these documents can be found.

2) Questions that require a written response. Questions that require a very brief response may be answered in the space provided on the form itself. Longer responses should be attached to the form and the location of the attachment identified in the space provided.

3) Questions that require a "yes" or "no" response. Put an “X” in the appropriate box and indicate in the space provided where additional information or information supporting the response can be found.

Section I. General Information

Instructions: All Applicants should complete Part I.

A. Site Location and Project Description

Please provide the information requested.

1. Project name:

   South Coast Renewables, LLC
   Name of Project

2. Site address:

   100 Duchaine Boulevard
   Street

   New Bedford — City/Town
   MA — State
   02745 — Zip Code

3. Type of facility:

   ☐ landfill
   ☐ combustion
   ☒ waste handling and processing

4. Total area of the site, including all buffer zones:

   71
   acres

5. Total area to be site assigned for solid waste activities:

   26.1
   acres

6. Capacity and expected life of proposed facility:

   a. State the maximum daily capacity of the proposed facility in tons per day. (This number should represent the maximum amount of waste to be accepted on any single day.):

      1,500
      tons per day

   b. State the average daily capacity of the proposed facility and describe how the average was computed:

      1,500
      average daily capacity (tons per day)

      1,500 TPD based on facility receiving maximum capacity on any given day
      how average was computed

A. Site Location and Project Description (cont.)

c. State the yearly capacity of the proposed facility and, if the capacity is expected to change over the life of the facility, indicate the capacity in each year the proposed facility is expected to operate:

486,000 (based on maximum capacity)
yearly capacity

Expected change in capacity (if applicable):

Expected yearly capacity	**Year**
468,000	All years

d. State the number of years the facility is expected to operate:

30 (Life of facility is not restricted)
years

e. State the total lifetime capacity of the proposed facility:

14 MM+ tons (Life of facility is not restricted)
total lifetime capacity

7. Type of Waste: What type of waste will be accepted at the proposed facility? (check all that apply)

☒ municipal solid waste
☒ construction and demolition waste
☐ industrial waste
☐ other, please specify:

8. Project Description: describe the proposed project:

See Site Suitability Application Narrative

B. Applicant Identification

1. Identify the owner of the site:

SMRE 10, LLC & SMRE Sublot 20
Name

100 Duchaine Blvd
Street Address

New Bedford	MA	02745
City/Town	State	Zip Code

1-800-833-9100
Telephone

Tim Cusson	1-617-908-0825
Contact Person	Contact Telephone

2. Identify the operator of the proposed facility if the owner has entered into an agreement with an operator:

South Coast Renewables, LLC
Name

100 Duchaine Blvd
Street Address

New Bedford	MA	02745
City/Town	State	Zip Code

1-800-833-9100
Telephone

Tim Cusson	1-617-908-0825
Contact Person	Contact Telephone

C. Fees {16.08(4)}

1. Proof of Payment: Documentation must be submitted showing that the requirements for paying the Technical Fee to the Board of Health as per 16.08(4) have been satisfied.

Proof of payment may be either (please check which one you have provided):

☐ Document from the Board of Health stating that the Board of Health has waived the technical fee or that the Applicant has satisfied the Technical Fee payment requirements; or

☒ Receipt showing that the Applicant has paid the Maximum Technical Fee to the municipality.

Location of Attachment:

See Attachment 1
section and/or page numbers

C. Fees {16.08(4)} (cont.)

2. Amount of Maximum Technical Fee: Enter the Maximum Technical Fee as computed using Appendix A of 310 CMR 16.99:
   $83,363 See Section I, Part C and Atachment 1
   Maximum Technical Fee

D. Collection Center for Household Hazardous Waste

Does the applicant intend to apply, pursuant to 310 CMR 30.190, for approval to operate a collection center for hazardous waste from households on the proposed site?

☐ Yes ☒ No

If "yes," the Applicant should contact the Permitting Section of the Bureau of Waste Prevention in the appropriate DEP Regional Office.

E. Declaration of Waiver Request {16.08(5)(c)}

1. Is a waiver from any of the site suitability criteria being requested under provisions of 310 CMR 16.40(6)? (If "yes," complete Part V.A. of this application form.)

   ☐ Yes ☒ No

2. Is a waiver from any of the requirements of Part I of 310 CMR 16.00 being requested under provisions of 310 CMR 16.18? (If "yes," complete Part V.B. of this application form.)

   ☐ Yes ☒ No

F. Massachusetts Environmental Policy Act (MEPA) {16.08(5)(d)}

Indicate which one of the following is attached to the application:

☐ Evidence that the project does not require MEPA review.

☐ Certificate from the Secretary of the Executive Office of Environmental Affairs stating that an Environmental Impact Report is **not** required.

☐ Evidence that the MEPA process does apply and the Secretary has determined that an EIR is required. (Note: The DEP will not complete its technical review of the application until the applicant submits the Certificate from the Secretary of the Executive Office of Environmental Affairs stating that the Final Environmental Impact Report is acceptable.)

☒ Certificate from the Secretary of the Executive Office of Environmental Affairs stating that the Final Environmental Impact Report is acceptable.

F. Massachusetts Environmental Policy Act (MEPA) {16.08(5)(d)} (cont.)

Location of Attachment:

See Site Suitabilty Application and Attachment 2
section and/or page numbers

G. Wetlands Resources

1. Buffer Zone: Is any part of the proposed site located within 100 feet of any wetlands?

   ☒ Yes ☐ No

2. Riverfront Area: Is any part of the site located within a riverfront area?

   ☐ Yes ☒ No

3. Floodplain: Is any part of the proposed site located within a 100-year floodplain?

   ☐ Yes ☒ No

   If the answer to question I.G.1, I.G.2 or I.G.3 is "yes," please describe what activities, if any, will occur within the 100-foot buffer zone, the riverfront area or the 100-year floodplain.

   Respond here or identify location of attached response:

   See Section I-G - pages 19-24
   section and/or page numbers

4. Order of Conditions: Will an Order of Conditions under the Wetlands Protection Act (c.131, s.40) be required?

   ☒ Yes ☐ No

5. Variance: Will a variance from the Wetlands regulations be required?

   ☐ Yes ☒ No

H. Maps

1. Ground Water Contour Map: Has a ground water contour map for the site been developed?

   ☐ Yes ☒ No

   If Yes, please attach the map and identify the location of the attachment:

   Monitoring well location shown on Insert 8
   section and/or page numbers

Please submit the following with the Application:

2. Locus Map: A US Geological Survey (USGS) topographic map of at least 8.5 x 11 inches in size (7.5 minute series scale) should be attached which clearly delineates the proposed site boundaries and shows all access roads to the proposed site.

   Identify the attachment:

   See Site Suitability Application, USGS Topographic Map (Insert 1)
   section and/or page numbers

3. Water Resources Site Plan: The following information regarding water resources should be indicated on a site plan (scale no larger than one inch equals two hundred feet) that covers the site plus a one-half mile extension in all directions from the site boundary. Please refer to the definitions at 310 CMR 16.02 for guidance on the meaning of the terms.

   - All wetlands, associated buffer zones and riverfront areas as defined in 310 CMR 10.00
   - All 100-year flood plains
   - All surface water bodies (rivers, streams, ponds, lakes, reservoirs etc),
   - All perennial streams draining to surface drinking water supplies,
   - All private water supply wells
   - All public water supply wells
   - All or any fractions of Interim Wellhead Protection Areas (IWPA) or Zone II areas
   - All or any fractions of Proposed Drinking Water Source Areas
   - All or any fraction of a Zone A or B of a surface water supply

   Identify the location of the attachment:

   See Site Suitability Application, Water Resources Plan (Insert 2)
   section and/or page numbers

H. Maps (cont.)

4. Land Use Site Plan: The following information regarding land use should be indicated on a site plan (scale no larger than one inch equals two hundred feet) that covers the site plus a one-half mile extension in all directions from the site boundary:

   - All wildlife management areas,
   - All Areas of Critical Environmental Concern (ACEC) as established by the Secretary of the Executive Office of Environmental Affairs (EOEA),
   - All lands actively devoted to agricultural or horticultural uses and lands classified as Prime, Unique, or of State and Local Importance by the United States Department of Agriculture, Natural Resources Conservation Service;
   - All of the Following Open Space Protected Areas:
     - state forests
     - state or municipal parklands or conservation land, or other open space held for natural resource purposes in accordance with Article 97 of the Massachusetts Constitution
     - Department of Conservation & Recreation (DCR) reservations
     - lands with conservation. preservation, agricultural, or watershed protection restrictions approved by the Secretary of the Executive Office of Environmental Affairs
     - conservation land owned by private non-profit land conservation organizations that is open to the public
     - All residential dwellings on site and within 500 feet (1000 feet for landfills) of the property boundary,
     - All occupied commercial buildings within 500 feet of the property boundary,
     - All of the following:
       - health care facilities
       - prisons
       - Elementary Schools
       - middle schools
       - high schools
       - children's' pre-schools
       - licensed day care centers
       - senior centers
       - youth centers
   - Other Solid Waste Facilities
   - All proposed waste handling areas on the site,
   - All proposed areas of waste deposition on the site,
   - All buildings and other facilities proposed on the site,
   - All access roads on the site and traffic flow off the site,
   - All abutting properties and their appropriate zoning designation (include any zoning abbreviations in plan legend).
   - The zoning designation of the proposed site.

   Identify the location of the attachment:

   See Site Suitability Application, Land Use Plan (Insert 3)
   section and/or page numbers

Section II. Facility Specific Criteria

Part II is divided into three sections. Complete only the appropriate section.

II.A. Landfills
II.B. Combustion Facilities
II.C. Waste Handling and Processing Facilities

A. Landfills {16.40(3)(a)}

Complete Part II.A., if Site Assignment is sought for a landfill.

1. Zone II of Existing Public Water Supply {16.40(3)(a)1.}: Will any area of waste deposition be located within the designated Zone II area of an existing public water supply well?

   ☐ Yes ☐ No

   Location of supporting information or comments:

   section and/or page numbers

2. IWPA of Existing Public Water Supply {16.40(3)(a)2.}: If the Zone II of an existing public water supply well has not been determined, will any area of waste deposition be within the Interim Wellhead Protection Area (IWPA) as defined at 310 CMR 22.02?

   ☐ Yes ☐ No

   If "Yes" see the note at Question II.A.4. and identify where additional information is attached:

   section and/or page numbers

3. Zone II or IWPA of a Proposed Drinking Water Source Area {16.40(3)(a)3.}: Will any area of waste deposition be within the area of a Zone II or Interim Well Head Protection Area (IWPA) of a proposed drinking water source area for which the documentation necessary to obtain a source approval has been submitted prior to the earlier of either the site assignment application, or if the MEPA process does apply, the Secretary's Certificate on the Environmental Notification Form or Notice of Project Change, or where applicable, the Secretary's Certificate on the EIR or Final EIR;

   ☐ Yes ☐ No

   If "Yes" see the note at Question II.A.4. and identify where additional information is attached:

   section and/or page numbers

A. Landfills {16.40(3)(a)} (cont.)

4. 15,000 Feet Upgradient of Existing Public Water Source Well or Proposed Drinking Water Source Area {16.40(3)(a)4.}: In instances where the Zone II has not been calculated, will any area of waste deposition be 15,000 feet or less hydraulically upgradient of an existing public water source well or proposed drinking water source area?

   ☐ Yes ☐ No

   See the note and identify where additional information is attached:

   section and/or page numbers

   Note: If the answer to Questions II.A.2., 3, or 4 is "YES," the applicant may conduct and submit with this application a preliminary Zone II study, approved of by the Department, showing that the waste deposition area would be beyond the Zone II of the public water supply well or proposed drinking water source area in question. Alternatively, the applicant may prepare and submit, with this application, other evidence showing the well or proposed drinking water source area and the ground water under the proposed site are not hydraulically connected

   The Applicant should consult with the DEP Drinking Water Program in the Bureau of Resource Protection prior to conducting a preliminary Zone II investigation to determine the scope of the investigation. At a minimum, the preliminary Zone II submittal should consist of:

   1) A review and discussion of all available pertinent geologic and hydrologic data including bedrock and surficial geologic maps, hydrologic data reports and atlases, consultant reports, and pumping test reports;

   2) An estimate and orientation of the regional hydraulic gradient across the well site;

   3) A preliminary conceptual model of the aquifer, including a discussion of pertinent recharge and till boundaries; and

   4) A preliminary estimate of the Zone II area as defined in the Drinking Water Program's Water Supply Guidelines.

5. Danger to existing or proposed drinking water source area {16.40(3)(a)5.}: State why a discharge from the facility would not pose a danger to any existing or proposed drinking water source area.

   Respond here or identify where the response is attached:

   section and/or page numbers

Transmittal Number

Facility ID# (if known)

A. Landfills {16.40(3)(a)} (cont.)

6. Sole Source Aquifer {16.40(3)(a)6.}: Will any area of waste deposition be located within the recharge area of a designated sole source aquifer? (Sole Source Aquifers are designated by the US Environmental Protection Agency. To inquire as to whether a site is located above a Sole Source Aquifer contact the US Environmental Protection Agency, Region I, Ground Water Management Section.)

   ☐ Yes ☐ No

   Identify location of attached information:

   section and/or page numbers

   If the answer to question II.A.6. is "yes," then the site is not suitable unless the criteria in 310 CMR 16.40(3)(a)6.a., b. and c. are met. Attach documentation showing that these criteria are satisfied.

   Identify location of attached information:

   section and/or page numbers

7. Zone of Contribution or Recharge Area {16.40(3)(a)7.}: Is any area of waste deposition within the zone of contribution of an existing public water supply or proposed drinking water source area, or the recharge area of a surface drinking water supply, pursuant to a municipal ordinance or by-law enacted in accordance with M.G.L. c. 40A, § 9?

   ☐ Yes ☐ No

   Identify location of supporting information or comments:

   section and/or page numbers

8. Zone A or B of Surface Drinking Water Supply {16.40(3)(a)8.}: Will any area of waste deposition be within the Zone A or Zone B of a surface water supply?

   ☐ Yes ☐ No

   Identify location of supporting information or comments:

   section and/or page numbers

A. Landfills {16.40(3)(a)} (cont.)

9. Perennial stream draining to Surface Drinking Water Supply {16.40(3)(a)9.} Will any area of waste deposition be located within 400 feet upgradient, as defined by groundwater flow or surface water drainage, of a perennial water course that drains to a surface water supply that itself is within one mile of the waste deposition area?

   ☐ Yes ☐ No

   Identify location of supporting information or comments:

   section and/or page numbers

10. Potentially Productive Aquifer {16.40(3)(a)10.}: Will any area of waste deposition be within a Potentially Productive Aquifer?

    ☐ Yes ☐ No

    Identify location of supporting information or comments:

    section and/or page numbers

    If the answer to question II.A.10. is "yes," then the site is not suitable unless documentation is attached showing that either 16.40(3)(a)10.a., b. or c. applies.

    Identify location of attached documentation:

    section and/or page numbers

11. Within 1000 feet Upgradient or Otherwise within 500 Feet of an Existing or Potential Private Water Supply Well {16.40(3)(a)11.}: Will any area of waste deposition be within 1000 feet upgradient, and where not upgradient, within 500 feet, of a private water supply well existing or established as a potential supply at the time of submittal of the application?

    ☐ Yes ☐ No

    Identify location of supporting information or comments

    section and/or page numbers

Transmittal Number

Facility ID# (if known)

A. Landfills {16.40(3)(a)} (cont.)

If the answer to question II.A.11 is "yes," attach documentation showing a valid option to purchase each such supply. Also indicate whether a replacement drinking water supply will be provided.

Identify the location of attached documentation:

section and/or page numbers

12. Four Feet Depth to Ground Water {16.40(3)(a)12.}: Will the maximum high ground water level under any area of waste deposition be less than four (4) feet below the lowermost level of the waste or, if a liner system is employed, four feet below the bottom of the lower most liner?

☐ Yes ☐ No

Identify location of supporting information or comments:

section and/or page numbers

13. Wetlands 16.40(3)(a)13.}: Will any area of waste deposition or any leachate containment structure be within any resource area, including the 100 year floodplain, protected by the Wetlands Protection Act?

☐ Yes ☐ No

Identify location of supporting information or comments:

section and/or page numbers

14. 400 Feet to a Lake or 200 feet to a Riverfront Area {16.40(3)(a)14.}: Will any area of waste deposition or any leachate containment structure be within 400 feet of a lake or within 200 feet of a Riverfront Area as defined in 310 CMR 10.00, that is not a drinking water supply?

☐ Yes ☐ No

Identify location of supporting information or comments:

section and/or page numbers

Transmittal Number

Facility ID# (if known)

A. Landfills {16.40(3)(a)} (cont.)

15. 1000 Feet to Various Occupied Facilities {16.40(3)(a)15.}: Will any area of waste deposition be within 1000 feet of any of the following (excluding equipment storage or maintenance structures):

    - an occupied residential dwelling,
    - health care facility
    - prison,
    - Elementary School
    - middle school
    - high school
    - children's' pre-school
    - licensed day care center
    - senior center
    - youth center

    ☐ Yes ☐ No

    Identify location of supporting information or comments:

    section and/or page numbers

    If the answer to II.A.15. is "yes", attach documentation showing evidence of a valid option to purchase the facility in question.

    Identify location of attached documentation:

    section and/or page numbers

16. Ground water Protection System {16.40(3)(a)16.}: Will a ground water protection system be employed?

    ☐ Yes ☐ No

    If a ground water protection system will be employed, describe the general features and components of the system which will prevent the migration of leachate and avoid adverse impact to the ground water.

    If a ground water protection system will not be employed, demonstrate that the facility will not discharge leachate that presents a threat of adverse impact to ground water.

    Identify location of attached explanation:

    section and/or page numbers

B. Combustion Facilities {16.40(3)(c)}

Complete Part II.B. if site assignment is sought for a combustion facility.

1. Zone I of Public Water Supply {16.40(3)(c)1.}: Will any waste handling area be within the Zone I of a public water supply?

   ☐ Yes ☐ No

   Identify location of supporting information or comments:

   section and/or page numbers

2. IWPA or Zone II of Existing Supply or Proposed Drinking Water Source Area {16.40(3)(c)2.}: Will any waste processing area be within:

   a) the Interim Wellhead Protection Area (IWPA) of an existing public supply

      ☐ Yes ☐ No

      Identify location of supporting information or comments:

      section and/or page numbers

   b) Zone II of an existing public water supply

      ☐ Yes ☐ No

      Identify location of supporting information or comments:

      section and/or page numbers

   c) a proposed drinking water source area, provided that the documentation necessary to obtain a source approval has been submitted prior to the earlier of either the site assignment application, or if the MEPA process does apply, the Secretary’s Certificate on the Environmental Notification Form or Notice of Project Change, or where applicable, the Secretary's Certificate on the EIR or Final EIR,

      ☐ Yes ☐ No

Transmittal Number

Facility ID# (if known)

B. Combustion Facilities {16.40(3)(c)} (cont.)

Identify location of supporting information or comments:

section and/or page numbers

If the answer to all the above is "No," do not respond to the following and go on to section II.B.3. If the answer to any of the above is "Yes," respond to the following requests:

Supply information to demonstrate to the Department that the risk of an adverse impact to the ground water will be minimized.

Identify location of attached information:

section and/or page numbers

Supply information to demonstrate to the Department that at least one of the following is true:

1) The proposed facility cannot reasonably be sited outside the IWPA or Zone II.

2) If the site has been previously used for solid waste management activities, there would be a net environmental benefit to the ground water by siting the facility within the Zone II or the IWPA.

Identify location of attached information:

section and/or page numbers

3. Zone A of Surface Water Supply {16.40(3)(c)3.}: Will the waste processing area be within the Zone A of a surface water supply?

☐ Yes ☐ No

Identify location of supporting information or comments:

section and/or page numbers

Transmittal Number

Facility ID# (if known)

B. Combustion Facilities {16.40(3)(c)} (cont.)

4. Within 500 feet Upgradient or Otherwise within 250 Feet of an Existing or Potential Private Water Supply Well {16.40(3)(c)4.}: Will the waste processing area be within 500 feet upgradient, and where not upgradient, within 250 feet, of a private water supply well existing or established as a potential supply at the time of submittal of the application?

   ☐ Yes ☐ No

   Identify location of supporting information or comments:

   section and/or page numbers

   If the answer to question II.B.4 is "yes," attach documentation showing a valid option to purchase each such supply. Also indicate whether a replacement drinking water supply will be provided.

   Identify location of attached documentation:

   section and/or page numbers

5. Two Foot Depth to Ground Water {16.40(3)(c)5.}: Will the maximum high ground water level be less than 2 feet below the surface in any waste handling or processing area?

   ☐ Yes ☐ No

   Identify location of supporting information or comments:

   section and/or page numbers

   If "yes," indicate how the project can be designed to maintain a two foot separation.

   Identify location of explanation:

   section and/or page numbers

B. Combustion Facilities {16.40(3)(c)} (cont.)

6. 500 Feet to Various Occupied Facilities {16.40(3)(c)6.}: Will any waste handling or processing area be within 500 feet of any of the following (excluding equipment storage or maintenance structures):

    - an occupied residential dwelling,
    - health care facility
    - prison,
    - Elementary School
    - middle school
    - high school
    - children's' pre-school
    - licensed day care center
    - senior center
    - youth center

    ☐ Yes ☐ No

    Identify location of supporting information or comments:

    section and/or page numbers

    If the answer to II.B.6. is "yes", attach documentation showing evidence of a valid option to purchase the facility in question.

    Identify location of attached documentation:

    section and/or page numbers

7. Riverfront Area {16.40(3)(c)7.}: Will the waste handling area be within the Riverfront Area as defined at 310 CMR 10.00?

    ☐ Yes ☐ No

    Identify location of supporting information or comments:

    section and/or page numbers

C. Waste Handling and Processing Facilities {16.40(3)(d)}

Complete Part II.C if site assignment is sought for a waste handling and processing facility (all facilities other than landfills and combustion facilities).

1. Zone I of Public Water Supply {16.40(3)(d)1.}: Will any waste handling area be within the Zone I of a public water supply?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitabilty Applicaton Narrative (Section II, Part C) and Insert 2
   section and/or page numbers

2. IWPA or Zone II of Existing Supply or Proposed Drinking Water Source Area {16.40(3)(d)2.}: Will any waste handling or processing area be within:

   a) the Interim Wellhead Protection Area (IWPA) of an existing public supply

      ☐ Yes ☒ No

      Identify location of supporting information or comments:

      See Site Suitabilty Applicaton Narrative (Section II, Part C) and Insert 2
      section and/or page numbers

   b) the Zone II of an existing public water supply

      ☐ Yes ☒ No

      Identify location of supporting information or comments:

      See Site Suitabilty Applicaton Narrative (Section II, Part C) and Insert 2
      section and/or page numbers

   c) a proposed drinking water source area, provided that the documentation necessary to obtain a source approval has been submitted prior to the earlier of either the site assignment application, or if the MEPA process does apply, the Secretary's Certificate on the Environmental Notification Form or Notice of Project Change, or where applicable, the Secretary's Certificate on the EIR or Final EIR,

      ☐ Yes ☒ No

C. Waste Handling and Processing Facilities {16.40(3)(d)} (cont.)

Identify location of supporting information or comments:

See Site Suitabilty Applicaton Narrative, MEPA FEIR Certificates (Attachment 2)
section and/or page numbers

If the answer to II.C.2.a, b and c is "No," do not respond to the following and go on to section II.C.3. If the answer to II.C.2.a, b or c is "Yes," respond to the following requests.

Supply information to demonstrate to the Department that the risk of an adverse impact to the ground water will be minimized.

Identify location of attached information:

N/A
section and/or page numbers

Supply information to demonstrate to the Department that at least one of the following is true:

1) The proposed facility cannot reasonably be sited outside the IWPA or Zone II.

2) If the site has been previously used for solid waste management activities, there would be a net environmental benefit to the ground water by siting the facility within the Zone II or the IWPA.

Identify location of attached information:
N/A
section and/or page numbers

3. Zone A of Surface Water Supply {16.40(3)(d)3.}: Will the waste handling or processing area be within the Zone A of a surface water supply?

☐ Yes ☒ No

Identify location of supporting information or comments:
See Site Suitabilty Applicaton Narrative (Section II, Part C) and Insert 2
section and/or page numbers

C. Waste Handling and Processing Facilities {16.40(3)(d)} (cont.)

4. Within 500 feet Upgradient or Otherwise within 250 Feet of an Existing or Potential Private Water Supply Well {16.40(3)(d)4.}: Will the waste handling or processing area be within 500 feet upgradient, and where not upgradient, within 250 feet, of a private water supply well existing or established as a potential supply at the time of submittal of the application?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitabilty Applicaton Narrative (Section II, Part C) and Insert 2
   section and/or page numbers

   If the answer to question II.C.4 is "yes," attach documentation showing a valid option to purchase each such supply. Also indicate whether a replacement drinking water supply will be provided.

   Identify location of attached documentation:
   N/A
   section and/or page numbers

5. Minimum Distances to Various Occupied Facilities {16.40(3)(d)5.}:

   a) Is the facility a transfer station using a fully enclosed storage system such as a compactor unit that proposes to receive less than or equal to 50 tons per day of solid waste

      ☐ Yes ☒ No

      Identify location of supporting information or comments:
      N/A
      section and/or page numbers

   Note: Respond to this question if the answer to question a) above is "Yes."

   b) Is the waste handling area 250 feet or less from any of the following (excluding equipment storage or maintenance structures)

      - an occupied residential dwelling,
      - health care facility
      - prison,
      - Elementary School
      - middle school
      - high school
      - children's' pre-school
      - licensed day care center
      - senior center
      - youth center

      ☐ Yes ☒ No

C. Waste Handling and Processing Facilities {16.40(3)(d)} (cont.)

Identify location of supporting information or comments:

See Site Suitabilty Applicaton Narrative (Section I, Part H) and Insert 3
section and/or page numbers

Note:
Respond to this question if the answer to question a) above is "No."

c) Is the waste handling area 500 feet or less from any of the following (excluding equipment storage or maintenance structures)

- an occupied residential dwelling,
- health care facility
- prison,
- Elementary School
- middle school
- high school
- children's' pre-school
- licensed day care center
- senior center
- youth center

☐ Yes ☒ No

Identify location of supporting information or comments:

See Site Suitabilty Applicaton Narrative (Section I, Part H) and Insert 3
section and/or page numbers

6. Riverfront Area {16.40(3)(d)6.}: Will the waste handling area be within the Riverfront Area as defined at 310 CMR 10.00?

☐ Yes ☒ No

Identify location of supporting information or comments:
See Site Suitabilty Applicaton Narrative (Section I, Part G and Section II, Part C) and Insert 2
section and/or page numbers

Transmittal Number

Facility ID# (if known)

C. Waste Handling and Processing Facilities {16.40(3)(d)} (cont.)

7. Two Foot Depth to Ground Water {16.40(3)(d)7.}: Will the maximum high ground water level be less than 2 feet below the surface in any waste handling or processing area?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitabilty Applicaton Narrative (Section I, Part G, Section II, Part C) and Insert 8
   section and/or page numbers

   If "yes," indicate how the project can be designed to maintain a two foot separation.

   Identify location of explanation:

   N/A
   section and/or page numbers

Section III. General Criteria {16.40(4)}

All applicants should complete all sections of Part III.

Note: When a response includes a description of a potential adverse impact, the applicant should describe both the qualitative and quantitative aspects of the potential impact.

A. Agricultural Land {16.40(4)(a)}

1. Does the site contain any land classified as Prime, Unique, or of State and Local Importance by the United States Department of Agriculture, Natural Resources Conservation Service?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitabilty Applicaton Narrative (Section III, Part A), Insert 3 and Attachment 12
   section and/or page numbers

2. Does the site contain any land deemed Land Actively Devoted to Agricultural or Horticultural Uses, except where the facility is an agricultural composting facility?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitabilty Applicaton Narrative (Section III, Part A), Insert 3 and Attachment 12
   section and/or page numbers

3. Will the facility be less than 100 feet from any land classified as Prime, Unique, or of State and Local Importance by the United States Department of Agriculture, Natural Resources Conservation Service?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitabilty Applicaton Narrative (Section III, Part A), Insert 3 and Attachment 12
   section and/or page numbers

Transmittal Number

Facility ID# (if known)

A. Agricultural Land {16.40(4)(a)} (cont.)

4. Will the facility be less than 100 feet from any land deemed Land Actively Devoted to Agricultural or Horticultural Uses, except where the facility is an agricultural composting facility?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitabilty Applicaton Narrative (Section III, Part A), Insert 3 and Attachment 12
   section and/or page numbers

B. Traffic Impacts {16.40(4)(b)}

1. ENF/EIR Accepted by MEPA

   If the applicant prepared an Environmental Notification Form (ENF) to comply with the requirements of the Massachusetts Environmental Policy Act (MEPA), please attach all portions of the ENF that are relevant to traffic impacts. If the applicant was also required to submit an Environmental Impact Report (EIR) to comply with MEPA, please attach all portions of the EIR relevant to traffic impacts.

   ☒ ENF/EIR traffic impacts attached
   ☐ ENF/EIR not required

   Identify location of attachments or comments:

   See Site Suitabilty Applicaton Narrative - Traffic Impacts (Section III, Part B), and Attachment 3
   section and/or page numbers

2. ENF/EIR Not Required by MEPA

   If no ENF or EIR was required to comply with MEPA, please provide the following information in an attachment:

   a) Maximum number of trips to the site per day by type of vehicle:

   b) Indicate, by vehicle type, the anticipated number of trips that will be made on each of the roads serving the facility.

   c) Identify any intersections, school zones, hospitals, or other locations on the roads serving the facility that may be adversely impacted by traffic accessing the site.

Transmittal Number

Facility ID# (if known)

B. Traffic Impacts {16.40(4)(b)} (cont.)

Identify the location of the attached information or comments

See Site Suitabilty Applicaton Narrative - Traffic Impacts (Section III, Part B), and Attachment 3
section and/or page numbers

C. Wildlife and Wildlife Habitat {16.40(4)(c)}

The Natural Heritage and Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries and Wildlife administers the programs dealing with the Wildlife and Wildlife Habitats referred to in these questions. The NHESP should be contacted to obtain the information and documentation needed to respond to the questions in this section.

The applicant must obtain a specific response from NHESP regarding the proposed site and attach the response to this application.

1. Habitat of Endangered, Threatened, or Special Concern Animal or Plant: Is the proposed site within the habitat of a state-listed Endangered, Threatened, or Special Concern animal or plant, as documented by the Natural Heritage and Endangered Species Program in its database?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitability Application Narrative, Habitat of Endangered Species (Section III, Part C), Insert 3, and Attachment 4.
   section and/or page numbers

2. Ecologically Significant Natural Communities: Is the proposed site located in or adjacent to an area described on the most recent map of Ecologically Significant Natural Communities as documented by the Natural Heritage Program in its database?

   ☐ Yes ☒ No

   Identify location of supporting information:

   See Site Suitability Application Narrative, Habitat of Endangered Species (Section III, Part C), Insert 3, and Attachment 4.
   section and/or page numbers

C. Wildlife and Wildlife Habitat {16.40(4)(c)} (cont.)

3. Wildlife Management Area: Is the proposed site located in an area adjacent to or with the potential to impact upon a Wildlife Management Area designated and managed by the Division of Fisheries and Wildlife?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitability Application Narrative, Habitat of Endangered Species (Section III, Part C), Insert 3, and Attachment 4.
   section and/or page numbers

   Instructions: If the answer to any of the above questions (III.C.1., III.C.2. or III.C.3.) is "yes," and the proposed facility does have the potential to adversely impact one or more Endangered, Threatened, or Special Concern animals or plants or Wildlife Management Area, then answer questions III.C.4. and, if necessary, III.C.5. If the answer to each of the above questions (III.C.1., III.C.2. and III.C.3.) is "no," do not answer question III.C.4. or III.C.5.

4. Adverse Impact on Habitat: Will the proposed site have an adverse impact on the habitat of a state-listed Endangered, Threatened, or Special Concern animal or plant, Ecologically Significant Natural Community, or Wildlife Management Area, as determined by the Natural Heritage and Endangered Species Program? (Attach determination from NHESP.)

   Identify location of supporting information or comments:
   N/A
   section and/or page numbers

   Instructions: If the Natural Heritage and Endangered Species Program has determined there will not be an adverse impact, do not answer question III.C.5. If NHESP determined there is a potential for an adverse impact, respond to question III.C.5.

5. Mitigation of Adverse Impacts: If there is a determination by the Natural Heritage and Endangered Species Program that the proposed facility may potentially impact the habitat of a state-listed Endangered, Threatened or Special Concern animal or plant, Ecologically Significant Natural Community, or Wildlife Management Area, are there any reasonable mitigation measures the proponent may use to minimize or eliminate any adverse impacts?

   ☐ Yes ☐ No

   If "no," then the site is unsuitable and the proposed facility shall not be sited.

   If "yes," then with regard to this criterion the site may be assigned with conditions which will meet Division of Fisheries and Wildlife approval for mitigation of the adverse impacts. The mitigation measures proposed shall be appended to this application.

C. Wildlife and Wildlife Habitat {16.40(4)(c)} (cont.)

Identify location of supporting information or comments:

N/A
section and/or page numbers

D. Areas of Critical Environmental Concern {16.40(4)(d)}

Programs for designating and protecting Areas of Critical Environmental Concern (ACEC) are administered by the Executive Office of Environmental Affairs (EOEA). EOEA should be contacted to obtain the information and documentation needed to respond to the questions in section III.D. Responses by EOEA should be appended to this application.

A specific response from EOEA is not required when EOEA's data show the site is not located near any ACEC.

1. Site Within ACEC: Is the proposed site located within the boundaries of an area designated as an Area of Critical Environmental Concern by the Secretary of EOEA?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitability Application Narrative, Areas of Critical Concern (Section III, Part D) and Insert 3
   section and/or page numbers

   If the answer to question III.D.1. is "yes, the site is not suitable.

2. Site Adjacent to ACEC: Is the proposed site adjacent to an ACEC with the potential to impact the resources designated by the Secretary of EOEA as worthy of protection? (As defined in 16.02, "adjacent" may include areas not contiguous to the boundaries of the site.)

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitability Application Narrative, Areas of Critical Concern (Section III, Part D) and Insert 3
   section and/or page numbers

Transmittal Number

Facility ID# (if known)

D. Areas of Critical Environmental Concern {16.40(4)(d)} (cont.)

3. Mitigation Measures: If there is a determination by EOEA that the proposed facility may potentially adversely impact the ACEC, are there any reasonable mitigation measures the proponent may use to minimize or eliminate any adverse impacts?

   ☐ Yes ☐ No

   If "no," the site is not suitable.

   If "yes," then with regard to this criterion the site may be assigned with conditions which will meet EOEA approval for mitigation of the adverse impacts. The mitigation measures proposed shall be appended to this application.

   Identify location of supporting information or comments:

   N/A
   section and/or page numbers

E. Protection of Open Space {6.40(4)(e)}

1. State Forests: Will the proposed solid waste management facility have an adverse impact on the physical environment of, or on the use and enjoyment of state forests?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitability Application Narrative, State Forests (Section III, Part E) and Insert 3
   section and/or page numbers

2. State or Municipal Lands: Will the proposed solid waste management facility have an adverse impact on the physical environment of, or on the use and enjoyment of state or municipal parklands or conservation land, or other open space held for natural resource purposes in accordance with Article 97 of the Massachusetts Constitution?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitability Application Narrative, State or Municipal Conservation and Park Lands (Section III, Part E) and Insert 3.
   section and/or page numbers

E. Protection of Open Space {6.40(4)(e)} (cont.)

3. MDC Reservation: Will the proposed solid waste management facility have an adverse impact on the physical environment of, or on the use and enjoyment of MDC reservations?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitability Application Narrative, MDC Reservations (Section III, Part E) and Insert 3
   section and/or page numbers

4. Lands Protected by EOEA Restrictions: Will the proposed solid waste management facility have an adverse impact on the physical environment of, or on the use and enjoyment of lands with conservation. preservation, agricultural, or watershed protection restrictions approved by the Secretary of the Executive Office of Environmental Affairs?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitability Application Narrative, EOEA Restricted Lands (Section III, Part E) and Insert 3
   section and/or page numbers

5. Privately Owned Public Conservation Land: Will the proposed solid waste management facility have an adverse impact on the physical environment of, or on the use and enjoyment of conservation land owned by private non-profit land conservation organizations and open to the public?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:

   See Site Suitability Application Narrative, Privately Owned Public Conservation Land (Section III, Part E) and Insert 3
   section and/or page numbers

F. Air Quality Impacts {16.40(4)(f)}

Instructions: If the proposed facility is a combustion facility, complete only section III.f.1. If the proposed facility is **not** a combustion facility, complete only section III.f.2.

1. Air Quality Impacts: Combustion Facilities

The Applicant shall, pursuant to the Air Pollution Control regulations, 310 CMR 7.02, submit a complete application to the Department for its review. The application shall be submitted on forms furnished by the Bureau of Waste Prevention. A copy of the permit application shall be appended to this application.

In addition to the Air Quality Control application, the Applicant shall provide information on any populations within the area impacted by emissions from the facility which might be sensitive to the projected emissions from the facility. Information should include relevant health statistics for the impacted population.

Identify location of supporting information or comments:

N/A

section and/or page numbers

2. Air Quality Impacts: Non-Combustion Facilities

a) Characterize the possible airborne emissions from the proposed facility. Include the composition and quantity of possible emissions. Indicate how these emissions are expected to vary over the life of the facility. Also characterize any other air emissions associated with the proposed facility such as emissions from vehicles.

b) Demonstrate that the anticipated emissions from the facility will meet required state and federal air quality standards and criteria and otherwise will not constitute a danger to the public health, safety or the environment. Take into account the concentration and dispersion of emissions, the number and proximity of sensitive receptors and the attainment status of the area.

Identify location of supporting information or comments:

See Site Suitability Application Narrative, Air Quality Impacts (Section III, Part F), Attachments 5, 10 and 11

section and/or page numbers

G. Nuisance Conditions {16.40(4)(g)}

For each of the following nuisance conditions that could occur during the construction and/or operation of the proposed facility, indicate the extent of the possible nuisance conditions and the measures that will be taken to mitigate or prevent the occurrence of the nuisance condition:

- Noise,
- Dust,
- Litter;
- Vectors such as rodents and insects,
- Odors,
- Bird hazards to air traffic, and
- Other nuisance conditions (please specify).

Identify location of supporting information or comments:

See Site Suitability Application Narrative, Nuisance Conditions (Section III, Part G) and Attachment 7
section and/or page numbers

H. Size of Facility {16.40(4)(h)}

Explanation: The information requested in this section is needed to determine whether the size of the site, considering access roads, areas for vehicles to wait before unloading, unloading facilities, storage areas, waste processing areas and pollution control equipment, is adequate for a facility with the proposed daily capacity.

1. Discussion: Discuss the waste delivery, unloading, and handling (including processing and storage) activities and pollution control equipment to demonstrate whether the size of the site is adequate to properly manage the proposed facility. Be specific with respect to the proposed capacity of the facility.

   Identify the location of supporting information or comments:

   See Site Suitability Application Narrative, Size of the Facility (Section III, Part H)
   section and/or page numbers

2. 100 Foot Set Back: Will the waste handling area or deposition area be less than 100 feet from any property boundary except where the property boundary borders a separate solid waste management facility?

   ☐ Yes ☒ No

Transmittal Number

Facility ID# (if known)

H. Size of Facility {16.40(4)(h)} (cont.)

Identify location of supporting information or comments:

See Site Suitability Application Narrative, Size of the Facility (Section III, Part H) and Inserts 5, 6 and 7
section and/or page numbers

I. Areas Previously Used for Solid Waste Disposal {16.40(4)(i)}

1. Previous Solid Waste Activities: Have the proposed site or any of the abutting properties been previously used for the legal or illegal disposal of solid wastes?

   ☐ Yes ☒ No

   Identify location of supporting information or comments:
   See Site Suitability Application Narrative, Areas Previously Used for Solid Waste Disposal (Section III, Part I)
   section and/or page numbers

   If "yes," please supply the following information and append to this application:

   a) Address: The address of the area previously used for the disposal of solid waste,

   b) Owner: The owner and the address of the owner of the area previously used for the disposal of solid waste,

   c) Dimensions: The dimensions of the area previously used for the disposal of solid waste,

   d) Status: Current status of the area previously used for the disposal of solid waste (e.g., active, inactive),

   e) Impacts on Site: The nature and extent to which the area previously used for the disposal of solid waste currently impacts or threatens to impact the proposed site,

   f) Impacts of Site: The nature and extent to which the proposed site may impact the area previously used for the disposal of solid waste,

   g) Combined Impacts: The nature and extent of any combined impacts from the area previously used for the disposal of solid waste and the proposed facility to public health, safety or the environment (Include factors such as ground water contamination and surface water runoff.),

   h) Mitigation: The extent to which use of the proposed site would result in mitigation of existing or potential impacts from the previously used site through remediation, closure or other activities.

I. Areas Previously Used for Solid Waste Disposal {16.40(4)(i)} (cont.)

Identify location of supporting information or comments:

See Site Suitability Application Narrative, Areas Previously Used for Solid Waste Disposal (Section III, Part I)
section and/or page numbers

J. Existing Disposal Facilities {16.40(4)(j)}

1. Existing Disposal Facilities in Municipality: Are there any existing (active or inactive) disposal facilities (solid waste landfills or combustion facilities) in the municipality in which the proposed site is located?

   ☒ Yes ☐ No

   Identify the location of supporting information or comments:

   See Site Suitability Application Narrative, Existing Disposal Facilities (Section III, Part J).
   section and/or page numbers

2. Exclusive Use of Facility: Will the proposed facility be limited to the exclusive use of the municipality in which the proposed facility is to be sited?

   ☐ Yes ☒ No

   Identify the location of supporting information or comments:
   See Site Suitability Application Narrative, Existing Disposal Facilities (Section III, Part J)
   section and/or page numbers

Instructions: If the answer to III.J.1. is "yes" and the answer to III.J.2. is "no," please provide the information requested in III.J.3. Otherwise, go on to question III.K.

3. Existing Facility Identification: Provide the following information about the existing disposal facility or facilities in the municipality in which the proposed site is located:

   a) Existing facility identification (name, address, type of facility):

   b) How much of the waste (tons/day) accepted at the proposed facility will be generated in the municipality in which the facility is located?

   c) What percentage of the waste accepted at the proposed facility will come from the municipality in which the site is located?

Transmittal Number

Facility ID# (if known)

J. Existing Disposal Facilities {16.40(4)(j)} (cont.)

d) Discuss to what extent the proposed facility meets the needs of the region in which the site is located.

e) Explain to what extent the proposed facility incorporates recycling, composting and waste diversion. (Refer to other responses, if appropriate.)

Identify the location where the information is attached:

See Site Suitability Application Narrative, Existing Disposal Facilities (Section III, Part J)
section and/or page numbers

K. Other Sources of Contamination or Pollution {16.40(4)(k)}

Attach an evaluation of whether the projected impacts of the proposed facility pose a threat to public health, safety or the environment, taking into consideration the impacts of existing sources of pollution or contamination as defined by the Department, and whether the proposed facility will mitigate or reduce those sources of pollution or contamination.

The Department has prepared a guidance document that describes how to make this evaluation. The document is titled, *Interim Risk-Evaluation Guidance Document for Solid Waste Site Assignment and Permitting in Support of 310 CMR 16.00 and 19.000* (initially published June 8, 2001, and most recently revised on March 22, 2006). This guidance document, including its title, will be revised from time to time. Please contact the Department or visit the Department's web site to obtain the most recent version of the guidance document.

The applicant should contact the Department to discuss the scope of work prior to undertaking the evaluation.

Identify the location of the attached evaluation:

See Site Suitability Application Narrative, Other Sources of Contamination or Pollution (Section III, Part K)
section and/or page numbers

Transmittal Number

Facility ID# (if known)

L. Regional Participation

1. Municipal Participation in Regional Disposal: Does the municipality in which the proposed site is located now participate in a regional disposal facility?

   ☒ Yes ☐ No

   Identify location of supporting information or comments:
   See Site Suitability Application Narrative, Regional Participation (Section III, Part L)
   section and/or page numbers

   Instructions: If the answer to question III.L.1. is "Yes," supply the information requested in question III.L.2. Otherwise, go on to part IV.

2. Proposed Facility: Provide the following information about the proposed facility:

   a) How much of the waste (tons/day) accepted at the proposed facility will be generated in the municipality in which the facility is located?

   b) What percentage of the waste accepted at the proposed facility will come from the municipality in which the site is located?

   c) Discuss to what extent the proposed facility meets the needs of the region in which the site is located.

   d) Explain to what extent the proposed facility incorporates recycling, composting and waste diversion. (Reference other responses, if appropriate.)

   Identify the location of the information or comments:
   See Site Suitability Application Narrative, Site Location and Project Description (Section I, Part A)
   section and/or page numbers

Transmittal Number

Facility ID# (if known)

Section IV. Integrated Solid Waste Management {16.40(5)}

Instructions: Complete Part IV only if site assignment is sought for a **Landfill** or **Combustion** facility.

It is likely that the information requested in Part IV will have been included in the EIR submitted to complete the MEPA process. If this is the case, the applicant should attach the relevant sections from the EIR that was accepted by the Secretary of EOEA. If all the information requested below is not included in the EIR attach additional information.

In order to complete this section, the Applicant will need information on the Commonwealth's goals for recycling and composting and for establishing a statewide integrated solid waste management (ISWM) system. This information is contained in the Commonwealth's Solid Waste Master Plan which is available on the DEP's web site or by calling the DEP. The Master Plan is periodically revised and may be updated by issuing annual Status Reports, so it is important to make sure you have the current version before completing this application.

A. Capacity Need {16.40(5)(a)1.}

Demonstrate the need for the capacity that will be provided by the proposed facility. For each year of the expected life of the proposed facility identify the sources (residential, commercial, industrial) of the solid waste that will supply the amount of waste equal to the proposed capacity. Please be as specific as possible in identifying "sources." Include the municipalities in which the waste will be generated and the type of waste (demolition/construction, wood waste, sludge, ash, special wastes, commercial wastes, household wastes, etc.).

Show how the capacity that will be provided by the proposed facility will contribute to providing the capacity needed by the Commonwealth as identified in the most recent Solid Waste Master Plan and/or most recent annual Status Report.

B. Waste Diversion {16.40(5)(a)2.}

Explain how the proposed facility will maximize the diversion of recyclable and compostable materials from the waste prior to combustion or landfilling. Include a discussion of how the proposed facility will coordinate with other facilities or programs to maximize the diversion.

C. Contribution to ISWM {16.40(5)(a)3.}

How will the proposed facility contribute to the establishment and maintenance of a statewide system for integrated solid waste management? Include a discussion of how the proposed facility will complement the other facilities in the service area.

D. Recycling and Composting {16.40(5)(b)}

Explain to what extent the proposed facility itself incorporates recycling and composting and explain how the proposed facility will be integrated into the recycling and composting activities in the service area.

Identify the location of the information requested in Part IV:

N/A
section and/or page numbers

Section V. Waivers

A. Site Suitability Criteria Waiver {16.40(6)}

The Site Suitability Criteria Waiver Application should be completed only if the applicant is seeking a waiver from one or more of the Site Suitability Criteria set forth in the Site Assignment Regulations, 310 CMR 16.40(3) or the setback distance at 310 CMR 16.40(4)(h). (The intention to seek a waiver must be noted in Part I of the Site Assignment Application Form.)

Note: As required by 310 CMR 16.08(5)(c), an application for a waiver must be accompanied by all data and documentation necessary to support the waiver request.

☐ Check here if a waiver from the Site Suitability Criteria is requested.

Identify the location of the information requested in V.A.1 through V.A.9:

N/A
section and/or page numbers

1. Criteria: Identify the Site Suitability Criteria in 310 CMR 16.40(3) or 310 CMR 16.40(4)(h) from which a waiver is sought and for each explain the nature of the waiver being requested.
2. Hardship: State the nature of the hardship which would result if a waiver were not granted.
3. Interest Served: State the community, regional or state public interest that would be served by granting the waiver.
4. Maintain Protection: Explain why granting the waiver will not result in less protection of the public health and safety and the environment than would exist in the absence of the waiver.
5. Alternative Site: Explain why the proposed facility cannot be located at another site in the affected municipality or region at which a waiver would not be needed.
6. Preferred Municipality: Is the proposed site located in a preferred municipality as defined in MGL c.111, s. 150A1/2? (A "preferred Municipality" is a municipality that does not have existing disposal facilities and is not part of a regional waste disposal district.)
7. Environmental Benefit: Will granting the waiver result in any environmental benefits in excess of those benefits achievable in the absence of a waiver? Explain.
8. Integrated Solid Waste Management: Explain how the proposed facility contributes to integrated solid waste management.
9. Waiver Needed for Project Goals: Explain why the solid waste management objectives of the proposed project could not be achieved in the absence of the waiver.

B. Waiver from Application Process {16.18}

This waiver application should be completed only if the applicant is seeking a waiver from one or more of the provisions of Part I (310 CMR 16.01-16.19) of the Site Assignment Regulations that deals with the application process. (The intention to seek a waiver must be noted in Part I of the application form .)

Note: As required by 310 CMR 16.08(5)(c), an application for a waiver must be accompanied by all data and documentation necessary to support the waiver request.

☐ Check here if a waiver from the Application Process is requested.

Identify the location of the information requested in V.B.1 through V.B.4.

1. Regulatory Provision: Identify the provision of the regulations from which a waiver is being requested and explain the specific nature of the request.
2. Interest Served: State the community, regional or state public interest that would be served by granting the waiver.
3. Interference with Suitability Evaluation: State why the granting of the waiver would not interfere with the ability of the Board of Health to evaluate the Suitability of the proposed site.
4. Public Review and Comment: State why granting the waiver would not diminish the ability of the general public to review and comment on the proposed project.

VI. Signatures and Certification {16.08(5)(e)}

A. Land Owner's Signature

Where the applicant is not the owner of the legal title to the land described as the "site" in this application, the owner or other person with control of the site pursuant to an order of a court of competent jurisdiction shall sign the application here:

Owner's Signature

2-8-23

Date

SMRF 100 LLC

B. Applicant's Signature and Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties both civil and criminal for submitting false information including possible fines and imprisonment.

Applicant's Signature

2-8-23

Date

Agent's Signature

2/10/2023

Date

Transmittal Number

Facility ID# (if known)

VI. Signatures and Certification {16.08(5)(e)}

A. Land Owner's Signature

Where the applicant is not the owner of the legal title to the land described as the "site" in this application, the owner or other person with control of the site pursuant to an order of a court of competent jurisdiction shall sign the application here:

Owner's Signature

2-2-23
Date

SMRE Sub lot 20 LLC

B. Applicant's Signature and Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties both civil and criminal for submitting false information including possible fines and imprisonment.

Applicant's Signature

2-2-23
Date

Agent's Signature

2/10/2023
Date

Site Suitability Introduction

Introduction

Green Seal Environmental, LLC (GSE) has prepared the following document for the Massachusetts Department of Environmental Protection (MassDEP) on behalf of South Coast Renewables, LLC (the "Applicant" or "SCR") for the property at 100 Duchaine Boulevard, New Bedford, MA.

This application provides the necessary information for MassDEP and the Board of Health to find the Site suitable to handle solid waste including Municipal Solid Waste (MSW) and Construction and Demolition Debris (C&D), limited to a total of 1,500 tons per day (tpd) and 468,000 tons annually, pursuant to the siting criteria of 310 CMR 16.00 applicable to this proposed site.

Information contained herein includes a Site Suitability Application (BWP SW 01), supporting narrative, attachments, and inserts (figures/site plans) for the proposed site and surrounding area as required under 310 CMR 16.00.

Provisions of Section 16.40 (1) (c) of the Site Assignment Regulations pertinent to determining suitability is as follows:

"(c) Facility Design Review.

1. General. All applications shall be evaluated with the presumption that the proposed facility shall be designed and constructed to meet all relevant state and federal statutory, regulatory and policy requirements.

2. Design Considerations. The review of an application shall not consider detailed facility designs or operations except where:

a. the Department determines that specific design or operation plans or data are necessary to determine whether potential discharges or emissions from the proposed facility could render the site not suitable and requires the applicant to submit such relevant and detailed information; or

b. the applicant intends to alter the site or design the facility to meet specific site suitability criteria and submits such plans or other information as the Department deems necessary to determine if the criteria is satisfied.

3. Design Conditions. When facility design or operation plans are submitted the Department may base a site suitability determination on:

a. the incorporation of specific facility design elements; or

b. compliance with performance and technical standards and criteria."

Continued on next page

Site Suitability Introduction, Continued

Introduction, continued

This document coincides with the format of the MassDEP's Site Suitability application and contains the following information:

- Site Suitability application form (BWP SW 01) provided by MassDEP;
- A narrative that provides required information relative to each individual suitability criterion;
- Attachments that supplement certain sections of the application corresponding with that particular section (e.g., traffic analysis, MEPA, and NHESP); and
- Inserts (site plans) for comparison to the Site Suitability Criteria such as Water Resources and Land Uses, Existing Conditions, and Proposed Conditions.

Non-Applicability

In the sections of the Site Suitability Application that do not pertain to the project, the statement ***"not applicable"*** will appear. However, some of these sections will contain a narrative and/or justification statement. Where a statement is determined to be necessary, the reader will be directed to the appropriate section within this document and any supporting attachments or Inserts.

Site Suitability Table of Contents

Continued on next page

Site Suitability Table of Contents, *Continued*

Section I. General Information

Introduction

The following sections are addenda to the General Information section contained within the Site Suitability application and address the following topics:

- Site Location
- Project Description
- About the Applicant
- Fees
- Collection of Household Hazardous Waste
- Declaration of Waivers
- Massachusetts Environmental Policy Act (MEPA)
- Wetland Resources
- Maps Narrative

Section I - Table of Contents

The following Section I table of contents references page numbers of this document, not the application forms.

Site Location and Project Description (A)

Site Location

SCR proposes to site assign 26.1 acres (the "Site") of a 71-acre parcel located at 100 Duchaine Boulevard in New Bedford within the New Bedford Industrial Park identified by the New Bedford Tax Assessor as Lot 5 on Assessor's Plat 134 (the "Property"). A locus plan of the Site is included as Insert 1.

The project site also includes an existing General Recycling operation (not subject to Site Assignment) which is presently under construction and partially operational. The project site, when fully constructed, will also provide 4.7 megawatts (MW) of photovoltaic solar power mounted on a series of canopies and roofs. The glass processing operations and solar power installation do not require a site assignment or solid waste permit but will be discussed in this application as they are a component of the overall project.

The proposed facility is designed to accept MSW and C&D delivered by truck for subsequent processing (providing the potential for unbaled MSW to be processed) and/or transfer into rail cars and secondarily as conditions dictate, larger trucks for transport to various locations throughout the country for disposal and/or further recycling. The buildings have been sized so that all unloading, handling, any processing, and loading onto rail cars and/or trucks will occur within the building interiors.

Insert 5 depicts existing and proposed features of the Facility including the proposed limits of the site assigned area. Insert 2 – Water Resources Plan and Insert 3 – Land Use Plan provided identify the Site features and relationships to various setbacks and/or receptors relevant to 310 CMR 16.40.

Continued on next page

Site Location and Project Description (A), *Continued*

Type of Facility

The Facility will be a state-of-the-art rail-served MSW and C&D handling and transfer facility with the potential to process wastes. Waste handling will be performed within the proposed 65,317-sf metal framed/sheathed “tipping building” and any waste processing will be within a portion of an existing 92,220 sf “processing building” adjacent and connected to the proposed tipping building. Loading of waste into rail cars will be performed within both the tipping and processing buildings. No MSW or C&D will be handled outside with the exception of wastes contained within loaded railcars, trucks, or other appropriate container.

Current construction activities on-site include all development associated with the already-approved glass processing facility subject to the General Recycling Permit. This construction includes a Glass Beneficiation (processing) operation and 1.842 MW of solar power energy generation in addition to the 1.567 MW currently installed. The glass processing/recycling activities includes recycling glass containers that are collected through the Massachusetts bottle deposit system. This previously-approved development also includes the construction of a rail sidetrack onto the site to service the glass processing operation. Bottles collected will be processed such that the glass can be reused to produce new glass containers and other glass products. The buildings associated with glass processing are as follows:

- Glass Processing Building = Completed/operational 27,500 sf
- Bunker Building = 90% Completed 23,320 sf
- Side Bunker Building = 90% Completed 21,973 sf

Construction associated with the proposed Facility will include two rail sidetracks in addition to the main rail spur and three rail side-tracks previously-approved as part of the glass processing facility. . Please refer to the Site plans contained in Insert 5 for further detail (note the dashed tracks are previously approved and solid lines indicate to be constructed).

SCR is also adding an additional 1.357 MW of solar power to the site. The solar panels will be mounted on a series of structures located over parking areas, a canopy and on the proposed solid waste handling building. Please refer to Insert 5, Sheet 4 of 10.

Continued on next page

Site Location and Project Description (A), Continued

Type of Facility

The Site is located on a 71-acre parcel located at 100 Duchaine Boulevard in New Bedford within the New Bedford Industrial Park. The Property was formerly owned by Polaroid Corporation and existing buildings and access roads are being reused to the maximum extent possible. SCR proposes to site assign 26.1 acres of the parcel.

As noted, SCR proposes to site assign 26.1 acres of the Property shown on plans included in Inserts 2, 3, and 5 (sheet 10 of 10). Waste handling, other than loaded railcars or trucks, is limited to the areas within the proposed 65,317 square foot tipping building, and approximately 50% of the area within the existing 92,200 square foot processing building which is depicted on the plans within Insert 5 and the Interior Layout Plan presented as Insert 6. For the purposes of applying the siting criteria, SCR has conservatively identified the waste handling areas as any areas within the site assigned limits, including the rail side tracks. No solid waste will be handled outside unless it is contained within a loaded railcar or truck.

Continued on next page

Site Location and Project Description (A), Continued

Capacity

SCR will operate within the following capacity limits:

a. The proposed Facility will have a maximum daily capacity of 1,500 TPD of solid waste (MSW and C&D debris).

b. Based upon a maximum daily capacity of 1,500 TPD of solid waste, the project will handle a maximum of 468,000 tons per year of solid waste (MSW and C&D) waste (312 days x 1,500).

c. As presently proposed, the Facility will have waste delivery hours between 6:00 AM and 7:00 PM on weekdays and between 7:00 AM and 4:00 PM on Saturday. The Facility will not accept waste on Sundays.

d. The Facility plans to have the ability to process materials and perform maintenance 24/7 (this is predominately based on the throughput of the MSW processing equipment).

e. The Facility is expected to have a lifetime of approximately 30 years however, the lifetime capacity does not theoretically have any limitation as it is a transfer station and not a landfill.

f. Based upon the projections given above, the estimated lifetime capacity for the Facility is 14 million tons, based on 30 years.

Continued on next page

Site Location and Project Description (A), *Continued*

Type of Waste

The Facility will accept MSW and C&D materials (post-processed C&D residuals as currently planned). As defined by MassDEP, MSW is any residential or commercial solid waste.

C&D waste is waste building materials and rubble resulting from the construction, renovation, repair, or demolition of buildings, pavements, roads, or other structures. Construction and demolition waste includes but is not limited to concrete, bricks, asphalt pavement, masonry, plaster, gypsum wallboard, metal, lumber, and wood. The proposed Facility presently proposes to accept Category 2 C&D waste (residual waste from C&D processing facilities) and does not intend to process C&D material on-site. However, the requested site assignment is for both MSW and C&D.

The Facility will not accept hazardous wastes.

Project Description-Summary

The following narrative describes how the project was presented and reviewed in the MEPA process and is proposed to be pursued. The project was presented in two phases. Phase 1 of the project involved the glass processing operation that has been approved and is not subject to this application for site assignment. Phase 2 of the project includes the solid waste handling proposal which is subject to site assignment. It includes the MSW/C&D handling facility, which includes an approximate 65,000+ square foot tipping building addition to the current building on site that SCR intends to use for waste acceptance and processing. This phase will also include the expansion of the rail sidetracks in order to provide for additional on-site rail car storage tracks to service the solid waste operations.

Continued on next page

Site Location and Project Description (A), Continued

Project Description-Summary, continued

In summary, the two main phases are as follows:

1. Phase 1. Although not part of this application process, the already approved glass processing facility will process approximately 200 tpd of glass bottles and will produce glass cullet for shipment to bottle manufacturers to produce bottles. Phase 1 includes:
   - Construction of the rail spur and three sidetracks for Glass Recycling Operations
   - Construction of the glass bunker building, side bunker building, and associated roof-mounted solar
   - Construction of 1.842-MW of solar canopies

2. Phase 2. A 1,500 tpd solid waste handling facility to handle MSW and C&D waste. Recyclable materials will be sent to recycling markets and the non-recyclable fraction of the waste will be sent off site for disposal. Phase 2 includes:
   - Construction of a 65,000 + sf solid waste tipping building
   - Construction of two additional rail sidetracks
   - Reconfiguration of stormwater controls
   - Reduction of impervious surfaces
   - 1.35 MW additional solar
   - Installation of scales and scale house
   - Installation of MSW processing equipment
   - Installation of potential baler
   - Installation of associated environmental controls.

Although not part of this application process, the glass processing facility will process approximately 200 tpd of glass bottles and will produce glass cullet for shipment to bottle manufacturers to produce bottles.

Project development will also include the construction of a new rail side track from the existing rail line adjacent to the site that will be used for outbound shipment of the products of the above-referenced project elements.

Continued on next page

Site Location and Project Description (A), Continued

Site Description

The site is an approximately 71-acre parcel identified by the New Bedford Tax Assessor as a combination of Lots 5 and 462 on Assessor's Plat 134 and Lot 67 on Assessor's Plat 133. The site is zoned Industrial C. A locus plan of the site location is included in Insert 1. The site is located within the New Bedford Business Park. The site was previously owned by Multilayer Coating Technologies and before that by Polaroid Corporation. The site was used by both previous owners to manufacture film. The site as developed by Polaroid included access roads, parking areas, stormwater management features, and various buildings. An existing conditions plan of the site is included within Insert 5. SCR intends to utilize the existing infrastructure to the maximum extent possible in developing the proposed project.

Although not part of the siting criteria, SCR has designed the overall project to reduce total impervious surface area on the Property, an environmental benefit. The site currently has 17.7 acres of impervious surfaces (25.1% lot coverage) consisting of access roads, buildings, parking lots, driveways, and concrete slabs on grade in areas where buildings were previously demolished. Buildings planned for the proposed project are being constructed in areas of the site that are currently impervious when possible. Project construction will partially remove an existing concrete slab on grade in order to construct the rail sidetrack, converting surfaces that are currently impervious to pervious surfaces. Although the proposed project (Phases 1 and 2 combined) will add an additional 138,110 square feet of buildings and additional canopy structures to support solar panels (Phase 1 and 2) will occupy an additional 128,238 square feet, the net impact of the proposed project (Phase 1 and Phase 2 combined with the proposed Phase 2 revisions) is now a **decrease** in impervious surfaces of 0.67 acres compared to pre-existing conditions. This will decrease the impervious surface lot coverage to 24.4% from 25.1%.

Existing Impervious Surfaces: 771,119 sf (17.7 acres).

Post Phase 1 Construction Activities: Impervious surfaces reduced to 696,119 sf. This is due to the removal of concrete slabs associated with the development of the rail.

Continued on next page

Site Location and Project Description (A), Continued

Site Description, continued

Post-Phase 2: Originally, impervious areas were to increase to 785,571 sf (18.03 acres). This equated to an increase of 0.33 acres of impervious surfaces compared to pre-existing conditions. However, with the removal of the biosolids portion of the proposed development, impervious surfaces decrease by 29,112 sf (0.67 acres) to 756,449 sf. As such, impervious surfaces will decrease when compared to pre-development existing conditions.

A Limited Subsurface Investigation was conducted at the site by Sage Environmental. This investigation concluded that: “Based on the results of this LSI, SAGE has not identified the presence of subsurface impacts at the site that would require reporting to MassDEP. As such, SAGE is of the opinion that further actions are not warranted at this time.”

Waste Handling Facility

Infrastructure associated with the proposed Facility includes the construction of a 65,317 square foot “tipping building”, and the redevelopment/use of approximately 50% of the area within the existing 92,200 square foot processing building that SCR intends to use for MSW processing equipment and operations. Please refer to the Interior Layout Plan presented as Insert 6.

The new waste handling building will connect on the west side of the existing processing building. This new “tipping” building will serve as the tipping floor and will be designed to allow waste delivery trucks to back into the building to unload waste material for processing/handling/transfer. The tipping building consists of these general areas:

1. The waste tipping and inspection areas
2. Temporary waste storage area
3. Baled waste storage area
4. The rail car loading area
5. The MSW processing feed hopper loading area

After tipping, front-end loaders will stage the material for subsequent processing/handling and loadout.

Continued on next page

Site Location and Project Description (A), Continued

Waste Handling Facility, continued

The existing building on site adjacent to the proposed tipping building is intended to be used for the processing of MSW. SCR intends to modify the building as required to house MSW processing equipment used to extract recyclable material from MSW. General MSW processing line specifications, although they may change as designs progress, are included in Attachment 8. A baler to bale and shrink wrap (or bag) MSW, if deemed appropriate, will also be located within the building. The interior Layout Plan presented as Insert 6, currently shows the potential baler within the new tipping building. Loose, baled, and shrink-wrapped (or bagged) MSW as well as Category 2 C&D will be loaded in rail cars for shipment to disposal sites.

The Facility will accept both baled MSW and MSW delivered loose in transfer trailers and packer trucks.

Baled MSW will be delivered to the proposed facility from other transfer stations that have baled MSW to meet the railroad requirements for shipping MSW in rail cars. Baled MSW accepted at the proposed Facility will be loaded into rail cars for shipment to disposal sites such as a landfill or waste to energy facility. The Facility will also accept C&D defined as Category 2 (C&D processing residuals). All shipment of MSW by rail will follow then-applicable CSX-approved shipment standards (e.g., baled, intermodal, or other approved method). Outbound materials are intended to be shipped by rail, but trucks can be also be used when necessary or required.

Presently, the Facility does not intend to de-bale MSW for further processing or reprocess Category 2 C&D residuals.

Waste delivery trucks arriving at the Facility will be weighed on a truck scale before backing into the tipping building and depositing the waste onto the interior tipping floor. MSW will be delivered in transfer trailers and packer trucks (the trucks that provide curbside pickup of MSW). Baled MSW may be delivered in transfer trailers or flatbed trucks. The average capacity of a packer/smaller trucks is 9 tons and transfer trailers are 28 tons. It is expected that Category 2 C&D waste will be delivered in 100-cy live floor trailers.

Continued on next page

Site Location and Project Description (A), Continued

Waste Handling Facility (continued)

SCR intends that non-baled MSW received by the Facility will be processed to extract recyclable materials. Such processing would consist of a processing line that includes both mechanized separation equipment and a manual picking line. Materials extracted may include ferrous and non-ferrous metals, cardboard, wood, glass, PET, paper, and plastic. It is intended that the Facility will likely include two processing lines with each line capable of processing 40 tons per hour of MSW. Note that final line sizing, layout and throughput per hour of any processing equipment will be further refined during future permitting processes. As presently planned, the processing line(s) will operate two to three shifts per day depending on the inbound volume accepted. A general processing line flow diagram and equipment specifications are included in Attachment 8. The location of the processing equipment is presented on the Interior Layout Plan presented as Insert 6. The processing line is expected to extract approximately 20% to 25% recyclables from the MSW that is processed. After the recycled material has been extracted, the remaining waste that will be shipped by rail will be baled and shrink wrapped (or otherwise prepared for shipment by rail as required by then-current CSX shipment requirements) for transport to a disposal facility. Note that pending modifications to existing CSX transportation policies, baling and shrink- wrapping wastes sent via rail may not be necessary. The primary means of transport for disposal will be by rail. Trucks can also be used to transport waste, if necessary. Recyclable materials extracted from MSW will be sent to recycling markets by rail or truck.

The Facility will also accept C&D. At this time, the Facility plans to only accept residual C&D waste classified as Category 2 C&D waste by MassDEP. Category 2 waste is C&D waste that has been processed by a C&D processing facility and has had the “waste ban” materials extracted. The generating processing facility will have removed waste ban material and other recyclable material from the C&D material as deemed appropriate to satisfy existing regulation/policy. This material will be received in the proposed tipping building.

Continued on next page

Site Location and Project Description (A), Continued

Waste Handling Facility (continued)

At the present time, CSX generally allows shipment of MSW in intermodal containers. However, there are other means and methods presently being used at other rail-served transfer stations (e.g., covering the MSW in a rail car gondola with Posi-shell™). SCR commits to following then-current and applicable CSX shipment standards and will adjust procedures and protocols as deemed appropriate. Presently, SCR is also proposing the installation of a MSW baler. SCR may opt to not install a baler based on policies regarding the shipment of MSW by rail.

Generally, each rail car can carry approximately 90 to 100 tons of solid waste for disposal. It is expected that at full processing capacity the Facility will produce approximately 1,300 tons per day of residual waste that will be sent for disposal. This will require approximately 15 rail cars each day (based on a 90-ton capacity). In the event that the MSW processing equipment is unavailable, up to 1,500 tons of MSW could be sent for disposal daily. The rail sidetrack will be modified in this phase of development to allow for the storage of more rail cars than can be accommodated by the sidetrack construction associated with the glass processing development. With the completion of track construction in Phase 2 associated with the proposed solid waste facility, the sidetrack will allow for the receipt of 18 empty rail cars and the removal of 18 full rail cars. The site will be serviced by Mass Coastal Railroad. The Proponent will also purchase an electric rail car mover for the movement of rail cars on-site. Additional rail side-track will be added to the previously-approved (under Phase I waiver) rail side-tracks. Please refer to Insert 5 for further detail (note the dashed tracks are previously approved and solid lines indicate to be constructed).

The Facility will use Best Management Practices (BMPs) to minimize potential impacts to the Site and surrounding environment. A partial list of BMPs that will be incorporated into the Facility are as follows:

- All tipping, handling, and loading will be performed within a fully-enclosed processing and tipping building.

Continued on next page

Site Location and Project Description (A), Continued

Waste Handling Facility (continued)

- The building floor is designed as impervious concrete that will prevent any potential contamination of groundwater, stormwater, or the surrounding environment. Any liquids released from the waste will be collected in a floor drain system. The liquid collected in this system will be gravity fed into the City's sanitary sewer system or stored in a wastewater holding tank to be periodically pumped out and trucked off-site for disposal at a wastewater treatment plant.
- Use of a fine atomized misting system within the Tipping Building and Processing Building will effectively control fugitive dust and odor in the building. This system can also introduce odor counteractants.
- Regular cleanup and sweeping will occur on the external paved surfaces. Operation and Maintenance Plans will be developed and staff will be trained on these operational procedures.
- Following first in/first out waste handling procedures.
- The use of tipping doors that can be opened and closed to reduce the potential for nuisance conditions when deemed appropriate.
- Ventilation stacks that promote dispersion.
- Location of doorways farthest from the location of offsite receptors.
- Limiting doors that would promote the channeling of air through the facility.

It should be noted that as the Facility progresses through the permitting phases (e.g., MassDEP and City of New Bedford), controls, BMP's, etc., may be modified or enhanced.

Applicant Information (B)

Applicant	The Applicant is South Coast Renewables, LLC, which has a corporate address of 100 Duchaine Boulevard, New Bedford, Massachusetts 02745. The Site, at 100 Duchaine Boulevard, New Bedford, is owned by affiliates of SCR, SMRE 100 LLC, and SMRE SUBLOT 20, LLC.

Fees, Household Hazardous Waste, Waivers (C-E)

Fees

As part of the site suitability process, the New Bedford Board of Health will assess SCR a Technical Fee. The Board of Health may use the fee for eligible costs of reviewing technical data, obtaining technical assistance, and conducting a public hearing. The maximum allowable technical fee that the Board of Health can assess is computed per 310 CMR 16.00 and is based on the type of Facility and the tons of waste accepted per day.

From 310 CMR 16.99 Appendix A, Table 2, the Maximum Technical Fee for Handling Facilities is based on the maximum daily volume of waste, measured in tons per day (TPD), that is proposed to be accepted at the Facility. SCR is proposing to accept up to 1,500 TPD of solid waste at the Facility. The Maximum Technical Fee for the proposed Facility capacity is as follows:

- Maximum Fee = $3,000 + (1,500 TPD x $20.00/TPD) = $33,000.00

The total of the Maximum Technical Fee ($33,000) is required be adjusted for inflation by a factor determined by the ratio of the Boston Consumer Price Index ("BCPI") for September of the year preceding the current year, divided by the BCPI for September 1988. Per information provided by the U.S. Department of Labor, Bureau of Labor Statistics, the BCPI for September 2022 was 318.80 and for September 1988 was 126.2.

Applying the adjustment factor results in the following Maximum Technical Fee for the proposed facility = $33,000 x (318.8/126.2) = $83,363

As such, a check in the amount of $83,363 has been provided to the Board of Heath. Please see Attachment 1 for a copy of the check.

Household Hazardous Waste

The Applicant is not applying, pursuant to the Massachusetts Hazardous Waste Regulations (310 CMR 30.000, section 30.190), for approval to operate a Facility for the collection of Household Hazardous Waste. Oil and hazardous waste storage on-site will consist of limited quantities of spent hydraulic oil, motor oil, and anti-freeze, generated from servicing on-site equipment.

Furthermore, if Household Hazardous Waste is found during inspections, the oil and/or hazardous material will be placed in a secured and approved container for subsequent removal and proper disposal.

Waivers

SCR is not requesting any waivers per 310 CMR 16.18.

Priority Resources and Land Uses (F-H)

MEPA

According to 310 CMR 16.08(5)(d), the Applicant must provide evidence that the proposed project does or does not require review under the Massachusetts Environmental Policy Act (MEPA).

SCR has completed the MEPA process. The project has received the following certificates:

- Final Record of Decision (FROD for glass processing and rail spur) – March 19, 2019
- Environmental Notification Form (ENF) – April 12, 2019
- Draft Environmental Impact Report (DEIR) – January 30, 2020
- Draft Environmental Impact Report (FEIR) – April 2, 2021
- Supplemental Final Environmental Impact Report/Notice of Project Change (NPS-SFEIR) – August 29, 2022

Copies of the Secretary's Certificates are presented in Attachment 2.

Wetlands Resources

The wetland boundaries and 100-foot wetland buffer zones, as defined by MassGIS, are shown on the attached Water Resources Plan (Insert 2) and on the site plans included in Insert 5.

The Phase 1 construction of rail spur and sidetracks has already been approved by the Conservation Commission under an Order of Conditions. A copy of the Order of Conditions (OOC) for the rail spur and sidetracks is presented in Attachment 6. Construction of the additional rail side tracks and the new tipping building addition requires the filing a Notice of Intent with the New Bedford Conservation Commission due to their location partially within the buffer zone to wetland resource areas. SCR will seek and an additional OOC for the construction of these features.

Continued on next page

Priority Resources and Land Uses (F-H), Continued

Riverfront Area	None of the areas to be site assigned are within the Riverfront Area. A drainage swale was constructed along the northern and western property lines by the former owner of the property associated with construction of the existing site development. A 25-foot Riverfront Area is associated with these drainage swales as shown on Water Resources Plan in Insert 2. Developed areas of the proposed project and the site assigned limits are located outside of the identified Riverfront.
100-Year Floodplain	The 100-year flood boundaries as determined by the Federal Emergency Management Agency (FEMA) are shown on the attached Water Resources Plan included as Insert 2. All of the developed portions of the Site will be above the 100-year floodplain elevation and have no impact on the floodplain. As shown on Insert 2, the limit of the 100-year flood zone is approximately 650 feet south of the SCR property line.
Wetland Impacts	The rail sidetracks and the 63,000 sf + building addition to be constructed as part of Phase 2 and related to this solid waste facility permitting will be located within the buffer zone to wetlands. This work will be permitted through the Conservation Commission prior to construction.

Continued on next page

Priority Resources and Land Uses (F-H), Continued

Separation of Waste Handling from Groundwater

Two groundwater monitoring wells in the area of the proposed Tipping Building, MW-4 and MW-5, were installed and the water elevations were measured monthly during initial design. The location of the monitoring wells is shown on the plan included in Insert 8.

Monitoring Well MW-4	Depth to GW- (Feet)	GW Elev. (Feet)	Adjusted Max. GW Elev. (Feet)
June 28, 2018	5.35	74.77	78.8
July 27, 2018	6.35	73.77	77.9
August 28, 2018	5.15	74.97	79.4
September 28, 2018	3.40	76.72	80.1
October 31, 2018	3.30	76.82	79.3
November 30, 2018	2.70	77.42	78.4
January 10, 2019	3.00	77.12	79.2
February 6, 2019	3.70	76.42	78.7
March 15, 2019	2.50	77.62	79.5
April 8, 2019	3.30	76.82	78.9
May 17, 2019	3.25	76.87	79.5
March 29, 2021	3.40	76.72	79.5
April 5, 2021	3.35	76.77	79.6
April 12, 2021	3.95	76.17	78.6
April 19, 2021	2.95	77.17	79.6

Continued on next page

Priority Resources and Land Uses (F-H)Continued on next page, Continued

Separation of Waste Handling from Groundwater, continued

Monitoring Well MW-5	Depth to GW (Feet)	GW Elev. (Feet)	Calculated Max GW Elev. (Feet)
June 28, 2018	6.50	74.16	78.2
July 27, 2018	7.8	72.86	77.1
August 28, 2018	6.9	73.76	78.2
September 28, 2018	4.95	75.71	79.1
October 31, 2018	5.05	75.61	78.1
November 30, 2018	4.50	76.16	77.1
January 10, 2019	4.90	75.76	77.8
February 6, 2019	5.30	75.36	77.6
March 15, 2019	4.35	76.31	78.2
April 8, 2019	5.05	75.61	77.7
May 17, 2019	5.10	75.56	78.2
March 29, 2021	5.25	75.41	78.2
April 5, 2021	5.15	75.51	78.3
April 12, 2021	5.80	74.86	77.3
April 19, 2021	4.80	75.86	78.3

The table presented above shows groundwater elevations measured in monitoring wells MW-4 and MW-5. The measured groundwater levels in MW-4 and MW-5 have been adjusted to calculate a maximum groundwater level using the Frimpter Method (USGS Water Resources Investigations 80-1205) using the USGS well (MA-ATW-83R) which is located in Attleboro. Water elevations in the USGS well have been recorded since 1964. As shown in the above table the groundwater elevation adjusted to the maximum expected groundwater elevation is 80.1 feet.

The waste handling area of the handling building must be a minimum of 2 feet above the maximum groundwater level. Waste handling areas include the tipping building floor, the rail car loading area floor, and the trench drain system at each truck door in the Tipping Building. The entire trench drain system including the trench drains, the sump that collects water from the trench drains, the industrial wastewater holding tank and all system piping to the tank must be a minimum of 2 feet above maximum groundwater elevation.

Continued on next page

Priority Resources and Land Uses (F-H), Continued

Separation of Waste Handling from Groundwater (continued)

The lowest area of waste handling for the trench drain system will be approximately 1.5 feet below the floor elevation of the tipping building. To provide the required 2-foot separation to groundwater, the tipping building floor must be at a minimum elevation of el 83.6 feet to account for a 1.5' deep trench drain system. The proposed Tipping Floor elevation is 85 feet, therefore providing greater than the 2- feet minimum required separation, as summarized in the table below:

Proposed Tipping Floor Elevation	85.0
Bottom of interior trench drains/sump Elevation	83.5
Maximum High Groundwater Elevation	80.1
Provided Separation to Groundwater	3.4 feet

Monitoring of groundwater will continue to be periodically measured as confirmation that the groundwater separation requirement is met. Should groundwater monitoring indicate higher groundwater levels than have currently been recorded, the tipping floor elevation would be raised in the ATC application to provide the required 2-foot separation to maximum groundwater levels.

Continued on next page

Priority Resources and Land Uses (F-H), Continued

Maps The following section addresses plans that GSE has prepared for the proposed project. Please refer to the Insert section for copies of the appropriate plans.

Locus Map The following table provides pertinent information relative to the "Locus Map." A locus map is included in Insert 1.

Quad Name and Date	New Bedford North - 2018
Latitude and Longitude	Lat. 41.7161 N, Long. -70.9521 W

Priority Resources The following table provides a brief narrative of the priority resource features found within ½-mile radius of the Site. Please refer to the Water Resources Plan (Insert 2), the Land Use Plan (Insert 3), and the Site Plans presented within Insert 5 of this application for more information on these features.

Regional Details (1/2-mile radius)	Description
Wetlands	The Water Resources Plan (Insert 2) depicts wetlands as obtained from MassGIS within a ½-mile radius of the Site. The Existing Conditions Plans within Insert 5 shows a field-surveyed delineation of wetland areas on the SCR property. Buffer areas extending 100 feet from wetlands identified on-Site and in the vicinity of the Site are also indicated on the above-mentioned Inserts. The Property was previously owned by Polaroid Corporation. Polaroid developed and operated the site as a manufacturing facility for its products. Existing infrastructure consists of access and egress roads, parking areas, driveways, buildings, building slabs, and a stormwater management system. The Property has large areas of wetlands. The project has been developed to utilize the existing infrastructure to the maximum extent possible to minimize impacts to wetlands. The design of all stormwater management systems will be in conformance with MassDEP's Stormwater Management Policy for water quality, recharge, and control of sediment contamination.

Continued on next page

Priority Resources and Land Uses (F-H) *Continued*

Priority Resources, (*continued)*

Regional Details (1/2-mile radius)	Description Please refer to the Water Resources Plan included as Insert 2.
Proposed Drinking Water Source Areas	The nearest mapped proposed drinking water source area is an aquifer located approximately 1-mile northwest of the site. According MassGIS, the site is located within a Medium Yield Aquifer as shown on Insert 2. A "Non-Potential Drinking Water Source Area – High Yield" is located approximately 700 feet north of the SCR property line. Note that all waste handling operations at the proposed facility will take place indoors beside railcar staging.
Zone A	The nearest Zone A is located in the corridor for Route 140. This is approximately 1,250 feet from the SCR property line. The SCR site is not within a Zone A of a surface water supply. The Zone A is shown on Insert 2.
Zone I	The Site is not located within or in close proximity to Zone I of a public water supply. The nearest Public Water Supply Wells are located approximately 2 miles northeast of the Property off of Middle Road.
IWPA or Zone II	The Site is not located within an IWPA or Zone II. The nearest Zone II is approximately 2.5 miles northeast of the Property. The nearest IWPA is approximately 2 miles northeast of the Property.

Continued on next page

Priority Resources and Land Uses (F-H) *Continued*

Land Uses The following table provides a brief narrative of land uses within ½-mile of the Site. Please note that this information was obtained using digitized images and vectorized data from the Massachusetts Geographic Information Systems (MassGIS) and other publicly available information from the MassGIS website. Please refer to Insert 3, Land Use Plan.

Regional Details (1/2-mile radius)	Description
Natural Heritage Endangered Species Program	According to MassGIS, there is Priority Habitat of Rare Species and an Estimated Habitat of Rare Wildlife located approximately 0.5-mile south of the subject Site. A portion of the Rare Species Habitat and Habitat of Rare Wildlife areas are located within the half mile radius depicted on the Land Use Plan in Insert 3. MassGIS research and communication with the Natural Heritage and Endangered Species Program has confirmed that the Site is not located withing any Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife (See Attachment 4).
Wildlife Management Areas	GSE reviewed the Division of Fisheries and Wildlife website for information regarding Wildlife Management Areas. No Wildlife Management Areas are located within a ½ mile of the Site .
ACECs	According to MassGIS, the nearest Area of Critical Environmental Concern (ACEC) is located over 10 miles east of the Site.
Agricultural Lands (Adjacent & On-Site)	Areas of prime farmland and farmland of statewide importance as identified by soils classification on the MassGIS system are mapped at the Site and are identified on the Land Use Plan in Insert 3. Farmland of state-wide importance was identified along the eastern property line and prime farmland soils were identified along the western property line. The “Facility” and proposed site assigned area is greater than 100 feet from all prime farmland soils and from farmland of statewide importance. During the development process, SCR also hired APEX to perform a detailed soils survey. This survey is presented as Attachment 12.
State Forests	GSE reviewed the Department of Conservation and Recreation website for information regarding State Forests. The nearest State Forest is the Freetown-Fall River State Forest, which is more than 5 miles from the Site.

Continued on next page

Priority Resources and Land Uses (F-H), *Continued*

Land Uses,
(continued)

Regional Details (1/2-mile radius)	Description Please refer to the Land Use Plan included as Insert 3.
Conservation and Park Lands	The Acushnet Cedar Swamp State Reservation is located to the west of the Site. The Site is separated from the Acushnet Cedar Swamp State Reservation by the main rail line at the property's westerly property line. The primary purpose of the State Reservation is recreation and conservation. The area is shown on the Land Use Plan in Insert 3. Pine Hill Park is located 1,250 feet to the southeast of the Property line. The primary purpose is recreation. The park is shown on the Land Use Plan in Insert 3. The Greater New Bedford Industrial Foundation owns conservation land 1,600 feet to the northwest of the Property line. The City of New Bedford owns a small parcel of vacant land just east of Route 140. This land is labelled on Insert 3 as Clough Cr. This land is approximately 1,800 feet east of the Property line.
MDC Reservations	The MDC is now the Department of Conservation and Recreation (DCR). No DCR parks/reservations were identified within 0.5 miles of the Site.
EOEEA Restricted Land	GSE did not identify any lands with conservation, preservation, agricultural, or watershed protection restrictions approved by the secretary of EOEEA within a ½ mile of the Site.
Privately Owned Public Access Conservation Land	GSE did not identify any privately-owned public access conservation lands in close proximity to the Site. Based on the proposed location, the subject Site will not have adverse impacts on the physical environment of local conservation lands.
Residential Dwellings (500-Foot Radius)	No residential dwellings exist within 500 feet of the proposed site assigned limits (Site) or proposed waste handling areas.

Continued on next page

Priority Resources and Land Uses (F-H), Continued

Land Uses,
(continued)

<table>
<tr><th>Regional Details (1/2-mile radius)</th><th>Description

Please refer to the Land Use Plan included as Insert 3.</th></tr>
<tr><td>Commercial Buildings (500-Foot Radius)</td><td>Five commercial buildings are located within 500 feet of the property line of the subject site. All five buildings are located within the industrial park. The commercial buildings within 500 feet of the Property are:
<table>
<tr><th>Facility/Business</th><th>Address</th></tr>
<tr><td>IMTRA Corporation</td><td>30 Samuel Barnet Blvd</td></tr>
<tr><td>Milhench Arthur L “Trustee”</td><td>127 Duchaine Blvd</td></tr>
<tr><td>N E Plastics Corporation</td><td>126 Duchaine Blvd</td></tr>
<tr><td>C P Bourg Inc.</td><td>50 Samuel Barnet Blvd</td></tr>
<tr><td>City of New Bedford (Lift Station)</td><td>100 Duchaine Blvd</td></tr>
<tr><td>Eversource</td><td>50 Duchaine Blvd</td></tr>
</table></td></tr>
<tr><td>Health Care Facilities</td><td>GSE identified did not identify any health care facilities within ½ mile of the Site.</td></tr>
<tr><td>Prisons</td><td>GSE did not identify any prisons within ½ mile of the Site.</td></tr>
<tr><td>Schools</td><td>GSE did not identify any schools within ½ mile of the Site.</td></tr>
<tr><td>Daycare Facilities</td><td>GSE did not identify any licensed daycares within ½ mile of the Site.</td></tr>
<tr><td>Senior & Youth Centers</td><td>GSE did not identify any senior or youth centers within ½ mile of the Site.</td></tr>
</table>

Continued on next page

Priority Resources and Land Uses (F-H), *Continued*

On-Site Land Use The following table provides a brief overview of the proposed on-site land use. This information can be found within Inserts 2, 3, 5, and 6.

Criteria	Description
Solid Waste Facilities	GSE did not identify any solid waste facilities within ½ mile of the Site. Note the Crapo Hill Landfill is located 6,500+ feet to the northwest.
On-Site Waste Handling Areas	SCR will not handle waste outside of the buildings on the Site other than the loaded railcars or trucks. For the purposes of the siting criteria, SCR has conservatively defined the waste handling areas as any areas within the approved site assigned limits.
Areas of Waste Deposition	Waste will not be landfilled and/or incinerated on the Site. Inbound materials will be tipped, handled, and loaded within the confines of the buildings. The consolidated waste materials will then be transported off-site via rail or large trucks.
Existing Buildings	A portion of an existing 92,200-sf building will be used for MSW processing. A new 65,317-sf tipping building will be constructed for tipping solid waste and for loading rail cars prior to shipment to disposal sites.
Access Roads	Traffic to and from the Facility will use Route 140. Please refer the Traffic Study presented as Attachment 3 and the site plans included in Insert 5 for further detail.
Traffic Flow	The traffic flow pattern is shown in the Traffic Report (Attachment 3). The Site has adequate room for safe and effective traffic flow and truck queueing on-site. Sheet 6 of 10 in Insert 5 provides a general traffic flow plan.
Zoning of Abutting Properties	The abutting properties, as defined in 310 CMR 16.02, to north of the site are zoned “Multi-Use 1”. The remaining abutting properties are zoned Industrial.
Site Zoning	The area to be site assigned is located within an area zoned Industrial C. The New Bedford City Solicitor has determined that the use is an allowed use provided a site assignment and all other required permits and licenses have been obtained. The zoning in the area of the project is shown on Insert 4.

Section II. Facility Specific Criteria (A-C)

Introduction

The following section addresses Facility-specific criteria [310 CMR 16.40(3)(d)] for Waste Handling and Processing Facilities. Please refer to the prior statements in this narrative in the Priority Resources and Land Uses description, Attachments, Inserts, and Site Plans for additional information.

Table of Contents – Section II

The following is a TOC for Section II of the Site Suitability application. The page numbers cited refer to page numbers of the general document, not the application form.

Landfills

The proposed Facility is a solid waste handling and transfer facility that will not landfill or dispose of waste on-site. Therefore, this section does not apply.

Combustion Facilities

The proposed Facility is a solid waste handling and transfer facility that will not burn or incinerate waste on-site. Therefore, this section does not apply.

Continued on next page

Section II. Facility Specific Criteria (A-C), *Continued*

Zone I of a Public Water Supply	The proposed waste handling area is not located within a Zone I of a public water supply. MassDEP establishes Zone I areas as the area encompassed by a protective radius of 400 feet around a public water system well with a yield of 100,000 gallons per day or greater. The Site is not located within or in close proximity to Zone I of a public water supply. The nearest Public Water Supply Wells are located approximately 2 miles northeast of the Site. The Site complies with the requirements of 310 CMR 16.40(3) (d) (1).
IWPA and Zone II Areas	The proposed waste handling area is not within an Interim Wellhead Protection Area or a Zone II of a public water supply well. The nearest Zone II is approximately 2.6 miles northeast of the proposed facility. The nearest IWPA is approximately 2.0 miles northeast of the proposed facility. The Site complies with the requirements of 310 CMR 16.40(3) (d) (2).
Zone A	The proposed waste handling area is not within the Zone A of a public water supply. The closest Public Surface Water Supply is located approximately 1,300 feet east of the Site as shown on the Water Resources Plan (Insert 2). The Site complies with the requirements of 310 CMR 16.40(3) (d) (3).
Private Water Supplies	Private well locations in the vicinity of the site were obtained from the Commonwealth of Massachusetts Energy & Environmental Affairs Data Portal and through communication with the City of New Bedford. No private wells were identified within 500 feet of the of the proposed site assignment limits and waste handling areas. The Site complies with the requirements of 310 CMR 16.40(3) (d) (4).

Continued on next page

Section II. Facility Specific Criteria (A-C), *Continued*

Occupied Facilities

There are no existing occupied residential dwellings, prisons, health care facilities, elementary schools, middle schools or high schools, children's preschools, licensed day care centers, senior centers, or youth centers within 500 feet of the proposed site assignment limits or waste handling areas at the Facility. The locations of these sensitive receptors are presented within Insert 3.

The residential dwellings nearest the proposed waste handling facility are located on Phillips Road to the east of the Property. The closest residential dwelling is located 590 feet from the proposed site assignment limits and 610 feet from the nearest proposed waste handing area (closest being the eastern most portion of the rail spur). Interior waste handling (not including the general recycling/glass processing operations) at it's closest point will be approximately 1,210 feet from the closest residential dwelling and the tipping doors to the facility will be approximately 1,580 feet from the closest residential dwelling.

The Site complies with the requirements of 310 CMR 16.40(3) (d) (5).

Riverfront Area

The waste handling area is not within a Riverfront Area as defined at 310 CMR 10.00.

A "River" is defined at 310 CMR 10.58(2)1.a., as a perennial stream where "the issuing authority shall presume that a river or stream shown as perennial on the current U.S. Geologic Survey ("USGS") or more recent map provided by the MassDEP is perennial unless rebutted by evidence from a competent source asserting to the contrary or a finding by the issuing authority." The Riverfront Area is defined at 310 CMR 10.58(2)(a)3.a. as "the area of land between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 25 feet away." The waste handling area will not be within 25 feet of a river.

The Site complies with the requirements of 310 CMR 16.40(3) (d) (6).

Continued on next page

Section II. Facility Specific Criteria (A-C), *Continued*

Depth to Groundwater

The Facility will maintain at least a two-foot separation between the maximum high groundwater elevation and the waste handling area. The maximum potential groundwater elevation has been calculated based on two groundwater monitoring wells on opposite sides of the proposed waste handling building. Records of groundwater levels in the monitoring wells and calculated maximum groundwater levels are discussed in Section I, H-Priority Resources and Land Uses above. Based on this calculation, the tipping building floor is proposed to be set at or above el. 85.0 feet, providing adequate groundwater separation. The groundwater levels will continue to be monitored periodically up to the ATC application. The tipping floor elevation will be adjusted before construction, as necessary, based upon updated groundwater levels.

The plan in Insert 5 (Sheet 7 of 10) identifies the proposed slab elevations which satisfies the requirements of 310 CMR 16.40(3) (d) (7).

Continued on next page

Section III. General Criteria (A-L)

Introduction

The following section addresses Section III of the Site Suitability Application - General Site Suitability Criteria for a Solid Waste Management Facility. Please refer to the prior statements in this narrative in the Priority Resources and Land Uses description, Attachments, Inserts, and Site Plans for additional information.

Table of Contents – Section III

The following is a TOC for Section III of the Site Suitability application. The page numbers cited refer to page numbers of the general document, not the application form.

Agricultural Land (A)

Agricultural Land(s)	Areas of prime farmland, farmland of unique importance, and farmland of statewide importance as identified by soils classification on the MassGIS system are indicated on the Land Use Plan in Insert 3 and the Soils Analysis report prepared by APEX presented as Attachment 12. The proposed “Site” (i.e.., the proposed Site Assignment limits) is not within 100 feet of prime farmland, farmland of unique importance, or farmland of statewide importance as identified by soils classification. The Site complies with the requirements of 310 CMR 16.40 (4)(a).

Continued on next page

Traffic Impacts (B)

Traffic Impacts

The traffic associated with the Facility has been evaluated to demonstrate that the traffic impacts from Facility operations would not constitute a danger to the public health, safety, or the environment, taking into consideration the following factors:

1. traffic congestion;
2. pedestrian and vehicle safety;
3. road configurations;
4. alternate routes; and
5. vehicle emissions.

Traffic Study Overview

During historical MEPA submissions, McMahon Associates had prepared several traffic studies. The older traffic studies may be found within the historical reports which are have been uploaded to the following website:

https://parallelproductssustainability.com/#new-bedford.

The website link presented above includes all of the reports associated with the historical MEPA filings including all previously prepared traffic reports, which will be used as part of the record during the Site Assignment proceedings. GSE, upon request, can also set up a Dropbox link to access these historical documents.

As part of this Site Suitability filing, McMahon Associates prepared a supplemental traffic impact assessment for the proposed facility expansion at 100 Duchaine Boulevard in New Bedford, MA. This appended supplemental analyses was prepared to address comments received from the Massachusetts Department of Transportation (MassDOT) and Massachusetts Department of Environmental Protection (MassDEP) relative to the Supplemental Final Environmental Impact Report (S-FEIR) for the proposed facility expansion. In addition, the supplemental analysis reflects the removal of biosolids processing operations from the proposed facility expansion, which ultimately reduces anticipated traffic volumes.

Continued on next page

Traffic Impacts (B), Continued

Mitigation

SCR has committed to the following traffic related mitigation measures:

- SCR entered into a Host Community Agreement with the City of New Bedford. Within this Agreement, the Facility shall restrict all inbound and outbound vehicles from using Phillips Road.
- Proposed installation of traffic signal at intersection of Braley Road at Phillips Road/Theodore Rice Boulevard (City discussion in process) (approximately $300k).
- Restrict transportation of outbound material by truck during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours to mitigate potential increases in delay at the Route 140 interchange ramp (does not include backhauls)
- Donation of $5,000 for a truck exclusion zone study
- Opportunities for employees to participate in transit subsidy or reimbursement programs
- Coordination with SRTA to request revising existing transit service to better service the project site
- Informing employees of nearby transit stops and bicycle and pedestrian amenities
- Provide incentives to encourage bicycle ridership to the site, such as bike racks and other storage facilities onsite
- Implementation of a carpool system among employees
- Provide preferential parking for carpools and vanpools
- Paperless, direct deposit offered to employees
- Provide striped bicycle lanes along Duchaine Boulevard and shared bicycle markings along Theodore Rice Boulevard to provide connectivity to the existing bicycle amenities along Braley Road. This is contingent upon City approval.

Continued on next page

Traffic Impacts (B), Continued

Mitigation, continued

The capacity analysis indicates that the proposed development will not have an appreciable impact on the operations of the study area intersections or roadways.

McMahon concluded… "Based on review and interpretation of the analyses presented, the proposed mitigation measures mitigate project generated impacts to the greatest extent feasible, addresses MassDOT comments received on the SFEIR, and satisfies MassDOT Traffic Impact Assessment Guidelines. It is McMahon's opinion that the traffic impacts of the proposed development of this solid waste facility located at 100 Duchaine Boulevard do not constitute a danger to the public health, safety, or the environment with consideration to traffic congestion, pedestrian and vehicular safety, roadway configuration, or alternate routes in conformance with 310 CMR 16.40(4)(b)."

Please refer to Attachment 3 for a copy of the Traffic Impact Study.

Wildlife and Wildlife Habitat (C)

Introduction

This section addresses the Natural Heritage and Endangered Species Program (NHESP) administered by the Massachusetts Division of Fisheries & Wildlife (MassWildlife).

Habitat of Endangered Species

According to MassGIS, there is Priority Habitat of Rare Species and an Estimated Habitat of Rare Wildlife located approximately 1,500 feet southwest of the subject Site. These areas are separated from the Site by the existing rail line. The areas of Rare Species Habitat and Habitat of Rare Wildlife are shown on Insert 3. The siting of the proposed Facility will not have an adverse impact on Endangered, Threatened, or Special Concern species listed by the NHESP.

Additionally, the Massachusetts Division of Fisheries & Wildlife was contacted with respect to the subject Site. The Massachusetts Division of Fisheries & Wildlife responded by email on January 3, 2019 which said, in part, "this project site does not occur within Estimated Habitat of Rare Wildlife or Priority Habitat as indicated in the Massachusetts Heritage Atlas (14th Edition). Therefore, the project is not required to be reviewed for compliance with the rare wildlife species section of the Massachusetts Wetlands Protection Act Regulations". A copy of the email communication is included in Attachment 4. The proposed Project complies with the requirements of 310 CMR 16.40(4) (c) (1).

Ecologically Significant Communities

The siting of the proposed Facility will not have an adverse impact on an Ecologically Significant Natural Community. There are no areas identified by the Natural Heritage and Endangered Species Program as ecoregions within ½ mile of the Site. The proposed Project complies with the requirements of 310 CMR 16.40(4) (c) (2).

Wildlife Management Area

The siting of the proposed Facility will not have an adverse impact on the wildlife habitat of any state Wildlife Management Area. GSE reviewed MassGIS and the Division of Fisheries and Wildlife website for information regarding Wildlife Management Areas. No Wildlife Management Areas are located with ½ mile of the Site. The proposed Project complies with the requirements of 310 CMR 16.40(4) (c) (3).

Areas of Critical Environmental Concern (D)

Introduction	This section addresses Areas of Critical Environmental Concern (ACEC) administered by the Executive Office of Environmental Affairs.
ACEC On-Site	Based on GSE's review of the MassGIS ACEC data layer, the Site is not within an ACEC. The proposed Project complies with the requirements of 310 CMR 16.40(4) (d) (1).
ACEC Adjacent to the Site	Based on GSE's review of the MassGIS ACEC data layer, no ACECs are located adjacent to the proposed Site. The proposed Project complies with the requirements of 310 CMR 16.40(4) (d) (2).

Protection of Open Space (E)

Introduction

This section addresses land areas that are considered parks and recreation lands under local, regional, and state regulatory agency jurisdiction.

State Forests

GSE reviewed the Department of Conservation and Recreation website for information regarding State Forests. According to the Department of Conservation and Recreation website there are no State owned or operated forests within ½ mile of the Site.

Therefore, the siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, State Forests in conformance with the requirements of 310 CMR 16.40(4)(e)(1).

State or Municipal Conservation and Park Lands

The site borders the Acushnet Cedar Swamp State Reservation. The site is separated from the Acushnet Cedar Swamp State Reservation by the rail line along the western property line. The primary purpose of the State Reservation is recreation and conservation. This is the only state conservation or park land within one-half mile of the site. The area is shown on the Land Use Plan in Insert 3. The reservation is managed by MassDEP.

The siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, state or municipal parklands or conservation land, or other open space held for natural resource purposes in accordance with Article 97 of the Massachusetts Constitution in conformance with the requirements of 310 CMR 16.40(4) (e) (2).

MDC Reservations

The MDC is now the Massachusetts Department of Conservation and Recreation (DCR). GSE reviewed the DCR website for information regarding reservations in the area of the proposed Facility and none were located within ½ mile of the Facility.

Therefore, the siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, DCR (MDC) reservations in conformance with the requirements of 310 CMR 16.40(4)(e)(3).

Continued on next page

Protection of Open Space (E), Continued

EOEEA Restricted Lands	GSE reviewed MassGIS and the Executive Office of Energy and Environmental Affairs website for any lands with conservation, preservation, agricultural, or watershed protection restrictions approved by the secretary of EOEEA within ½ mile of the Site. GSE did not identify any lands with conservation, preservation, agricultural, or watershed protection restrictions approved by the Secretary of EOEEA within ½ mile of the Site. Therefore, the siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, on EOEEA restricted lands in conformance with the requirements of 310 CMR 16.40(4)(e)(4).
Privately Owned Public Conservation Land	GSE reviewed MassGIS and the Executive Office of Energy and Environmental Affairs website for any privately owned public access conservation lands in close proximity to the subject Site. GSE did not identify any privately owned public access conservation lands in close proximity to the subject Site. Therefore, the siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, local conservation lands in conformance with the requirements of 310 CMR 16.40(4)(e)(5).

Air Quality Impacts (F)

Introduction

The following section addresses the potential air quality impacts regarding anticipated emissions from operation of the proposed facility.

According to 310 CMR 16.40(4)(f), Potential Air Quality Impacts, no site shall be determined to be suitable or be assigned as a Solid Waste Management Facility where the anticipated emissions from the Facility would not meet required State and Federal air quality standards or criteria or would otherwise constitute a danger to the public health, safety, or the environment, taking into consideration:

1. The concentration and dispersion of emissions
2. The number and proximity of sensitive receptors; and
3. The attainment status of the area.

Regulation

The proposed Facility will not be subject to MassDEP air plan approval (air permitting) requirements under 310 CMR 7.02. Key standards for approval are listed in 310 CMR 7.02 (4) for Limited Plan Approvals and 310 CMR 7.02 (5) for Comprehensive Plan Approvals. These standards typically include ensuring that any new stationary sources will be in compliance with all applicable federal and MassDEP air regulatory requirements, ensuring that the new sources will meet ambient air quality criteria, and requiring a certification that any facilities in Massachusetts owned or operated by the applicant are in compliance with MassDEP air requirements (or are on an approved schedule to come into compliance).

Continued on next page

Air Quality Impacts (F), Continued

Emissions Analysis

Epsilon Associates has evaluated air impacts associated with the proposed project and has prepared several reports detailing its findings. There are three reports within the Attachments that are relevant to air emissions:

1. Air and Odor Modeling – Attachment 5
2. Environmental Justice – Attachment 10
3. Greenhouse Gas Emissions (GHG) – Attachment 11

The attached reports **have not** been updated to remove the biosolids portion of the project that was eliminated in the MEPA SFEIR permitting process. However, within these reports, emissions from significant project components are calculated.

Epsilon reports demonstrate… "The analysis shows that, under maximum expected operating conditions and using conservative assumptions, the project's impacts will comply with all applicable standards. Specifically:

- The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per USEPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly." The Ambient Air Quality Standards for the Commonwealth of Massachusetts (MAAQS) will not be exceeded. Per 310 CMR 6.00, the MAAQS are currently identical to the NAAQS. In this report, the term "NAAQS" will refer to both sets of standards.

- MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air." In some cases, MassDEP had not developed an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System (IRIS) was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations.

Continued on next page

Air Quality Impacts (F), Continued

Air and Odor Modeling

In Massachusetts, odor is regulated under 310 CMR 7.09 in that operations that emit odors shall not permit their emissions to "cause a condition of air pollution." A Draft Odor Policy for Composting Facilities was published by MassDEP in January 1996. This draft guidance document recommended a minimum design standard benchmark of 5 D/T (Dilution to Threshold), presumably on a 5-minute average basis. The odor impacts from this project are compared to this criterion.

D/T is a dimensionless ratio defined as the volume of dilution air divided by the volume of odorous air, or commonly described as the number of equivalent volumes of clean air which must be added to an odorous volume such that the odor is undetectable to the average person. Thus, a higher D/T value indicates that a sample must be diluted many times to become undetectable, indicating a stronger sample. Conversely, a weak sample would require only a few volumes to be introduced to make the odor sample undetectable.

An odor concentration threshold of 1 D/T versus the 5 D/T standard was used for the design of the ventilation stacks in order to avoid nuisance conditions at nearby residences. Based on Epsilon's modelling, there will be no occurrences of odors greater than 1 D/T at any residential neighborhood location (0 events over a 5-year period using a 1-minute average). The design criteria used is more conservative than the MassDEP Draft Policy. Attachment 5 presents the Epsilon report.

Epsilon concluded… "The predicted air pollutant and odor concentrations are shown to be below the applicable NAAQS, MassDEP AALs and TELs (and RFCs, as applicable), and protective odor concentration criterion, using the USEPA AERMOD model. Therefore, it can be concluded that the proposed project as designed does not cause or contribute to a condition of air pollution in the area.

Continued on next page

Air Quality Impacts (F), Continued

Environmental Justice

As part of the EOEEA MEPA process, an Environmental Justice report was prepared to present an enhanced analysis of air impacts; data on baseline public health conditions within the affected EJ population; analysis of technological, site planning, and operational alternatives to reduce impacts; and proposed on-site and off-site mitigation measures to reduce multiple impacts and increase environmental and energy benefits for the affected EJ population. This report was also prepared while the biosolids portion of the project was being proposed. Even with the biosolids solids operations proposed, Epsilon concluded the following (See Section 5.0 of their report in Attachment 10):

- Under maximum expected operating conditions which include the stationary sources as well as the mobile on-site and off-site (i.e., traffic) sources and using conservative assumptions, that the project's air impacts will comply with all applicable health-protective standards.
- The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per EPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.
- MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air." The Massachusetts AALs and TELs will not be exceeded offsite.
- If MassDEP had not developed a specific AAL or TEL for a given chemical, the EPA Integrated Risk Information System was reviewed to determine if the EPA had developed a Reference Concentration. The EPA reference concentrations will not be exceeded off-site.

Please note that Environmental Justice is not a criterion of Site Suitability.

Continued on next page

Air Quality Impacts (F), Continued

GHG Emissions

The table presented below outlines the most recent calculations associated with GHG emissions. This calculation was presented within the FEIR (page 137) and differs from the original calculations within the GHG report. It should be noted that although it has been calculated that the development (of which the Facility only comprises a small part) will create 473 tons/year of GHG emissions, the additional solar will offset well over 1,000 ton/year of GHG emissions making this site net negative with respect to GHG emissions.

MSW Tipping and Processing			
Building Size	87,000	sf	
		Baseline	**Proposed**
DIRECT (NATURAL GAS)		**MMBtu/yr**	**MMBtu/yr**
Space Heating		0	0
	subtotal	0	0
INDIRECT (ELECTRICITY)		**MWh/yr**	**MWh/yr**
Ventilation		572	572
Space Heating		0	0
Internal Lighting		844	759
	subtotal	1,415	1,331
ENERGY USE INDEX		kBtu/sf/yr	kBtu/sf/yr
		55.5	52.2
(compared to baseline)			-6%
GHG EMISSIONS		tons/yr	tons/yr
Direct	Gas-burning	0	0
Indirect	Electricity	502	473
	Total	502	473
	Diff, tpy		-30
Diff, % (compared to baseline)			-6.0%
CO_2 Emission Factors			
Electricity [1]	710	lb/MWh	
Natural Gas [2]	117	lb/MMBtu	

[1] 2016 ISO New England Electric Generator Air Emissions Report
[2] EIA Fuel Emissions Factors, Weighted National Average (1029 Btu/scf)

Nuisance Conditions (G)

Introduction

The following section addresses nuisance conditions identified at 310 CMR 16.40(4) (g). This section addresses the following potential nuisance conditions:

- Noise
- Litter
- Vectors
- Odors
- Dust
- Bird hazards to air traffic

Noise

Noise on site will be minimized by conducting all tipping, handling, and loading of materials within an enclosed building. Trucks delivering waste to the site will utilize major roadway networks (Route 140 to New Bedford Industrial Park). No trucks will be allowed to use Phillips Road to access the Site. In addition, the placement of the new tipping building has been strategically located on the site to:

- Have the tipping/delivery doors on the west building elevation, which is away from the closest receptor.
- Allow the building to act as a sound buffer to the closest receptor.

Continued on next page

Nuisance Conditions (G), Continued

Noise, continued

Noise controls also included in the project design consist of the following:

- All waste handling to be conducted within enclosed buildings;
- Addition to the glass building to enclose the rail where railcars are being loaded;
- Rail track constructed to the west side of the building, opposite side of the building from residents to the east for noise attenuation;
- Rail track constructed without at-grade crossings, eliminating the need for the use of bells, horns, or whistles on locomotives;
- Tipping / delivery doors away from surrounding receptors;
- Glass unloading designed as a “drive forward” delivery system, eliminating backup alarms as a noise source at that location;
- Use of an electric rail car mover instead of diesel-powered;
- Air handling units and fans to be low noise units, fitted with silencers, or be placed within rooftop barriers for sound attenuation;

Acoustic louvered air intakes to provide baffling for noise attenuation.

Noise-Supplemental Sound Analysis

Noise assessments for this project have historically been presented within the Executive Office of Energy and Environmental Affairs MEPA filings including the Draft Environmental Impact Report [DEIR] (November 2019), the Final Environmental Impact Report [FEIR] (January 2021), and the Supplemental Final Environmental Impact Report [SFEIR] (July 2022). Previous reports have addressed noise from truck traffic due to operation of the Facility, as well as continuous operating sources of sound such as rooftop HVAC equipment and building exhaust stacks.

Continued on next page

Nuisance Conditions (G), Continued

Noise-Supplemental Sound Analysis, continued

Epsilon has revised their sound analysis in an effort to addresses comments made by the MassDEP during the SFEIR review by including all ambient data and further evaluating incidental and mobile sources such as truck tipping operations and rail logistics coupled with the stationary source sounds.

Epsilon's assessment shows that the impacts from all sounds generated from the Site development will be mitigated to the maximum extent practical and will not cause a nuisance noise condition or noise pollution.

It should be noted Epsilon modeled the truck tipping hours/back-up alarms/locomotive operations from 5AM to 9PM (Monday- Saturday) although tipping hours are from 6AM to 7PM M-F and 7AM to 4PM on Saturdays. This analysis was conducted to evaluate any potential incidental exterior movements prior to and/or after the proposed hours of waste acceptance.

Epsilon further opined that pursuant to 310 CMR 16.40(4)(g) the Facility will not cause a nuisance sound condition which would constitute a danger to the public health, safety, or the environment. Please refer to Attachment 7 for a copy of the report.

The Site complies with the requirements of 310 CMR 16.40(4) (g) (1).

Continued on next page

Nuisance Conditions (G), Continued

Litter

All waste handling activities will occur within the confines of the proposed solid waste tipping and solid waste processing buildings with the exception of railcar storage. The buildings will provide for significant protection from the elements, thus significantly reducing the potential for windblown litter related nuisance conditions.

All commercial vehicles that will transport materials either to or from the Facility will be required to be covered in order to prevent incidental littering. Shipment of materials by rail will be conducted in conformance with then-applicable CSX requirements. Additionally, the Facility will provide a phone number and website for the public to use to report any complaints regarding vehicles traveling on roads without covering on their trucks, and such, drivers violating the requirement will be banned from delivering to the Facility.

Facility personnel will implement a daily inspection program as part of the Operations & Maintenance Program.

For these reasons, the establishment or operation of the Facility will not result in a nuisance condition that would constitute a danger to the public health, safety, or the environment taking into account litter pursuant to 310 CMR 16.40(4)(g)(2).

Vectors

Vectors such as vermin and insects, will be discouraged by confining the waste handling operations to the inside of buildings. Additionally, MSW will be handled in such a way as to avoid the attraction of rodents and insects by efficiently moving the material from the tipping floor to the processing lines and then baler and/or loaded for off-site disposal. For these reasons, coupled with the mitigation measures presented in the next section, the establishment or operation of the Facility will not result in nuisance conditions that would constitute a danger to public health, safety, or the environment taking into consideration vermin such as rodents and insects pursuant to 310 CMR 16.40(4)(g)(3).

Continued on next page

Nuisance Conditions (G), Continued

Vector Mitigation

SCR will implement mitigation measures to ensure that vectors do not pose a nuisance condition. The following measures will be incorporated into SCR's Operation and Maintenance Plan that will be developed as part of the Authorization to Construct permitting phase to further describe and illustrate the processes and procedures for the control of nuisance conditions. Proposed measures include, but are not limited to, the following subject to revision as operations are finalized and during subsequent operational permitting with MassDEP:

- Contracting with a vector control management firm.
- Installing rodent traps within and around the interior and exterior of the building.
- Minimizing door openings within the proposed building.
- Conducting all waste handling activities indoors.
- Maintaining equipment on-site that will remove the materials from the tipping floor for subsequent handling.
- Covering the containers and trailers prior to leaving the waste handling building.
- Sweeping the paved areas and the interior of the building (as needed) at regular intervals.
- Instituting a daily inspection program for vectors following the Operations and Maintenance Plan that will be prepared for the proposed Facility.

Continued on next page

Nuisance Conditions (G), Continued

Odor

Proposed policies and procedures with respect to nuisance odor conditions include the following measures, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP:

MSW handling and processing:

- Confining all waste handling to within the buildings only except for waste contained within a loaded rail car or truck;
- Waste will be kept in a properly covered railcar (following then applicable CSX policy/regulation) or truck.
- Having the ability to entirely enclose/secure the Facility.
- Using a fine water mist and odor counteractants to reduce odor by adhering to particulate matter to prevent it from escaping the building.

Odor is regulated under 310 CMR 7.09 in that operations that emit odors shall not permit their emissions to “cause a condition of air pollution”. A Draft Odor Policy for Composting Facilities was published by MassDEP in January 1996. This draft guidance document recommended a minimum design standard benchmark of 5 D/T.

A study to model odor emissions from the proposed Facility was conducted by Epsilon Associates. An odor concentration threshold of 1 D/T was used for the design of the ventilation stacks in order to avoid nuisance conditions at nearby residences. Based on Epsilon’s modelling, there will be no occurrences of odors greater than 1 DT and any residential neighborhood location (0 events over a 5-year period using a 1-minute average). The design criteria used is more conservative than the MassDEP Draft Policy. The Epsilon report is included in Attachment 5.

The Epsilon report demonstrates that odor associated with the establishment or operation of the Facility will not result in nuisance conditions that would constitute a danger to public health, safety, or the environmental taking into consideration odors pursuant to 310 CMR 16.40(4)(g)(4).

Continued on next page

Nuisance Conditions (G), Continued

Dust

Proposed policies and procedures with respect to nuisance dust conditions include the following measures, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP:

- All waste handling to be conducted within enclosed buildings;
- Minimizing door openings within the proposed buildings;
- Minimizing cross-ventilation of air through the building by designing openings all on one side of the building;
- Maintaining equipment on-site that will remove the materials from the tipping floor for subsequent processing;
- Requiring all waste delivery vehicles/rail cars to be covered;
- Regular sweeping of the paved areas outside and inside, as necessary;
- Use of an atomized water mist at multiple locations and a water spray when necessary to control dust from C&D handling and odor for MSW handling and processing operations; and
- Implementation of a complaint log system for Proponent to respond to public comments regarding any nuisance condition generated by the Facility.

Bird Hazards To Air Traffic

The closest airport identified is the New Bedford Municipal Airport located approximately 2.2 miles south of the Site. Based on the distance to the nearest airport and the design considerations noted below, birds will not be a hazard to air traffic.

- The Facility will not be a landfill, and thus is not subject to the regulations discussed in the FAA Advisory Circular #150/5200-34(2000) regarding the construction or establishment of municipal solid waste landfills near airports.
- The Site is outside of the 3,000-foot buffer established by M.G.L. Chapter 90, Section 35B for building height restrictions within proximity of airports.
- Vectors such as gulls will not be attracted to the Site given the completely enclosed operation.
- No waste handling, loading, or unloading will be allowed outside of the building.
- A vector control service will be contracted.

Continued on next page

Nuisance Conditions (G), *Continued*

Bird Hazards to Air Traffic - Mitigation

Even though bird hazards are not a significant concern at the subject Facility, SCR will still implement mitigation measures to ensure that bird hazards do not pose a threat. The following measure will be incorporated into SCR's Operation and Maintenance Plan that will be developed as part of the Authorization to Construct permitting phase to further describe and illustrate the process and procedures for the control of nuisance conditions. These measures include, but are not limited to the following, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP:

- Minimizing door openings within the proposed building;
- Conducting all waste handling activities indoors;
- Maintaining equipment on-site that will remove the materials from the tipping floor for subsequent handling and off-site shipment;
- Covering the containers and trailers prior to leaving the building;
- Sweeping the paved areas and the interior of the building (as needed) at regular intervals; and,
- Instituting a regular inspection program for vectors following the Operations and Maintenance Plan that will be prepared for the proposed Facility.

Based on the location of the airports from the Site and the proposed controls at the Site, the establishment or operation of the Facility will not result in nuisance conditions that would constitute a danger to the public health, safety, or the environment taking into consideration bird hazards to air traffic in compliance with the requirements of 310 CMR 16.40(4) (g) (5).

Other Nuisance Conditions

Other nuisance conditions are not anticipated during the construction and operation of the Facility.

The Site complies with the requirements of 310 CMR 16.40(4) (g) (6).

Continued on next page

Nuisance Conditions (G), Continued

Response to Nuisance Condition Complaints

The Proponent will encourage the public to submit complaints in a confidential manner and will make the complaint log available to the public in an easily accessible manner (the complaint log and air quality data will be updated and made available on the Proponent's website: https://parallelproductssustainability.com)

The Proponent has prepared a system to log potential odor, noise, and dust complaints associated with operation of the Facility which will be provided to MassDEP and the New Bedford Board of Health. Response measures and mitigation actions that will be implemented will be as follows:

1. Log complaint and concurrent weather and operating conditions.
2. Independently confirm complaint by on-site and/or off-site observation, to the extent possible.
3. Identify any immediate mitigation measures available and implement them.
4. Conduct a root-cause analysis and review Best Management Practice (BMP), Standard Operating Procedure (SOP), and Preventative Maintenance (PM) documentation to determine if modifications are needed.
5. Respond to complainant with a report of actions taken.

Once construction begins, the Proponent will have a complaint log system set up on their website. This system will:

1. Allow individuals to lodge a complaint (by name or anonymously)
2. Allow the public to view past complaints, if any.
3. Allow public to review any mitigative measures that the Proponent has and/or will take with respect to any particular complaint.

Size of the Facility (H)

Introduction

The following section discusses the characteristics and logistics of the proposed Facility and details how the Facility has been designed to adequately handle up to 1,500 TPD of solid waste (MSW and C&D) material and meet the Size of Facility criterion at 310 CMR 16.40(4)(h). This section includes information regarding the following:

- Size of the Facility
- Access Roads (Material Ingress & Egress)
- Vehicle Queuing Areas
- Tipping, Waste Consolidation, and Loading Operations
- Comparison with Existing Facilities
- Waste Tipping Capacity Factors
- Setbacks of Waste Handling Areas from property boundaries

Size of Facility

The size of the proposed Site is sufficient to properly operate and maintain the Facility. The proposed Facility includes the construction of an approximately 65,317-square foot building addition (the Tipping Building) as well as a rail yard, scales, scale house, associated tarmac areas, underground utilities, site grading, paving, and stormwater controls. A portion of an existing building will be used for processing MSW to extract recyclable materials (the MSW Processing Area). The proposed Facility will be located on 71 acres of land. The area to be site assigned within these parcels will be 26.1 acres and is depicted on Inserts 2, 3, 4, and 5.

Waste handling, other than the storage of waste in in loaded railcars or trucks, will occur within the proposed 65,317 square foot tipping building, and approximately 50% of the adjacent existing 92,200 square foot building that will be used for MSW processing. For the purposes of the siting criteria, SCR has conservatively defined the waste handling areas as any areas within the approved site assigned limits. SCR has identified the presently proposed interior waste handling areas, which is depicted as shown on the plans within Inserts 5 and the Interior Layout Plan presented as Insert 6. No solid waste will be stored outside of the buildings unless it is stored within a railcar or truck.

Continued on next page

Size of the Facility (H), *Continued*

Access Roads – Material Ingress and Egress

The following describes traffic and waste delivery flow on-site.

1. Vehicular ingress and egress will be from/to Route 140 to the north and east of the subject property.
2. The ingress traffic pattern follows along an existing paved driveway. The paved driveways are designed for one-way traffic around the perimeter of the site. These internal roadways provide for queuing, two scales, and a bypass lane to ensure there is no queuing of trucks off of the subject site. Scale house personnel will be able to monitor inbound and outbound traffic patterns.
3. From the inbound scale, delivering waste vehicles would proceed to the tipping building. The vehicle will back into one of the four proposed inbound off-loading doorways. A fifth doorway in the northwest corner is reserved for railcars or outbound live floor tractor trailers. Please see the plans in Insert 6 which depict the exterior Facility layout and interior building layout, respectively.
4. Once in the building, the inbound waste vehicles will tip their loads and exit out of the tipping door in which they entered located along the western side of the waste handling building.
5. Exiting vehicles would proceed from the waste handling building to the outbound scale before exiting the site.

Continued on next page

Size of the Facility (H), *Continued*

Vehicle Queueing

The Site provides a significant amount of space for inbound vehicle queuing which is approximately 1,600 feet from the closest residential receptors.

Building Size, Elevations and Doorways

The proposed "Tipping" Building is 65,317 square feet in size. The building's footprint allows for several coupled railcars to be in the loadout bay of the tipping building at one time. The building is sized to include the following areas within the building:

1. The waste tipping and inspection areas
2. Temporary waste storage area
3. Baled waste storage area
4. The rail car loading area
5. The MSW processing feed hopper loading area

The MSW processing building is an existing 92,200 square foot building. Approximately half (or 50,000+/- square feet) of this building is intended to be used for MSW processing. Such processing would consist of extracting recyclable material from the MSW and then the remaining residual waste will be staged for outbound transport (or baled prior to). The Facility intends to utilize a series of conveyors, magnets, eddy current separators, air classifiers, and picking lines to remove recyclable materials. The draft layout and equipment list has been provided within Attachment 8.

MSW/C&D Tipping Overview

The Facility's operational protocols will require personnel to inspect and oversee solid waste (MSW and C&D) tipping activities. The following table outlines SCR's proposed procedure, subject to revision as operations are finalized during subsequent operational permitting with MassDEP.

Step	Action
1	An incoming driver is prompted to back his/her vehicle up and onto the concrete tipping area inside the Tipping Building.
2	Facility personnel will direct the driver to tip the waste in one of several designated areas.
3	The load is inspected by trained Facility personnel for unacceptable materials (e.g., visible waste ban materials).
4	Pending an acceptable inspection, the vehicle exits the waste handling area within the building and heads towards the outbound scale.

Continued on next page

Size of the Facility (H), Continued

MSW/C&D Waste Consolidation

The following table outlines SCR's proposed procedure for MSW and C&D consolidation within the waste handling building, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP.

Step	Action
1	Pending an acceptable inspection and safe vehicle exit, the tipped waste materials may be pushed to the waste staging area located within the southern area of the tipping building.
2	The MSW will be loaded into the feed hopper of the processing system by a front-end loader and/or excavator.
3	After processing to extract recyclable material, the non- recycled fraction may be baled or loaded loose onto awaiting railcars or transfer trailers.

The buildings have been sized to allow sufficient space for material tipping, processing, and loading outbound rail cars. The draft specifications of the equipment to be provided to extract recyclable materials from MSW are included in Attachment 8.

Railcar or Live Floor Loading Operations

The following table outlines SCR's procedure for railcar or truck loading within the building, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP.

Step	Action
1	A front-end loader and/or excavator will load MSW from the tipping floor in to a feed hopper for the MSW processing system.
2	Loose, baled and/or wrapped residual material will be moved from the MSW processing area back into the tipping building for loadout.
3	The baled material will be directly loaded into a live floor trailer and/or rail car located in the proposed outbound loadout and railcar staging area. Rail cars may also be topped off with Category 2 C&D residuals as required by the Railroad. (Actual process of loading out rail cars will be adjusted to comply with then-applicable CSX requirements)
4	The rail cars and/or trailers will be covered with an appropriate cover for subsequent staging and transport to the final disposal destination.

Continued on next page

Size of the Facility (H), Continued

Comparison with Existing Facilities

The proposed 65,317-square foot waste Tipping Building (exclusive of the MSW Processing Area) provides greater operational area than the following solid waste facilities:

- Allied Waste System Fall River transfer station [1,000 TPD, 20,700 sf]
- Braintree transfer station [1,600 TPD, 23,600 sf]
- Allied Peabody transfer station [1,000 TPD, 23,400]
- New England Waste Disposal transfer station [2,000 TPD, 50,000 sf]
- Western Recycling transfer station [2,000 TPD, 46,000 sf]

Note that the Facility square footage presented above includes the tipping and loadout area and does not include the area where it is intended that the processing equipment will be constructed. Collectively, the cumulative size will be greater than 115,000 sf as approximately 50,000 sf of the existing building is intended to be used to house the proposed MSW processing line. Additionally, it appears this Facility will exceed many the aforementioned facilities with respect to queueing areas, internal storage capabilities, rail car storage, etc.

Continued on next page

Size of the Facility (H), *Continued*

Waste Tipping Capacity Factors

The table presented below has been prepared to outline the doorway capacities as it relates to tonnage based on various delivery scenarios. Note the calculations below are for four tipping doors although the Facility has the ability to construct five tipping doors.

SCR Four Door Peak Factor Calculations			
	All 9-Ton Packer/Roll-off Vehicles	**50% Packers/Roll-off & 50% Live Floor Trailers by Weight**	**100% Live Floor Trailers by Weight**
Average Tons Per Vehicle	9	18.5	28
Inbound Trucks Per Day Based on Weight Assumptions	167	81	54
Tons Received Per Day at Facility	1500	1500	1500
Hourly Tonnage if Averaged Over 13 Operational Hours (*9 hours Saturday*)	115 (*167*)	115 (*167*)	115(*167*)
Operational Hours Per Day for Tipping Waste	13 (*9*)	13 (*9*)	13 (*9*)
Number of Doorways Used	4	4	4
Time to Tip Per Vehicle (Minutes Averaged)	10	12	15
Trucks Per Hour Per Doorway	6	5	4
Tons Per Hour Per Doorway	54	93	112
Tons Per Hour - 4 Doorways	216	372	448
Peak Capacity Factor 4 Doorways Utilized	1.87 (*1.29*)	3.22 (*2.23*)	3.88 (*2.69)*

Notes:

1. *Packers/Roll-off weights averaged based on anticipated volumes and assume to carry 9-tons per vehicle.*
2. *Live floor trailers assumed to carry 28 tons per vehicle.*
3. *Tipping time for packers/roll-off is 10 minutes (generally tipping is less than 5 minutes).*
4. *Tipping time for live floor trailers is 15 minutes.*
5. *Columns 2 and 3 assume that tonnage average is by weight. For example, if deliveries are 50% packers/roll-offs and 50% live floor trailers, then each vehicle type delivers 500 TPD.*
6. *Column 3 has assumed 100% live floor trailers.*
7. *Figures have been rounded up when necessary.*
8. *Based upon hours of operation Monday-Friday 6am-7pm, 13 operational hours. Values in italics and parenthesis represent Saturday operations of 7am-4pm, 9 operational hours.*

Continued on next page

Size of the Facility (H), *Continued*

Waste Handling Setbacks

The table below presents various setbacks from the waste handling building (Tipping Building and MSW Processing Area combined), tipping doors and rail side tracks:

Setback	Distance
Handling Building to closest property line	240 feet to closest property line (south property line)
Handling Building to closest occupied residential dwelling	1,210 feet to closest occupied dwelling (east)
Rail storage side track to closest property line	490 feet to closest property line (east)
Rail side track to closest occupied residential dwelling	610 feet to closest occupied dwelling (east)
Handling Building tipping doors to closest occupied residential dwelling	1,580 feet to closest occupied dwelling (east)
Handling Building to closest Riverfront Area	170 feet to closest Riverfront Area (northeast)

Note: Refer to the Priority Resource and Land Use sections of this narrative and Inserts 2 and 3 that depict setbacks from other various features that are located off-site. Based on the regulations set forth in 310 CMR 16.40, all of the required minimum setbacks have been met.

Conclusion

Based on the size of the Site, the design of the handling building, associated paved surfaces, the available space for queuing of trucks, and the analysis of the interior operations, the size of the proposed Site is sufficient to properly operate and maintain the proposed Facility.

The Site complies with the requirements of 310 CMR 16.40(4) (h).

Areas Previously Used for Solid Waste Disposal (I)

Introduction	The following section discusses areas previously used for solid waste disposal and demonstrates compliance with 310 CMR 16.40(4) (i).
Abutting Properties	Based on GSE's research, no former solid waste landfill disposal activities were identified on abutting properties.
Proposed Site	No portion of the Site has been previously used for solid waste disposal as listed on the MassDEP Solid Waste Facilities Master List.
Conclusion	1. No prior solid waste facility operated on any area adjacent to the proposed Facility. 2. GSE is unaware of any solid waste activities or contamination that would adversely impact or threaten to adversely impact the Site. The Site complies with the requirements of 310 CMR 16.40(4) (i).

Existing Disposal Facilities (J)

Introduction

The following section discusses existing disposal facilities in the vicinity of the proposed Site.

Active Disposal Facilities

MassDEP and the local Board of Health shall give preferential consideration to sites located in municipalities in which no existing landfill or solid waste combustion facilities are located, a preference that will be applied only to new facilities that will not be for the exclusive use of the municipality in which the Site is located. The proposed Facility does not meet these requirements and is therefore not entitled to a preference.

The Crapo Hill Landfill is located in North Dartmouth but with the address of 300 Samuel Barnet Boulevard, New Bedford, as it is accessed through New Bedford and is used for disposal by the City of New Bedford and the Town of Dartmouth. The City of New Bedford and the Town of Dartmouth are not expected to utilize the proposed Facility for MSW disposal. However, the Host Community Agreement with the City of New Bedford does allow for the Facility to give "favored/lowest" pricing to the City should they use it in the future.

Project Need

Presently, a significant amount of MSW is being transported out of state for disposal due to a lack of in state disposal sites and capacity. Recent landfill closures in Massachusetts have resulted in limited disposal options that are within economical trucking distances. The proposed Facility with its rail access will provide economical disposal options for Southeastern Massachusetts.

The proposed project is intended to include the construction of a state-of-the-art facility for extracting recyclable materials from MSW (20+%), which is in line with the goals and initiatives set forth within the Massachusetts Solid Waste Master Plan.

Other Sources of Contamination or Pollution (K)

Introduction

The Facility includes environmental controls for stormwater, contact water, dust, odors, vectors, bird hazards, and noise. The Facility will not pose a threat to public health, safety, or the environment taking into consideration the impacts of existing sources of pollution or contamination pursuant to 310 CMR 16.40(4)(k).

Consideration of Other Sources of Contamination or Pollution

Other sources of contamination or pollution could be emissions from construction. The Facility will incorporate the proper controls, protocols, and procedures to reduce emissions, which will be addressed in future MassDEP and City permitting endeavors. This will also hold true for the environmental controls that will incorporated into the facility design.

The Facility as proposed coupled with the solar installation will create an overall reduction in CO_2 emissions annually. It is documented by CSX that moving freight (waste) by rail is approximately 4 times more fuel efficient than moving freight on the highway. Trains can move a ton of freight over 470 miles on a single gallon of fuel whereas a truck can move a ton of freight only approximately 134 miles per gallon of fuel.

Consolidating waste and incorporating rail efficiencies can result in significant reductions to CO_2 emissions, which follows the goals and initiatives of the Massachusetts Environmental Policy Act (MEPA), M.G.L. c. 30, ss. 61-621 and within 301 CMR 11.00.

Additionally, based on the enhanced air quality analyses prepared by Epsilon during the MEPA review process, the proposed operations have been properly assessed while taking into the facility location, surrounding populations and other related receptors.

The proposed Project complies with the requirements of 310 CMR 16.40(4)(k).

Regional Participation (L)

Regional Participation & Need	MassDEP and the Board of Health shall give preferential consideration to sites located in municipalities not already participating in a regional disposal Facility pursuant to 310 CMR 16.40(4) (l). The City of New Bedford is a member of the Greater New Bedford Refuse District, which is served by the Crapo Hill Landfill. As such, the City is not a preferred municipality under M.G.L. c. 111, § 150A½ (15) and (16). The proposed Facility's maximum capacity and annualized capacity will support regional need within the surrounding area(s). By having a facility in close proximity to major roadway networks coupled with access to rail, the Facility is designed around regional participation. The Facility serves a disposal need created by insufficient disposal options in Massachusetts and in other states that can be economically serviced by truck transport.

Section IV. Integrated Solid Waste Management (A-D)

Introduction	Section IV is applicable to Landfills and Combustion facilities only.

Section V. Waivers

Waiver	The Facility is not requesting any waivers under 310 CMR 16.40.

ATTACHMENT 1

RECEIPT OF TECHNICAL FEE

Green Seal Environmental, LLC
ENGINEERING | ENVIRONMENTAL | SURVEY | ENERGY
114 State Road, Bldg. B, Sagamore Beach, MA 02562
T: 508.888.6034 F: 508.888.1506 www.gseenv.com

MassDOT Certified
DCAMM Certified

RECEIVED
FEB 08 2023
BY:

February 8, 2022

Damōn O. Chaplin, Director
CITY OF NEW BEDFORD
DEPARTMENT OF PUBLIC HEALTH
1213 Purchase Street,
New Bedford, MA 02740

**Re: Proposed Solid Waste Handling Facility
South Coast Renewables, LLC
100 Duchaine Blvd, New Bedford, MA**

Dear Director Chaplin,

As you may be aware, South coast Renewables (SCR) is presently seeking regulatory approvals to site assign a 1500 ton per day solid waste handling facility that will accept municipal solid waste (MSW) and construction and demolition debris (C&D). The proposed facility will accept MSW and C&D regionally from commercial haulers and contractors. This material would then be handled/processed/consolidated indoors and a portion of it is presently planned to be hauled off site via the proposed rail component that will be constructed at the facility.

SCR is preparing to submit an application to MassDEP for a site suitability determination in the this week. Once the MassDEP determines that the site is suitable, the Board of Health will need to conduct public hearings on the project and make a decision on whether to grant a site assignment for the subject site following the site assignment process detailed in 310 CMR 16.00. The applicant, SCR, must pay the Board of Health an application fee to cover the Board of Health's costs of reviewing technical data and the costs associated with conducting a public hearing. SCR must demonstrate that the technical fee has been paid to the Board of Health prior to MassDEP's review of the site suitability application.

The technical fee is the actual costs of reviewing technical data and for obtaining technical assistance in reviewing the data submitted by SCR related to the project and site. The maximum allowable fee is determined in accordance with the provisions of 310 CMR 16.99. For a 1,500 ton per day handling facility, the maximum technical fee is $33,000. When adjusted for inflation per 310 CMR 16.99, the **maximum fee is $83,363**. The actual costs to the Board of Health for outsourced technical review cannot be determined prior to the start of the review.

This letter has not addressed how SCR will reimburse the Board of Health for the costs associated with the public hearings.

Please advise if the technical review payment schedule defined above is acceptable to the Board of Health. Should you have any questions, please call me at (508) 280-8488 or email at greg@gseenv.com.

Sincerely,

GREEN SEAL ENVIRONMENTAL, LLC

Gregory C. Wirsen

Gregory C, Wirsen, MSc.
Vice President

Technical Fee and Hearing Fee (Maximum) Calculation

1. Proof of Payment of Technical Fee

South Coast Renewables has paid a portion of the Maximum Technical Fee to the City. A copy of the check is included within this attachment

2. Calculation of Technical Fee:

From 310 CMR 16.99 Appendix A Table 2, the Maximum Technical Fee For Handling Facilities is based on the maximum daily volume of waste, measured in tons per day (tpd), that is proposed to be accepted at the facility. South coast Renewables is proposing to have a maximum capacity of 1,500 tons per day (TPD). The Maximum Technical Fee for the proposed facility capacity is as follows:

- Maximum Fee = $3,000 + (1,500 TPD additional tons x $ 20.00/TPD) = $ 33,000.00

The total of the Maximum Technical Fee ($33,000) is required be adjusted for inflation by a factor determined by the ratio of the Boston Consumer Price Index ("BCPI") for September of the year preceding the current year, divided by the BCPI for September 1988. Per information provided by the U.S. Department of Labor, Bureau of Labor Statistics, the BCPI for September 2022 was 318.80 and for September 1988 were 126.2.

Applying the adjustment factor results in the following Maximum Technical Fee for the proposed facility = $33,000 x (318.8/126.2) = $83,363

Hearing Fee: 50% of Technical Fees = $41,682

PARALLEL PRODUCTS TECHNOLOGIES LLC 1086

VENDOR ID	NAME	PAYMENT NUMBER	CHECK DATE	1086
10142	NEW BEDFORD BOARD OF HEALTH	0001434	2/7/2023	

OUR VOUCHER NUMBER	YOUR VOUCHER NUMBER	DATE	AMOUNT	AMOUNT PAID	DISCOUNT	WRITE-OFF	NET
0001432	MASSBOARD123	2/6/2023	$83,363.00	$83,363.00	$0.00	$0.00	$83,363.00
			$83,363.00	$83,363.00	$0.00	$0.00	$83,363.00

COMMENT

HOLD TO LIGHT TO VIEW TRUE WATERMARK IN PAPER HEAT SENSITIVE RED LOCK DISAPPEARS WHEN HEATED

1086

PNC BANK, NA 050

PARALLEL PRODUCTS TECHNOLOGIES LLC
401 INDUSTRY ROAD, SUITE 100
LOUISVILLE, KY 40208
(502) 471-2444

21-10/830

SECURED BY EZSHIELD

DATE		AMOUNT
2/7/2023	1086	$83,363.00

Eighty Three Thousand Three Hundred Sixty Three Dollars and 00 Cents

PAY TO THE ORDER OF

NEW BEDFORD BOARD OF HEALTH
1213 PURCHASE STREET

NEW BEDFORD MA 02740

VOID AFTER SIX MONTHS

Two Signatures Required for Checks Over $10,000

AUTHORIZED SIGNATURE

FD Security features. Details on back.

[redacted]

RECEIVED
FEB 08 2023
BY: RA

ATTACHMENT 2

MEPA CORRESPONDENCE

FROD - CERTIFICATE

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

May 15, 2019

FINAL RECORD OF DECISION

PROJECT NAME	: Parallel Products of New England
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: Parallel Products of New England, LLC
DATE NOTICED IN MONITOR	: April 24, 2019

Pursuant to the Massachusetts Environmental Policy Act (MEPA, M.G.L.c.30, ss. 61-62I) and Section 11.11 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby **grant** a Phase 1 Waiver that will allow the first phase of development, as described in the EENF, to proceed to permitting prior to completion of the Draft Environmental Impact Report (Draft EIR) and Final EIR (FEIR) for the remaining development.

I received comment letters on the Draft Record of Decision from the City of New Bedford (City) and residents which identify concerns with the project. Comments from the City and City Councilor Brad Markey identify concerns with the noise, odor, traffic, and other cumulative impacts associated with full-build of the project. Comments from the City also request that I deny the Phase 1 Waiver request. I have weighed these concerns and considered the environmental impacts of Phase 1. I note that Phase 1, on its own, would not require MEPA review as it does not meet or exceed any MEPA review thresholds. Additionally, Phase 1 is an allowed use under the Proponent's existing General Permit for recycling operations. The Proponent will prepare Draft and Final EIRs which will provide additional opportunities for public review of the cumulative environmental impacts of the full-build project. Subsequent state and local permitting processes will also include additional meaningful opportunities for review and refinement of potential environmental impacts and measures to avoid, minimize, and mitigate environmental impacts.

Project Description

As described in the EENF, the project includes the phased construction of a glass recycling/processing facility; a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste; and a biosolids drying facility that will accept 50 dry tpd of biosolids.

Phase 1 includes construction of a glass recycling/processing facility within a 27,500-square foot (sf) building, construction of a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of a 1.9 megawatt (MW) solar photovoltaic (PV) array. The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks to shipment for bottle manufacturers. Phase 1 is proposed to meet an immediate regional need for glass processing in the region by providing an alternative market for glass that would otherwise be disposed.

Phase 2 includes construction of the MSW and C&D transfer station and the biosolids drying facility and extension of the RR sidetrack to service these facilities. Phase 2 will construct a 50,000-sf waste handling building which will be connected to an existing 103,000-sf building. The larger building will house processing equipment which will remove waste ban items and separate out recyclable materials. It also includes construction of a stand-alone 30,000-sf building to house the biosolids processing equipment. Biosolids processing will consist of drying the biosolids to reduce the volume and tonnage of the material prior to off-site disposal. Shipment of all outbound material will primarily occur via rail car.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south, and a rail line and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue to the project site. The site also contains 1.5 MW of solar PV mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility. The site has adequate area to support truck movement and access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway) via Braley Road or Phillips Road.

Wetland resource areas in the vicinity of the project include Bank, Bordering Vegetated Wetlands (BVW), Land under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern

(ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

According to the EENF, potential environmental impacts of Phase 1 include alteration of 4.6 acres of land, creation of 21,780 sf of impervious area, generation of 108 new average daily trips (adt), consumption of 150 gallons per day (gpd) of potable water, and generation of 150 gpd of wastewater. Phase 1 will impact BVW (4,087 sf), Bank (36 linear feet (lf), and Riverfront Area (900 sf).

The following commitments are proposed to avoid, minimize and mitigate environmental impacts associated with Phase 1 including: limiting all glass processing to an enclosed building; designing the RR crossing to reduce impacts to BVW and RFA; wetland replication; constructing the project on a previously altered site; use of rail to ship glass off-site; construction period erosion and sedimentation control measures; and generating renewable energy with solar PV systems.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires State Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol. The project is also subject to the Executive Office of Energy and Environmental Affairs' Environmental Justice (EJ) Policy.

The Proponent consulted with the Massachusetts Department of Environmental Protection (MassDEP) and the MEPA Office regarding the enhanced outreach requirements of the EJ Policy. The Proponent published Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times (respectively) in addition to the New Bedford Times. The Proponent also notified the following organizations of the project and MEPA scoping session and provided them with a copy of the EENF: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village. These were identified as EJ leaders based on consultation with MassDEP. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF. The comment period commenced on February 20, 2019 and concluded on April 5, 2019. I accepted all late comments as allowed in accordance with 301 CMR 11.06(3). A MEPA site visit and scoping session was held on March 7, 2019. Spanish and Portuguese translation services were provided at the MEPA scoping session.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 will require an Order of Conditions from the New Bedford Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). It may require an amended Site Plan Approval from the New Bedford Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Phase 1 Waiver Request

The Proponent submitted an EENF in support of its request for a Phase 1 Waiver. Consistent with this request, the EENF was subject to an extended 30-day public comment period. At the Proponent's request, the comment period was extended for an additional two-weeks and closed on April 12, 2019.

On April 12, 2019, I issued a Draft Record of Decision (DROD) proposing to grant a Phase 1 Waiver, provided that the Proponent hold a public meeting prior to the close of the comment period on the DROD. This provided the community with an additional opportunity to learn about and comment on the project. The DROD was published in the Environmental Monitor on April 24, 2019, commencing the 14-day public comment period, which concluded on May 8, 2019. The Proponent held a public meeting on the project on April 29, 2019 at 6:00 PM in the auditorium of the Pulaski Elementary School in New Bedford. The Proponent created and distributed a fact sheet for the project which provided a summary of the project and identified required permits and opportunities for public comment. Spanish and Portuguese translation services were also provided at the public meeting. The Proponent notified the following organizations of the meeting: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, Old Bedford Village, Conservation Law Foundation, and Toxics Action Center. Notice of the public meeting was also provided on the radio (1420 WBSM), through a Facebook campaign via New Bedford Guide, and published in the Standard Times on April 24th and 26-28th. The Proponent has committed to hold additional public meetings approximately every 30 days. I acknowledge the Proponent's outreach efforts and encourage the Proponent to continue this productive dialogue with stakeholders.

Standards for All Waivers

The MEPA regulations at 301 CMR 11.11(1) state that I may waive any provision or requirement in 301 CMR 11.00 not specifically required by MEPA and may impose appropriate and relevant conditions or restrictions, provided that I find that strict compliance with the provision or requirement would:

(a) result in an undue hardship for the Proponent, unless based on delay in compliance by the Proponent; and
(b) not serve to avoid or minimize Damage to the Environment.

Determinations for a Phase 1 Waiver

The MEPA regulations at 301 CMR 11.11(4) state that, in the case of a partial waiver of a mandatory EIR review threshold that will allow the proponent to proceed with Phase 1 of the project prior to preparing an EIR, I shall base the finding required in accordance with 301 CMR 11.11(1)(b) on a determination that:

(a) the potential environmental impacts of Phase 1, taken alone, are insignificant;
(b) ample and unconstrained infrastructure facilities and services exist to support Phase 1;
(c) the project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated; and
(d) the agency action on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

Findings

Based upon review of the EENF, consultation with State Agencies, and review of public comments, I find that the Waiver Request has merit and that the Proponent has demonstrated that Phase 1 meets the standards for all waivers at 301 CMR 11.11(1). The EENF provided sufficient information regarding potential impacts for the purpose of MEPA review, it demonstrated that environmental impacts associated with Phase 1 are not significant and it identified measures to avoid, minimize, and mitigate potential impacts.

As noted in the EENF and confirmed by MassDEP's comments on the EENF, there are limited outlets for recycling container glass within the Commonwealth and New England since the last glass bottle production facility in the region closed in 2018. This has resulted in increased shipping distances to bottle production facilities, which combined with a nationwide trucking shortage, has increased costs for recycling programs. Phase 1 will provide a new outlet for processing of glass bottles and will facilitate reliable and economical shipment of the glass to recycling markets and bottle manufacturers via rail car. Comments from MassDEP on the EENF confirm that Phase 1 will enhance glass processing in the region by offering alternative markets for those collecting and diverting container glass from landfills. Phase 1 includes construction of a building and installation of solar PV within previously altered and impervious areas and extension of a RR line using funds from MassDOT's IRAP grant program.

In light of the regional benefits and limited impacts associated with Phase 1, strict compliance with the requirement to prepare a Mandatory EIR for the project prior to Phase 1 would result in undue hardship and would delay the regional benefits to the glass recycling market identified in MassDEP's comment letter on the EENF. The Proponent will redevelop a previously altered site within an industrial park, which has adequate vehicular access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway). In addition, the Proponent has committed to implement adequate measures to avoid, minimize, and mitigate Phase 1 impacts. Comments from MassDEP and MassDOT on the EENF indicate support for the Waiver. I find that strict compliance with the requirement to submit an EIR prior to completion of Phase 1 of the project would result in an undue hardship and would not serve to avoid or minimize Damage to the Environment.

In accordance with 301 CMR 11.11(4), the latter finding is based on my determination that:

1. The potential environmental impacts of Phase 1, taken alone, are insignificant.

Potential impacts associated with Phase 1 do not exceed ENF thresholds. The majority of development is located within previously altered and impervious areas. Potential environmental impacts of Phase 1 are primarily associated with construction of the RR side track which will alter wetland resource areas. The New Bedford Conservation Commission will review Phase 1 to determine its consistency with the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including the Stormwater Management Standards (SMS). The Proponent will provide wetland replication and design the crossing to comply with MassDEP's Stream Crossing Standards.

2. Ample and unconstrained infrastructure facilities and services exist to support Phase 1.

The site provides infrastructure necessary to support Phase 1, including access roads, water and sewer, and electricity. Phase 1 will construct a RR extension to facilitate shipment of outbound material via rail car. Existing roadway infrastructure can accommodate traffic generation associated with the project. Based on the foregoing, I find that ample and unconstrained infrastructure exists to support Phase 1.

3. The project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated.

The Phase 1 project can function independently without the remaining development. Phase 1 does not require the implementation of remaining development phases or restrict the means by which potential environmental impacts from remaining development may be avoided, minimized, or mitigated.

4. The Agency Action(s) on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

The Proponent is seeking Financial Assistance from MassDOT for Phase 1. I hereby direct MassDOT to include a condition in their funding agreement that requires compliance with MEPA and 301 CMR 11.00 prior to commencement of Phase 2. Based on the foregoing, I find that Phase 1 of the project can commence prior to the completion of the MEPA review process.

Given the foregoing, and subject to the conditions included herein, I find that a requirement to complete MEPA review prior to Phase 1 is not necessary to demonstrate that it will avoid, minimize, and mitigate potential Damage to the Environment to the maximum extent practicable, and that a requirement to do so would therefore cause undue hardship and would not serve to minimize Damage to the Environment.

Conclusion

Based on these findings, I have determined that this waiver request has merit. A DROD was issued on April 12, 2019 and was published in the Environmental Monitor on April 24, 2019 in accordance with 301 CMR 11.15(2), which began the public comment period. The public comment period lasted for 14 days and concluded on May 8, 2019. Accordingly, I hereby **grant** a Phase 1 Waiver to allow the Proponent to proceed with Phase 1 of the project prior to completing the EIR process.

May 15, 2019
Date

K. Theoharides
Kathleen A. Theoharides

Comments received on the DROD:

05/02/2019 City Councilor Brad Markey
05/05/2019 Ron Cabral
05/10/2019 Jonathan F. Mitchell, Mayor, City of New Bedford
05/15/2019 Donna Poyant
Form letter beginning "I am strongly opposed to the…" (1 received)

KAT/PRC/prc

City of New Bedford

Office of City Council
133 William Street • New Bedford, Massachusetts 02740
(508) 979-1455 • Fax: 508-979-1451

Brad Markey
Councillor Ward One

RECEIVED
MAY 10 2019
MEPA

May 2, 2019

RE: EEA 15990 Parallel Products

Dear Ms. Czepiga

I am writing you regarding my concerns and the concerns of the residents in the surrounding areas on the Parallel Products project which is a proposed expansion at 100 Duchaine Blvd. in the New Bedford Industrial Park. The Industrial Park as well as the proposed expansion abuts heavily populated neighborhoods and we are concerned that this expansion can have a detrimental effect on these neighborhoods.

There are many concerns with the processing at this facility, health concerns of toxins being emitted into the air, odor, as well as issues with the proximity to wet lands.

Other issues effecting the quality of life in the area from this project would be noise, air pollution from the processing and, with the increase of truck traffic going into this facility every day, air quality from the diesel emissions.

While air quality is a major concern there is also traffic issues. With the many trucks making their way into the facility this is adding more traffic congestion into an already high traffic area.

I ask you to carefully review this project and to consider the neighborhood's concerns which are stated above and to their quality of living.

Sincerely,

Brad Markey

Brad Markey

City Councilor Ward 1

Residence: 1520 Morton Avenue • New Bedford, Massachusetts 02745 • Tel.: (508) 998-8377
Brad.Markey@newbedford-ma.gov

CITY OF NEW BEDFORD
JONATHAN F. MITCHELL, MAYOR

May 10, 2012

Executive Office of Energy and Environmental Affairs (EEA)
Attention: MEPA Office
Paige Czepiga: EEA No. 15990
100 Cambridge St, Suite 900
Boston MA 02114

RE: EEA 15990: Parallel Products

Dear Ms. Czepiga,

I write in strong opposition to the establishment of a glass/solid waste/biosolids processing facility to be operated by Parallel Products at 100 Duchaine Boulevard in New Bedford. In addition, I strongly urge MEPA to deny a Phase I Waiver to allow Parallel Products to proceed with the first phase of development as described in the April 12, 2019 Draft Record of Decision.

The company has operated a glass bottle recycling operation at the location for some time in compliance with local zoning, site plan conditions, and conservation restrictions. However, the site as newly conceived, would be an entirely different creature--especially with the inclusion of a biosolids processing facility as detailed in the company's MEPA filing in February.

On March 29 I submitted comments to MEPA regarding the proposed project. The concerns and objections I raised on behalf of the City all remain valid. (I refer you to items 1-7 contained in the letter.) Most important, I made clear then, as well as in several subsequent public remarks, that the burden was on the company to demonstrate that its project would not pose a threat to the quality of life in surrounding neighborhoods.

Since that time, concerns regarding the potential odor, noise, and traffic impacts of the Parallel Products proposal have grown significantly among both neighborhood residents and municipal departments. Based on what we have learned in recent weeks regarding potential odor, noise, and traffic impacts, there is ample evidence to conclude that this project is wrong for New Bedford.

With respect to the company's Waiver request, I believe it important for MEPA to consider the request in the full context of the development proposed at the site. The first development phase is now a part of a much larger, more impactful, multi-faceted project. It is therefore imperative that permitting authorities revise their approach accordingly. For example, at least one component in the first phase (rail access) now also has a direct connection to uses (including biosolid processing) that are being contemplated in future phases. In this broader context, it does not make sense to treat <u>any</u> Phase I component in isolation.

It is therefore wrong and irresponsible to provide a Waiver for certain aspects of the proposed expansion and allow the facility to be effectively approved piecemeal by the state, without adequate analysis and an understanding of the cumulative impact of the project as a whole. On behalf of local residents and businesses, I urge MEPA to refrain from approving any Waivers and instead mandate a full Environmental Impact Report be completed before any state decisions are made on any aspect of development at the site.

Thank you for this opportunity to express my opposition to the Waiver and the project more generally.

Sincerely,

Jon Mitchell

CC: Energy & Environmental Affairs Secretary Kathleen Theoharides
MassDEP Commissioner Martin Suuberg
Senator Mark Montigny
Representative Paul Schmid
Representative Christopher Hendricks
New Bedford City Council
New Bedford Planning Board

Czepiga, Page (EEA)

From:	Buckley, Deirdre (EEA)
Sent:	Wednesday, May 15, 2019 1:05 PM
To:	Czepiga, Page (EEA)
Subject:	FW: Parallel products of New Bedford

-----Original Message-----
From: Schwalbert, Nick (EEA) <nick.schwalbert@mass.gov> On Behalf Of internet, env (EEA)
Sent: Wednesday, May 15, 2019 1:01 PM
To: Buckley, Deirdre (EEA) <deirdre.buckley@mass.gov>
Subject: FW: Parallel products of New Bedford

Sending your way per Sarah's request.

Nicholas Schwalbert
617-626-1022

-----Original Message-----
From: Donna [mailto:dmpeko@comcast.net]
Sent: Wednesday, May 15, 2019 11:07 AM
To: internet, env (EEA)
Subject: Parallel products of New Bedford

I am writing as I believe the site description in EEA #15990 is deceiving. It does not reflect the hundreds of single family home east of Phillips road. It describes a site surrounded by industrial sites.
It also states that glass processing is limited to enclosed building. Glass processing is occurring under a canopy and residents whose home are only a few hundred feet away are already noting odors and noise issues.
I am writing to request your agency review this decision as well as deny phase 2 which would have a great affect on the adjacent neighborhoods.
Donna Poyant
39 Ridgewood Rd New Bedford MA 02745

Sent from my iPhone

Secretary of Energy & Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
Attn: MEPA Office

RECEIVED

MAY 02 2019

MEPA

RE: Parallel Products of New England, LLC

I am **strongly opposed** to the Parallel Products of New England, LLC Waste Transfer Station project at 100 Duchaine Boulevard, New Bedford, MA. We do not need this horrendous project in our neighborhood.

There is no good reason to impose a facility like this on a community that has plenty of capacity for the disposal of waste. We do not want to be the dumping ground of Southeastern Massachusetts. As a group we will use whatever means necessary to make sure our neighborhood is not dumped on!!

Sincerely,

Signature Robert E Charon

Name ROBERT E CHARON

Address 3913 ACUSHNET AVE
NEW BEDFORD MA

Czepiga, Page (EEA)

From:	Ron <rrcrt@aol.com>
Sent:	Sunday, May 05, 2019 11:55 PM
To:	antonio.cabral@mahouse.gov; chris.hendricks@mahouse.gov; christopher.markey@mahouse.gov; paul.schmid@mahouse.gov; william.straus@mahouse.gov; michael.moynihan@masenate.gov; mark.montigny@masenate.gov; Ian.Abreu@newbedford-ma.gov; Naomi.Carney@newbedford-ma.gov; Debora.Coelho@newbedford-ma.gov; Hugh.Dunn@newbedford-ma.gov; Brian.Gomes@newbedford-ma.gov; Dana.Rebeiro@newbedford-ma.gov; Linda.Morad@newbedford-ma.gov; Joseph.Lopes@newbedford-ma.gov; Brad.Markey@newbedford-ma.gov; Maria.Giesta@newbedford-ma.gov; Scott.Lima@newbedford-ma.gov; Jon.Mitchell@newbedford-ma.gov; kristine.arsenault@newbedfordma.gov
Cc:	Buckley, Deirdre (EEA); Schluter, Eve (EEA); Wixon, Josephine (EEA); Canaday, Anne (EEA); Patel, Purvi (EEA); Czepiga, Page (EEA); Strysky, Alexander (EEA); Flaherty, Erin (EEA); MEPA (ENV); TimC@parallelproducts.com; newbedford@parallelproducts.com
Subject:	Fwd: Attached letter ref Parallel Products, Inc.
Attachments:	Draft-Record-of-Decision-April-12-2019.pdf
Follow Up Flag:	Follow up
Flag Status:	Completed

Good morning

Please read the attached letter regarding Parallel Products and the Commonwealth of Massachusetts Environment and Energy. I was quite surprised when I read the letter in particular Page 3 Paragraph 2 which is copied below.

The Proponent consulted with MassDEP and the MEPA Office regarding the enhanced outreach requirements of the EJ Policy. The Proponent published Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times (respectively) in addition to the New Bedford Standard Times. The Proponent also notified the following organizations of the project and MEPA scoping session and provided them with a copy of the EENF: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village. These were identified as EJ leaders based on consultation with MassDEP. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF. The comment period commenced on February 20, 2019 and concluded on April 5, 2019. I accepted all late comments as allowed in accordance with 301 CMR 11.06(3). A MEPA site visit and scoping session was held on March 7, 2019. Spanish and Portuguese translation services were provided at the MEPA scoping session.

Just wondering if any of the City and State Officials knew about this meeting? If so, why wasn't the residents in the area invited or made aware of this meeting?

Why were the Coalition for Social Justice, Alternatives of Community & Environment, Hands Across the River Coalition, and Old Bedford Village invited?

Also read that the company wants the state to give $500,000 for a side rail line to the property. This company is privately owned, why should we the taxpayers pay for a side rail line for the Parallel Products, Inc.? We are unable to get a commuter rail line from New Bedford to Boston although the state is working on it, lol.

We the residents/taxpayers, which I have been in contact with many, in the area deserve another meeting to be held at the Pulaski School, Parallel Products, Inc. should post at their expense in all news media a notice of such meeting, and being in large print. Hopefully Mayor Mitchel would be able to attend this meeting, sadly he was unable to attend the April 29th meeting.

Again, I would like to know if anyone of the City Officials, or State Officials knew about this meeting, I would like to hear from City and State Officials, that is if anyone is willing to respond.

My E-mail address is: RRCRT@aol.com

Respectfully,

Ron R. Cabral
67 Blaze Road
New Bedford, MA 02745

EENF - CERTIFICATE

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Matthew A. Beaton
SECRETARY

The Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

April 12, 2019

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Parallel Products of New England
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: Parallel Products of New England, LLC
DATE NOTICED IN MONITOR	: February 20, 2019

Pursuant to the Massachusetts Environmental Policy Act (MEPA; G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** an Environmental Impact Report (EIR). I am declining to allow a Single EIR as requested by the Proponent. The Proponent must submit a Draft EIR (DEIR) in accordance with the Scope provided in this Certificate. In a separate Draft Record of Decision (DROD), also issued today, I **propose to grant** a Waiver that will allow the proponent to proceed with Phase 1 of the project prior to completing the MEPA process for the entire project.

Project Description

As described in the ENF, the project includes the phased construction of a glass recycling/processing facility; a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste; and a biosolids drying facility that will accept 50 dry tpd of biosolids. Phase 1 includes construction of a glass recycling/processing facility within a 27,500-square foot (sf) building, construction of a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of a 1.9 megawatt (MW) solar photovoltaic (PV) array. The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks to shipment for bottle manufacturers. Phase 1 is proposed to meet an immediate regional need for glass processing in the region by providing an alternative market for glass that would otherwise be disposed.

Phase 2 includes construction of the MSW and C&D transfer station and the biosolids drying facility and extension of the RR sidetrack to service these facilities. Phase 2 will construct a 50,000-sf waste handling building which will be connected to an existing 103,000-sf building. The larger building will house processing equipment which will remove waste ban items and separate out recyclable materials. It also includes construction of a stand-alone 30,000-sf building to house the biosolids processing equipment. Biosolids processing will consist of drying the biosolids to reduce the volume and tonnage of the material prior to off-site disposal. Shipment of all outbound material will primarily occur via rail car.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south, and a rail line and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue to the project site. The site also contains 1.5 MW of solar PV mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility. The site has adequate area to support truck movement and access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway) via Braley Road or Phillips Road.

Wetland resource areas in the vicinity of the project include Bank, Bordering Vegetated Wetlands (BVW), Land under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

According to the EENF, potential environmental impacts of Phase 1 include alteration of 4.6 acres of land, creation of 21,780 sf of impervious area, generation of 108 new average daily vehicle trips (adt), consumption of 150 gallons per day (gpd) of potable water, and generation of

150 gpd of wastewater. Phase 1 will impact BVW (4,087 sf), Bank (36 linear feet (lf), and Riverfront Area (900 sf). The EENF describes commitments to avoid, minimize and mitigate environmental impacts associated with Phase 1 including: limiting all glass processing to an enclosed building; designing the RR crossing to reduce impacts to BVW and RFA; wetland replication; constructing the project on a previously altered site; use of rail to ship glass off-site; construction period erosion and sedimentation control measures; and generating renewable energy with solar PV systems.

Potential environmental impacts associated with full-build of the project include alteration of 8.8 acres of land; creation of 3.5 acres of impervious area; generation of 568 new adt (including employee trips), an increase in water demand of 13,000 gpd of potable water, and an increase in wastewater flow of 82,975 gpd of wastewater. The project will also generate GHG emissions associated with the project's energy use and trip generation. Measures to avoid minimize, and mitigate project impacts include constructing the project on a previously altered site; limiting all discharge and handling of solid waste to the enclosed tipping floor; limiting all biosolids processing to an enclosed building; use of rail to transport the majority of material from the site; installation of a floor drain collection system that drains to a holding tank to prevent groundwater contamination; erosion and sedimentation controls; stormwater management controls and implementation of Best Management Practices (BMPs) to minimize odor, dust, noise, and litter impacts.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires State Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol. The project is also subject to the Executive Office of Energy and Environmental Affairs' Environmental Justice (EJ) Policy.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 will require an Order of Conditions from the New Bedford Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP) and a new or amended Site Plan Approval from the New Bedford Planning Board.

The remainder of the project will require a Determination of Site Suitability, Authorization to Construct, and Authorization to Operate and may require a Limited Plan Approval (LPA) from MassDEP and a NPDES General Permit (GP) for Construction and/or Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity from the U.S. Environmental Protection Agency (EPA). The project will also require a number of local permits from the City of New Bedford, including: Site Assignment from the Board of Health, a new and/or Amended Order of Conditions from the Conservation Commission, and a new and/or amended. Site Plan Approval from the Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Phase 1 Waiver Request

The Proponent submitted an EENF in support of its request for a Phase 1 Waiver, which would allow Phase 1 of the project to proceed prior to completion of the EIR for the entire project. Consistent with this request, the EENF was subject to an extended 30-day public comment period. At the Proponent's request, the comment period was extended for an additional two-weeks and closed on April 12, 2019.

The MEPA regulations at 301 CMR 11.11(1) state that I may waive any provision or requirement in 301 CMR 11.00 not specifically required by MEPA and may impose appropriate and relevant conditions or restrictions, provided that I find that strict compliance with the provision or requirement would:

(a) result in an undue hardship for the Proponent, unless based on delay in compliance by the Proponent; and
(b) not serve to avoid or minimize Damage to the Environment.

The MEPA regulations at 301 CMR 11.11(4) state that, in the case of a partial waiver of a mandatory EIR review threshold that will allow the Proponent to proceed with Phase 1 of the project prior to preparing an EIR, I shall base the finding required in accordance with 301 CMR 11.11(1)(b) on a determination that:

(a) the potential environmental impacts of Phase 1, taken alone, are insignificant;
(b) ample and unconstrained infrastructure facilities and services exist to support Phase 1;
(c) the project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated; and
(d) the agency action(s) on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

Single EIR Request

The Proponent submitted an EENF and requested that I permit the filing of Single EIR, rather than a Draft and Final EIR. A Single EIR may be allowed, provided I find that the EENF: a) describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope; b) provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and, c) demonstrates that the planning and design of the Project use all feasible means to avoid potential environmental impacts.

Review of the EENF

The EENF included a detailed project description, an alternatives analysis, existing and proposed conditions plans, and information regarding traffic impacts, noise impacts, air and odor impacts, and GHG emissions. The Proponent provided supplemental information to the MEPA Office regarding Phase 1, existing operations at the project site, and wetland impacts to facilitate MEPA review.[1] For purposes of clarity, references to the EENF in this Certificate include this supplemental information. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF.

The project exceeds solid waste and wastewater threshold and is located within one mile of a designated Environmental Justice (EJ) community. The Proponent consulted with MassDEP and the MEPA Office regarding the enhanced outreach requirements of the EJ Policy. The Proponent published Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times (respectively) in addition to the New Bedford Times. The Proponent also notified the following organizations of the project and MEPA scoping session and provided them with a copy of the EENF: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village. These were identified as EJ leaders based on consultation with MassDEP. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF. The comment period commenced on February 20, 2019 and concluded on April 5, 2019. I accepted all late comments as allowed in accordance with 301 CMR 11.06(3). A MEPA site visit and scoping session was held on March 7, 2019. Spanish and Portuguese translation services were provided at the MEPA scoping session. As noted above, the Proponent will hold a public meeting in early May which will provide another opportunity for public participation and outreach.

I have received numerous comment letters that identify concerns regarding the project and public outreach. During the MEPA review period, the Proponent also agreed to hold a public meeting which will provide the community with an additional opportunity to learn about and comment on the project. The meeting is proposed to be held during the evening at the Pulaski School in the north end neighborhood of New Bedford. It is proposed to be held in early May although a final date has not been selected. Once scheduled, the Proponent will publish notice of the meeting in the Standard Times and will notify the above referenced EJ groups. The Proponent has also created a website (http://parallelproductssustainability.com) which provides information on the project and will be updated to include renderings of the proposed project.

Comments from State Agencies generally support the Phase 1 waiver request. In addition, comments from MassDEP note the important role that the Phase 1 project plays in supporting the alternative market for collecting and diverting glass from disposal. I have also received numerous comment letters from the City, abutters, and other stakeholders that express concerns regarding noise, odor, and traffic and identify the need for additional public engagement. I note that MassDEP's Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00) and Solid Waste Regulations (310 CMR 19.00) require that facilities be designed and constructed to prevent pollution of land, air and water, and to prevent the creation of nuisance conditions. The

[1] Emails from Whitney Hall (Green Seal Environmental Inc.) to Page Czepiga (MEPA Office) sent 3/5/19, 3/11/19, and 4/2/19.

Scope for the DEIR requires additional public outreach and analysis of project impacts to demonstrate that the project will not disproportionately affect EJ communities. It also requires that the Proponent provide information that addresses the applicable Site Assignment and Solid Waste regulatory approval criteria to support MassDEP permitting.

Alternatives Analysis

The EENF identified the criteria the Proponent used to evaluate the following potential sites in New Bedford: Site A- 100 Duchaine Boulevard (71 acres), Site B – 1080 Shawmut Avenue (3.6 acres), and Site C – 781 Church Street. According to the EENF, all three sites are located in industrial zoned areas, are located adjacent to a rail line, and would comply with MassDEP siting criteria established for the waste handling area of solid waste handling facilities. According to the EENF, Site B was not large enough to accommodate a waste handling building and a rail side track of sufficient length necessary for the required rail service. The EENF indicated that Site C could accommodate a waste handling building and sufficient rail side track. According to the EENF, Site C was eliminated as it would require trucks accessing the site to pass numerous residences and the New Bedford Vocation Technical High School. According to the EENF, Site A was selected as the Preferred Alternative as it is located in an existing industrial park, has adequate space to accommodate a waste handling building and rail side track of sufficient length, has good access to high-capacity roads and highways, and will avoid routing trucks through residential areas or past schools.

Solid Waste

The Proponent has been operating a glass, aluminum, and plastics container recycling operation at 969 Shawmut Avenue in New Bedford since 2008. The Proponent intends to relocate all recycling operations from 969 Shawmut Avenue to the project site as part of Phase 1. Comments from MassDEP indicate the Proponent holds a General Permit for its recycling operations and submitted Annual Certification on May 11, 2018, as required by 310 CMR 16.04. I refer the Proponent to MassDEP's comments which provide guidance on the annual certification requirements. Phase 2 will be regulated in accordance with MassDEP Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00) and Solid Waste Facility Regulations (310 CMR 19.00). The EENF included a detailed description of project operations and a preliminary site suitability application (BWP SW 01) which addresses how the project will meet MassDEP Site Suitability Criteria. The criteria include avoiding handling of waste in areas contributing to ground or surface water supplies or in the Riverfront Area, setbacks from residential areas, minimizing impacts to traffic and air quality and avoiding, or minimizing impacts to other sensitive resources including agricultural land, rare species habitat, Areas of Critical Environmental Concern (ACEC) and open space. According to the draft Site Suitability Application included in the EENF, the project design and location conform with the criteria. I refer the Proponent to comments from MassDEP which identify additional information necessary to demonstrate consistency with the criteria.

As described in the EENF, MSW, C&D, glass, and biosolids will be delivered to the facility by truck between 6:00 AM and 6:00 PM, Monday through Saturday. Biosolids delivery may also occur on Sunday between 6:00 AM and 6:00 PM. The facility will receive C&D, baled

MSW, and loose MSW in live floor trailers, transfer trailers, and packer trucks (respectively). Trucks will be weighed on a truck scale and backed into the 50,000-sf waste handling building to tip their load. Processing equipment and manual picking lines will remove waste ban items from the mixed waste and separate other recyclable materials for recycling or diversionary uses. Extracted recyclables will be sent to recycling markets by rail or truck and residual waste will be baled, shrink-wrapped, and transported via rail to off-site disposal. All biosolids processing will be done within a separate enclosed building with two odor control systems. The facility will accept both dewatered cake biosolids and thickened wet slurry biosolids. Wet slurry biosolids will be stored in tanks until they are dewatered via centrifuge or screw press. The dewatered biosolids cake will be blended with other biosolids cakes and directed to a thermal dryer that utilizes a natural gas burner. The biosolids will be dried to approximately 90% solids and sent for disposal via railcar or truck.

The following BMPs were incorporated into the project design to minimize potential impacts to the site and surrounding environment:

- All tipping, handling, and loading of MSW/C&D and all biosolids processing will occur within fully enclosed buildings;
- Tipping floor will be constructed of impervious concrete and include a floor drain collection system that drains to a holding tank to prevent contamination of groundwater;
- Use of a fine atomized misting system within the MSW handing and processing buildings to control fugitive dust and odor;
- Regular daily clean-up and sweeping to control fugitive dust on external paved surfaces;
- Use of a negative pressure air collection system, wet scrubber, and ionization system to reduce odors from the biosolids facility; and
- Designing building stacks with adequate heights and exit velocities to facilitate air dispersion.

Demolition of existing buildings will generate C&D waste, portions of which may contain asbestos. Removal or abatement of regulated asbestos-containing material must be completed consistent with the requirements of 310 CMR 7.00. I encourage the Proponent to incorporate C&D recycling activities into project plans and refer the Proponent to MassDEP's comment letter which provides regulatory guidance on Asphalt, Brick, and Concrete (ABC) recycling and processing.

Environmental Justice

Because the project exceeds MEPA EIR thresholds for wastewater and solid waste and is located within one mile of an EJ Community, it is subject to the EEA EJ Policy and requirements for enhanced public participation and enhanced analysis of impacts and mitigation. The EJ Policy was designed to improve protection of minority and low income communities from environmental pollution as well as promote community involvement in planning and environmental decision-making to maintain and/or enhance the environmental quality of their neighborhoods. The Proponent's outreach efforts and the enhanced outreach requirements of the

EJ Policy were identified earlier in this Certificate. The EENF identified one census block group designated as an EJ community (i.e. 25% or more of the residents area are minority) that is located within one mile of the project. The EENF included an "Environmental Justice Analysis" (Appendix J) which provided an assessment of baseline public health conditions, analysis of potential air impacts, and measures to avoid, minimize, and mitigate said impacts. It included an evaluation of the baseline health of the EJ communities in the broader area surrounding the project site using data from the Department of Public Health's (DPH) Environmental Public Health Tracking website. The analysis reviewed cancer data (from 2000 to 2013), the incidences of asthma (from 2000 to 2014), acute myocardial infarctions (AMI) (from 2000 to 2014), and Chronic Obstructive Pulmonary Disease (COPD) (from 2000 to 2014).

The analysis found that occurrences of these issues vary in the surrounding area with New Bedford having rates above the statewide average and Acushnet and Dartmouth having rates similar to or lower than the statewide average. Based on the results of the air quality dispersion model, the EENF concluded that the project will comply with all health-protective standards and will not cause or contribute to any health-protective exceedances of air quality concentrations. Specifically, the project will not exceed NAAQS/MAAQS which were established to "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly" or MassDEP's AALs and TELs which were developed to evaluate potential human health risks from exposures to airborne chemicals. Comments from MassDEP identify concerns regarding adverse impacts to proximate sensitive receptors (two schools and a daycare) and request an expanded discussion of potential project-related impacts to these sensitive receptors.

Wetlands/Stormwater

The Proponent provided supplemental information to the MEPA Office to clarify a slight reduction in wetland impacts based on plan refinements that occurred after the EENF was submitted.[2] According to this supplemental information, Phase 1 will impact BVW (4,087 sf), Bank (36 lf), and Riverfront Area (900 sf). Remaining development, which will be addressed in the DEIR, will not impact wetland resource areas. The New Bedford Conservation Commission will review Phase 1 to determine its consistency with the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including the Stormwater Management Standards (SMS). According to the EENF, all wetland impacts are associated with construction of the rail spur over a drainage swale and a BVW crossing. The EENF indicated the Proponent will provide wetlands replication to mitigate impacts to BVW. Comments from the City indicate they will require mitigation at a 1.5:1 ratio of mitigation to impacts. I anticipate that the Proponent will coordinate closely with the City Conservation Agent to provide appropriate wetland replication while reducing tree clearing. I refer the Proponent to comments from the City that note an outstanding compliance issue that must be remedied prior to the commencement of site work.

The following measures were incorporated to reduce wetland impacts: crossing perpendicular to the swale and BVW to minimize the impacted area, installation of a box culvert

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[2] Emails from Whitney Hall (Green Seal Environmental Inc.) and Christian Farland (Farland Corp.) to Page Czepiga (MEPA Office) sent 4/2/19 and 4/8/19, respectively.

within the alignment of an abandoned bridge to cross the swale, locating the swale crossing within previously disturbed soils, aligning the BVW crossing so a portion of the crossing can be constructed on an isolated area of uplands within the wetland, and use of retaining walls (in-lieu of sloped embankments) to construct the BVW crossing to reduce wetland impacts. Comments from MassDEP request additional consideration of alternative designs that will further reduce impacts to wetland resource areas. In an email dated March 29, 2019, the Proponent prepared a response to MassDEP's comments which elaborated on crossing structures considered for the site and confirmed that the crossings will comply with MA Stream Crossing Standards. Supplemental comments from MassDEP identify additional information that should be provided during permitting, including an expanded analysis to address the applicable Riverfront Area performance standards and information to demonstrate the project's compliance with the MA Stream Crossing Standards and support its designation as a Redevelopment Project per at 310 CMR 10.58(5).

The existing stormwater management system includes a series of catch basins, detention ponds, and subsurface infiltration systems. According to the ENF, the existing stormwater management system will continue to serve the site as the project will not significantly increase impervious area or result in significant changes to site drainage or topography. Comments from MassDEP note that components of the stormwater management system may be subject to the *Underground Injection Control* (UIC) program and provide guidance on NPDES permitting.

Transportation/Traffic

The EENF included a Traffic Impact and Assessment Study (TIAS) which was performed in general conformance with MassDOT/EEA's Guidelines for *EIR/EIS Traffic Impact Assessments.* Comments from MassDOT indicate the study area is adequate for capturing the traffic impacts of the project. The TIAS concluded that Phase 1 of the project will generate approximately 108 new trips per day (54 vehicles entering and 54 vehicles exiting). Full-build of the project will generate 418 new truck trips per day (209 truck trips entering, 209 truck trips existing). In addition, employees will contribute approximately 150 vehicle trips (75 entering, 75 exiting) for a total of 568 vehicle trips accessing the site on an average weekday. Trip generation was calculated based on empirical data collected from a similar solid waste facility in Rochester, MA. The Proponent anticipates shipping all outbound material by rail. To provide a conservative analysis, the trip generation calculations assumed all outbound material would be transported by truck. The planned use of rail for outbound shipment would reduce trip generation by approximately 110 trips per day. I refer the Proponent to comments from MassDOT and the City which request the Proponent commit to and implement a Transportation Demand Management (TDM) program to reduce trip generation. Comments from MassDOT also identify bus stops located in close proximity to the site and encourage the Proponent to design access roads in accordance with Complete Street standards to facilitate opportunities to walk and bike to the site and proximate transit connections.

The TIAS included a summary of study area crash rate data for the five year period of 2011-2015 which identified two unsignalized intersections[3] that exceed the MassDOT-District 5

[3] The two intersection locations are: 1) Braley Road/Theodore Rice Boulevard at Phillips Road and 2) Theodore Rice Boulevard at Duchaine Boulevard.

and state-wide average rates. Comments from MassDOT indicate that the additional traffic volume generated by the project is not expected to significantly impact safety at these intersections. According to the TIAS, there are no Highway Safety Improvement Program (HSIP) high crash cluster intersections within the study area. The TIAS included capacity analyses at study area intersections for the weekday morning (AM) and evening (PM) peak hours for 2018 Existing, 2025 No-Build, and 2025 Build conditions. The addition of project-generated traffic will cause certain turn movements to experience slightly increased delays compared to the 2025 No-Build conditions. The TIAS indicated the delays are generally not significant to impact the LOS and noted that the impacted locations will continue to operate under capacity in 2025 Build Conditions.

Greenhouse Gas Emissions

The EENF included a GHG analysis consistent with the MEPA GHG Policy (the Policy). The Policy requires projects to quantify carbon dioxide (CO_2) emissions and identify measures to avoid, minimize, or mitigate such emissions. The analysis quantified the direct and indirect CO_2 emissions associated with the project's energy use (stationary sources) and transportation-related emissions (mobile sources). I note the City of New Bedford is a designated Green Community under the provisions of the Green Communities Act of 2008. As such, the City has adopted the Commonwealth of Massachusetts' Stretch Code (SC).The project will be required to meet the applicable version of the SC in effect at the time of construction. The SC requires at least a 10-percent reduction in energy use compared to the base Building Code requirements. Stationary sources were evaluated using equipment assumptions and and excel spreadsheets. Mobile GHG emissions were estimated using information from the TIAS, MOVES CO_2 emission factors, and followed the standard methodology outlined in MassDEP's *Guidelines for Performing Mesoscale Analysis of Indirect Sources* (May 1991). Mobile source emissions were calculated for local on-road process truck deliveries, employee vehicle trips, onsite and offsite idling, and the use of front-end loaders for glass and MSW/C&D handling.

The GHG analysis evaluated CO_2 emissions for two alternatives as required by the Policy including: 1) a Base Case compliant with the 9th Edition of the Massachusetts Building Code , and 2) a Preferred Alternative (Mitigation Alternative) that incorporates additional energy saving measures. The 9th Edition of the Building Code references the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2013 and the International Energy Conservation Code (IECC) 2015. The EENF indicated that the equipment for processing the glass and MSW/C&D is industry standard and would not differ from the base case scenario. It also indicated that the glass recycling and MSW/C&D processing buildings will be unconditioned spaces. Based on this, the GHG analysis for the glass recycling and MSW/C&D processing facilities was limited to the energy use associated with their buildings, specifically the lighting demands. Similarly, the GHG analysis for the biosolids processing facility was limited to the energy use associated with lighting, ventilation, and heating demands. The EENF identified those measures that will be incorporated into the project design, measures that were dismissed as infeasible or inappropriate, and measures that will be studied further during advanced design stages.

The Proponent has committed to incorporate the following measures to reduce GHG emissions:

- Installation of 1.9 MW of solar PV via canopy (carport and shed) and rooftop arrays during Phase 1 (in addition to existing 1.5 MW on-site PV array);
- Reduced Lighting Power Densities (LPD) to achieve a 10% reduction over Code requirements in all buildings;
- Construction of all new buildings as solar PV-ready with appropriate structural capacity and space allocations for solar PV arrays;
- Energy-Efficient condensing boiler for heating the biosolids processing building; and
- Construction waste recycling.

Because the project is at a conceptual design level, the Proponent has an opportunity to consider incorporation of additional GHG reduction measures. As recommended by DOER, the Proponent should consider a further reduction in LPD and the use of cold-climate heat pumps to provide space heating in the biosolids processing building. I acknowledge and appreciate the Proponent's commitment to renewable energy which will assist the Commonwealth in meeting its overall GHG reduction goals stated in the Global Warming Solutions Act of 2008. The Proponent has installed 1.5 MW of solar PV at the site and will install an additional 1.9 MW of solar PV in Phase 1. Installation of the 1.9 MW solar PV array will generate 2,499 MWh/year and result in a GHG reduction of 907 tpy. The combined 3.5 MW array will generate 4,543 MWh/year for a total GHG reduction of 1,647 tpy.

The EENF evaluated and quantified the GHG reductions that could be achieved by implementing the following measures in the biosolids processing facility: advanced vacuum drying technology (2,393 tpy) and variable frequency drives (VFDs) in the ventilation system (36 tpy) and process motors (211 tpy). The EENF indicated the Proponent cannot guarantee these GHG reductions as they were based on conceptual engineering estimates and/or vendor representations. Based on this, these additional measures were not included as GHG mitigation commitments. It is unclear whether they will be incorporated into the project. This should be addressed in the DEIR. The EENF also indicated that the Proponent is evaluating gasification of dried biosolids for a later stage of the project. Gasification is not proposed at this time. If the Proponent intends to incorporate gasification into the project at a later date, it would be subject to a Notice of Project Change (NPC) to the MEPA Office and additional review, permitting and air quality analysis.

Phase 1 stationary source CO_2 emissions were estimated at 102 tpy in the Base Case. Adoption of energy efficient lighting will reduce stationary source CO_2 emissions by 10 tpy, for a total of 92 tpy or a 10% decrease. Installation of the 1.9 MW solar PV array will reduce GHG emissions by 907 tpy. The EENF indicated the estimated number of new trips associated with the Phase 1 project (108 new trips) is not anticipated to generate a significant level of mobile source GHG emissions. To be conservative, the EENF did not take credit for the reduction in mobile source emissions associated with shipping outbound materials by rail instead of trucks or the reduced travel from trucks transferring materials from their point of origin within the greater New Bedford area to more distant facilities. The GHG emissions (Table 7 of Appendix C) for full-build of the project are summarized below.

	BASECASE	PROPOSED	DIFFERENCE	
			TPY	%
MOBILE SOURCE EMISSIONS	**3,377**	**3,377**	**0**	**0**
STATIONARY SOURCE EMISSIONS	**10,898**	**10,835**	**63**	**-0.58%**
Glass Recycling	*102*	*92*	-	-
MSW/C&D Processing	*314*	*282*	-	-
Biosolids Processing	*10,482*	*10,461*	-	-
1.9 MW SOLAR PV		-907	-	-
TOTAL	**14,275**	**13,305**	**970**	**-6.80%**

Air Quality

The project will require a Limited Plan Approval (LPA) from MassDEP to ensure that the project, and the facility as a whole, conforms to National Ambient Air Quality Standards (NAAQS) and the Massachusetts Ambient Air Quality Standards (MAAQS). MassDEP's permitting process may include a review to demonstrate compliance with the Best Available Control Technology (BACT) review. The EENF included an Air and Odor Analysis (Appendix D) which evaluated emissions associated with stationary combustion sources, mobile diesel equipment, dust from material handling, and potential odor sources. The analysis used the U.S. EPA's AERMOD air dispersion model to determine potential air quality impacts associated with the above emissions on proximate residential receptors. To be conservative, the analysis assumed all outbound shipment of material will occur via truck. The analysis quantified potential emissions from the project for nitrogen dioxide (NO_2), particulate matter up to 2.5 micrometers in size ($PM_{2.5}$), and MassDEP air toxics and compared them to the NAAQS and MassDEP's Ambient Air Levels (AALs) and Threshold Effect Exposure Limits (TELs).

The analysis also evaluated potential odors from MSW tipping and processing and biosolids processing. These were compared against the recommended odor concentration limit in MassDEP's "Draft Odor Policy for Component Facilities". The analysis identified the following measures to reduce air quality and odor impacts: wet scrubbing for air emanating from the biosolids dryers; ionization for oxidation of the air constituents emanating from the biosolids dewatering operations; and designing building stacks to facilitate air dispersion. Based on the results of the air dispersion modeling, predicted air pollutant, and odor concentrations are shown to be below the applicable NAAQS/MAAQS, MassDEP AALs and TELs at residences, and protective odor concentration criterion at residences. Based on this, the analysis concluded that the project as designed, will not cause or contribute to a condition of air pollution in the area.

Noise

The EENF included a Sound Level Assessment Report (Appendix D) which provided a description of the applicable noise regulatory requirements, a brief explanation of noise terminology, a summary of the results of the complete ambient sound level monitoring program, and a discussion of the sound level modeling analysis for the proposed project. The EENF also discussed the project's consistency with the MassDEP Noise Policy. The primary noise sources of the project include MSW/C&D tipping and handling, ventilation equipment, outdoor front-end loader at the glass handling building, process ventilation equipment at the biosolids building, and four cooling towers. The project and majority of on-site equipment will operate 24 hours/day and 7 days per week, with the exception of the outdoor front-end loader at the glass processing building which will operate from 7:00 AM to 10:00 PM. I refer the Proponent to comments from MassDEP which identify additional sound sources that should be incorporated into the analysis.

The MassDEP Noise Policy limits new noise-generating equipment to a 10-dBA (A-weighted decibel) increase in the ambient sound measured at the property line and at the nearest residences. The EENF provided a summary of the results from sound level modeling measured at four representative locations around the facility and within the community. The locations were selected to represent the closest sensitive receptors (primarily residential) surrounding the project site. The analysis identified the following measures that were incorporated into the project to reduce noise impacts: electric rail car pusher to move rail cars within the site, fan silencers or low noise exhaust fans on the biosolids building, silencer or low noise unit in the scrubber stack and quiet cooling towers or construction of a sound barrier wall (50-ft long by 15-ft tall) along the southern edge of the biosolids building to shield the residential area from the sound generated by cooling towers. With implementation of the proposed mitigation, modeled future daytime and nighttime sound levels from the project are predicted to increase the measured background sound levels by 3 to 8 dBA at all modeled residential receptor locations, thereby demonstrating consistency with the MassDEP Noise Policy limit. Modeling also indicates that the proposed project is not expected to create any "pure tone" conditions, as defined by MassDEP, when combined with existing background sound levels at any modeled receptor locations.

Water/Wastewater

According to the EENF, the project will increase water demand by 13,000 gpd and will increase wastewater flows from the site by 82,975 gpd. Wastewater generation is primarily associated with water removed from biosolids either by dewatering or by drying/condensing. The project will be served by municipal water and sewer infrastructure. Comments from MassDEP indicate the City has an EPA approved Industrial Wastewater Pretreatment Program (IPP). The Proponent should consult with the City to determine measures necessary to comply with the City's IPP. I refer the Proponent to comments from the City which requests analysis to determine whether existing infrastructure can accommodate and treat the wastewater flows. Comments from MassDEP encourage the Proponent to implement measures to reduce water consumption.

Conclusion

Based on review of the EENF, consultation with State Agencies, and a review of comment letters, I hereby require the Proponent to file a Draft EIR and Final EIR. The Scope below identifies additional information and analysis that should be provided in the DEIR to demonstrate that environmental impacts have been minimized, avoided and mitigated to the maximum extent feasible; to demonstrate that the project will not disproportionately an EJ community; and to provide information and analysis for permitting agencies to evaluate consistency with regulatory standards and to make associated Section 61 Findings.

In a separate DROD, also issued today, I propose to grant a Waiver that will allow the Proponent to proceed with Phase 1 of the project prior to completing the MEPA process for the entire project. The Phase 1 waiver is limited to the construction of a glass recycling/processing facility, a RR sidetrack from the main RR line to the glass processing facility, and a 1.9 MW solar PV array. The DROD addresses the project's consistency with the criteria for a Phase 1 Waiver and related conditions.

SCOPE

General

The EIR should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope. The majority of the EENF was comprised of the preliminary site suitability application with appended technical studies. This provided information for review by State Agencies and the public; however, the DEIR must contain a full and self-contained description and analysis of the project. It should provide additional narrative to explain and support the analysis of the project's impacts and mitigation, and extract relevant documentation and tables from technical appendices to supplement the narrative. The DEIR should include a comprehensive narrative with a separate chapter for each of the categories identified herein.

Project Description and Permitting

The DEIR should include a detailed description of the existing and proposed conditions, describe any changes to the project since the filing of the EENF, and should provide an update on Phase 1. The DEIR should include updated site plans for existing and post-development conditions at a legible scale. It should provide a brief description and analysis of applicable statutory and regulatory standards and requirements, and a description of how the project will meet those standards and provide an update on the state, federal, and local permitting process. The DEIR should provide an update that describes all of the enhanced public outreach efforts and meetings that have occurred since the EENF was submitted in accordance with the EJ Policy.

The DEIR should show areas of land alteration for buildings, roadways, parking, wastewater, water and stormwater infrastructure, lawns and landscaping, and other project components. The DEIR should describe the project's consistency with the City's current Master Plan and the Southeast Regional Planning and Economic Development District's (SRPEDD) current Regional Policy Plan. It should also include a discussion of the facility's role in achieving the Commonwealth's goals as outlined in MassDEP's Solid Waste Master Plan.

Solid Waste

The DEIR should include a narrative summary that describes how C&D, baled and loose MSW, and dewatered cake and thickened wet slurry biosolids, will be delivered, transferred from vehicles, processed, and shipped-off site. The DEIR should address the issues identified in the "Suitability Criteria" section of MassDEP's comment letter (dated March 22, 2019). The DEIR should include a narrative description and supporting figures that describes the movement of empty and full railcars on the site, including the new rail spurs and extended sidetrack. It should provide plans that show the waste handling area and associated 500-foot setback from residential properties, including the newer residences referenced in MassDEP's comments. Plans should also depict wetland resource areas in relation to the proposed waste handling area. The DEIR should address the project's consistency with applicable site suitability criteria. Comments from the City identify concerns regarding the explosion/combustion potential of dried biosolids. The DEIR should address this issue and identify associated mitigation measures, as appropriate. It should also describe contingency plans for processing biosolids if one or more dryer becomes unavailable.

Environmental Justice

In accordance with the EJ Policy, the Proponent must provide enhanced public outreach of the DEIR to EJ populations in New Bedford. Enhanced public outreach should include preparation and distribution of a fact sheet that provides a summary of the project, environmental impacts (including air quality), and public comment opportunities. The fact sheet should include photos of similar facilities (or direct individuals to a website to view renderings). The project fact sheet should be provided to the public library and City Hall; included on the project website; and provided upon request by residents. Prior to submitting the DEIR, the Proponent should contact the Toxics Action Center, EJ groups identified above, and the City's Planning Department for input on alternative media outlets and information repositories in which to provide notice of the DEIR. The Proponent should consult with the MassDEP's and/or EEA's Environmental Justice Director during preparation of the DEIR regarding the proposed circulation and participation plan to ensure compliance with the EJ Policy.

I have received numerous comment letters that identify concerns regarding the project and public outreach. As noted above, the Proponent will be holding a public meeting to discuss the project, its potential environmental impacts, and mitigation measures. The DEIR should provide a detailed update that describes all of the proponent's enhanced public outreach efforts and meetings that have occurred since the EENF was submitted.

Comments from MassDEP identify concerns regarding adverse impacts to proximate sensitive receptors (two schools and a daycare) that are generally located within a one-mile radius of the project. Other comments identify concerns with potential mobile source emissions, air quality, noise, and odor impacts on vulnerable populations (children and the elderly). Because the project is sited within one mile of a designated EJ population, the DEIR should expand on the discussion of air dispersion modeling results provided in the EENF to identify the direction and extent of potential impacts and to inform development of effective mitigation measures. The DEIR should evaluate increased buffers between property lines and sources of noise/air emissions, increased plantings and vegetated buffers or other barriers to reduce potential impacts.

The EENF indicated that New Bedford has statistically higher rates of environmentally-related health outcomes, including asthma and COPD. The DEIR should discuss the current and future impacts that climate change (including extended periods of drought, and extreme temperatures) will have on air quality within the EJ populations. The DEIR should evaluate development of a plan to reduce air emission and odor impacts that will be implemented on days when the National Oceanic and Atmospheric Administration (NOAA) issues air quality alerts. In addition, the Proponent should consider implementing an air emissions monitoring plan to track the project's air emissions and identify thresholds which would trigger an evaluation of the need to implement additional mitigation to reduce air quality and odor impacts. The Proponent should also consult with MassDEP and the City's Health Agent to develop a system to log and track odor, noise, and dust complaints during the construction and operational phases of the project. The DEIR should describe the plan and how the community will be notified of the system.

Wetlands/Stormwater

During MEPA review of the EENF, the Proponent indicated project plans were refined to eliminate all wetland impacts associated with the remaining development. The DEIR should provide project plans and a supporting narrative that describes how the project was designed to avoid, minimize, and mitigate impacts to wetland resource areas. This narrative should also provide an update on Phase 1, including any design revisions that further reduced wetland impacts and the location and size (sf) of the wetland replication area. The DEIR should also provide plans that clearly identify new impervious areas and should evaluate all feasible methods to reduce impervious surfaces, including reduced parking ratios, narrow driveway widths, etc. The DEIR should describe the project's stormwater management system and provide conceptual plans identifying existing and proposed stormwater infrastructure. It should discuss how the project will comply with the requirements of applicable stormwater programs, including but not limited to MassDEP's SMS and NPDES GP and/or MSGP (as applicable). The DEIR should consider retrofitting the existing stormwater management system and incorporating additional low impact development (LID) measures to improve water quality.

Transportation/Traffic

Traffic accessing the site will travel through the Theodore Rice Boulevard/Braley Road at Phillips Road intersection in the easterly and westerly directions. This intersection operates as a 4-way stop sign-controlled location. The DEIR should provide revised traffic modeling to reflect this condition. It should provide information to demonstrate that vehicle queues will not block the proximate Route 140 off-ramps. Comments from MassDEP note that the Proponent must commit to limiting the maximum number of vehicles utilizing the site to that presented in the traffic study, or revise the traffic study to reflect the maximum proposed site traffic flow rate. The DEIR should address this and provide a revised traffic study, as necessary.

The DEIR should include a thorough evaluation of TDM measures to reduce site trip generation, including the measures identified in comments from MassDOT and the City. All feasible measures should be incorporated into a TDM plan for the project. The DEIR should include the draft TDM plan and a commitment by the Proponent to implement said plan. I encourage the Proponent to improve bicycle and pedestrian connectivity between the site and adjacent land uses, including proximate bus stops.

Greenhouse Gas Emissions

The FEIR should include a revised GHG analysis that includes the additional information and analyses requested in DOER's comment letter. The DEIR should clarify whether VFDs (for ventilation and process motors) and advanced vacuum technology will be incorporated into the biosolids processing building. If not included as mitigation commitments, the DEIR should provide supporting financial analysis or data to support the dismissal of these measures. The DEIR should clarify the planned code pathway and which two measures have been incorporated into the "Base Case" Scenario as required by Section C406.1 of the Building Code and/or should revise the GHG analysis accordingly. The DEIR should provide additional information on the construction type, building envelope, and space heating output of the biosolids processing building. As recommended by DOER, the revised GHG analysis should evaluate reducing LPD to achieve a 20% reduction over Code requirements in all buildings (vs 10% currently proposed) and the use of cold-climate heat pumps to provide space heating in the biosolids buildings. The DEIR should present the results of calculations used to establish the existing/baseline condition(s), the build condition(s), and the impact of proposed emissions-reduction mitigation. If the project does not incorporate additional reductions in LPD or cold-climate heat pumps, the DEIR should explain, in reasonable detail, why the use of these measures which could provide significant GHG reductions, were not selected. The Proponent should consult with DOER to confirm the approach of the GHG analysis prior to preparing the DEIR. The DEIR should also include a mobile source GHG analysis which has been updated to reflect any changes since the DEIR (as appropriate). The mobile source analysis should quantify the GHG reduction that could be achieved by shipping outbound material by rail instead of trucks.

Air Quality/Noise

The DEIR should include a revised sound analysis that incorporates the additional sound sources identified in MassDEP's comment letter. Prior to filing the DEIR, the Proponent should consult with DPH to identify additional measures that can be incorporated into the project to further reduce impacts to air quality and noise. The DEIR should provide an update on this consultation, including a thorough evaluation of the feasibility and benefits of the identified measures. The Proponent should commit to implementing any measures which are determined to be feasible. The DEIR should confirm the air permitting required by the project and provide an update on the air permitting process, including any BACT analysis.

Water/Wastewater

The DEIR should provide an update on consultations with the City regarding monitoring, metering, and pretreatment necessary to comply with the City's IPP. The DEIR should clarify whether the municipal wastewater infrastructure (including piping and pump stations) is adequate to accept and treat the additional flows from the project and/or should identify any necessary improvements. I refer the Proponent to the City's comment letter for additional guidance. The DEIR should include a draft spills contingency plan to address prevention and management of potential releases of oil and/or hazardous material. At a minimum, the spills contingency plan should address refueling of machinery, storage of fuels, and accidental releases. The DEIR should also identify measures incorporated into the project design to reduce the project's water demand.

Construction Period Impacts

The DEIR should describe construction methodology and sequencing, potential construction period impacts (including but not limited to traffic management, materials management, parking, air quality and noise impacts, and other items as they related to the construction period), and identify feasible measures that can be implemented to eliminate or minimize these impacts. This discussion may be prepared and presented in the DEIR as a draft Construction Management Plan (CMP). The draft CMP should include appropriate erosion and sedimentation control BMPs consistent with applicable NPDES Permit requirements. The project must comply with MassDEP's Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. c.40, §54. The DEIR should discuss the solid waste and air quality regulatory requirements identified in MassDEP's comment letter and identify the specific and aggressive construction recycling and source reduction goals the Proponent will adopt.

Because this project is located in close proximity to a designated EJ population, the Proponent should mitigate the construction period impacts of diesel emissions to the maximum extent feasible. This mitigation may be achieved through the installation of after-engine emission controls such as diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs), or the use of equipment that meets Tier 3 or Tier 4 emission standards for non-road construction equipment. The DEIR should address how the project will support compliance with the Massachusetts Idling regulation at 310 CMR 7.11.

Mitigation and Draft Section 61 Findings

The DEIR should include a separate chapter summarizing proposed mitigation measures. This chapter should also include draft Section 61 Findings for each State Agency that will issue Permits for the project. The DEIR should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation (either funding design and construction or performing actual construction), and contain a schedule for implementation. To ensure that all GHG emissions reduction measures adopted by the Proponent in the Preferred Alternative are actually constructed or performed by the Proponent, I require Proponents to provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above should be incorporated into the draft Section 61 Findings.

Response to Comments

The DEIR should contain a copy of this Certificate, and a copy of each comment letter received. Based on the large volume of form letters received, copies of form letters may be provided electronically. To ensure that the issues raised by commenters are addressed, the DEIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. A single response to form letters can be provided. This directive is not intended, and shall not be construed, to enlarge the scope of the DEIR beyond what has been expressly identified in this certificate. I recommend that the Proponent use either an indexed response to comments format, or a direct narrative response. Responses must specifically address each comment letter on the EENF; references to a chapter or extensive section of the DEIR are not adequate.

Circulation

The Proponent should circulate a hard copy of the DEIR to any State and City Agencies from which the Proponent will seek permits or approvals, and to any parties specified in Section 11.16 of the MEPA regulations. The Proponent must circulate a copy of the DEIR to all other parties that submitted individual written comments. In accordance with 301 CMR 11.16(5), the Proponent may circulate copies of the DEIR to these other parties in CD-ROM format or by directing commenters to a project website address. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. The Proponent should send correspondence accompanying the CD-ROM or website address indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. In addition, a hard copy of the DEIR should be made available for review at the New Bedford Public Library. The DEIR submitted to the MEPA office should include a digital copy (e.g., CD-ROM, USB drive) of the complete document.

Matthew A. Beaton

April 12, 2019
Date

Matthew A. Beaton

Comments received:

Form letters beginning "I am strongly opposed to the..." (1,013 received)
Form letters beginning "I strongly support the..." (two received)

03/08/2019	Tracy Wallace (1 of 2)
03/18/2019	Robert Ladino
03/22/2019	Massachusetts Department of Environmental Protection (MassDEP) (1 of 2)
03/26/2019	Roger Cabral
03/26/2019	Cheryl Souza
03/27/2019	Marlene Pollock
03/27/2019	Tracy Wallace (2 of 2)
03/27/2019	Wendy Graca
03/28/2019	Claire B.W. Miller, Toxics Action Center
03/29/2019	Massachusetts Department of Transportation (MassDOT)
03/29/2019	Jonathan F. Mitchell, Mayor, City of New Bedford
03/29/2019	Department of Energy Resources (DOER)
03/29/2019	Vincent Carolan

03/31/2019	Claudia Ostiguy
04/02/2019	Ron Cabral
04/02/2019	Carol Strupczewski
04/05/2019	MassDEP (2 of 2)

MAB/PRC/prc

Czepiga, Page (EEA)

From: cstrupczewski@verizon.net
Sent: Tuesday, April 02, 2019 9:33 AM
To: Czepiga, Page (EEA)
Cc: RRCRT@aol.com; cbostiguy@gmail.com; ritalapre@gmail.com; brad.markey@newbedford-ma.gov
Subject: EEA15990 Paralles Products

Paige Czepiga
Environmental Analyst
MEPA Office

First of all I want to thank and Secretary Matthew Beaton for the extension to April 5 for allowing residents to write their opposition for Parallel Products of New England plans for its expansion in the New Bedford Business Park with the future possibility of having a wastewater sludge facility.

My immediate concern is Phase I and its final step. If granted this will be devastating to the entire development of Pine Hill Acres more than 350 home, Heritage Estates, Long Built Homes, and Briarwood quality of life for more than a thousand residents. Presently, residents in Pine Hill Acres less than 500 feet for the facility are being awaken with loud noise at night, during the daytime, detection of odors in the neighborhood, and can clearly see the well-lighted outside holding stalls with materials in them from Phillips Road. Abutting the property, there are newly built homes.

As I drove on Phillips Road past the Parallel site at 10 p.m., I could clearly see down from the road the lighted open holding stalls which are less than 200 feet from the street. There are no trees, shrubs, privacy fence around the stalls.

The quality of life in this densely popular area is quickly changing for all of the residents from air to noise to traffic. Phillips Road is a two-lane street and can't take the traffic of heavy vehicles on it multiple times a day which will most likely happen as some trucks will take Exit 5 off of Route 140 to enter the southern area of the Business Park which is closer to the Parallel Products factory.

Please do not grant the Phase I step.

Carol Strupczewski
1075 Braley Road
New Bedford, MA 02745

508-995-6135

Czepiga, Page (EEA)

From: Cheryl Souza <clsouza@comcast.net>
Sent: Tuesday, March 26, 2019 8:06 PM
To: Czepiga, Page (EEA)
Subject: Parallel Products of New England

Ms Czepiga,

I have just learned about a project proposed for a location close to my home. I live at 80 Keene Road, in Acushnet, not far from the New Bedford Industrial Park. It has just been brought to my attention that Parallel Products of New England is proposing to bring a biosolid facility to the Industrial Park. I am a strong proponent of environmental cleanliness, and the company does present itself as an environmentaly concious company, however, there has definitely not been enough community outreach regarding the effects on neighbors and the environment they live in.

Parallel Products is also not being truly forthcoming, by denying their plan to implement the "gasification" of biosolids which is in their own words "cutting edge technology". Generally, cutting edge technology really means "we are making this up as we go along."

Please postpone the upcoming deadline for the public comment period, the company has not advertised their public forums, nor have they offered them at times the average working class person would be able to attend.

In addition, there is an annonymous campaign reaching out to the community with poorly written, blatantly false and repetitive flyers. The website for this campaign is http://stoptheparalleldump.com. It is not uncommon, in today's world, that corporations employ many ways to get their projects completed regardless of community interest. I believe the owner of that website should be brought to light, it could be Parallel Products themselves.

thank you for your time,

Cheryl Souza

80 Keene Road

Acushnet, Ma 02743

508-685-0330

CITY OF NEW BEDFORD
JONATHAN F. MITCHELL, MAYOR

March 29, 2019

Executive Office of Energy and Environmental Affairs (EEA)
Attention: MEPA Office
Paige Czepiga: EEA No. 15990
100 Cambridge St, Suite 900
Boston MA 02114

RE: EEA 15990: Parallel Products

Dear Ms. Czepiga,

I write to present the response of the City of New Bedford regarding Parallel Products of New England's (PPNE) proposed facility expansion project at 100 Duchaine Blvd. in our business park.

Given the facility's proximity to a densely populated residential neighborhood, I am troubled by the paucity of PPNE's outreach to public, and particularly to the abutting Pine Hill neighborhood. I believe strongly that there needs to be a much more robust public engagement effort that has been undertaken to date.

Moreover, I am not convinced that the preliminary impact analysis regarding potential noise, odor, and traffic is adequate given the stakes, and I would encourage MEPA to exercise its oversight authority to ensure that further study is pursued so that the decision-makers and the public alike can have greater confidence in the findings. In sum, unless and until PPNE is able to satisfactorily address reasonable neighborhood concerns in the areas of noise, odor, and traffic, I am not prepared to lend my support to the project.

In addition to my concerns regarding public engagement and neighborhood impacts, municipal departments have identified a number of specific operational/environmental issues with the proposed facility. These are enumerated below, and are based upon departmental reviews of the EENF submitted to the City of New Bedford in February 2019.

1) ***Land Use Impacts***

The project site is in the City's Business Park, a location established to accommodate most industrial uses. As such, the project site is meant to be buffered from the surrounding neighborhood which is residential to the east. If MEPA should allow the project to proceed, PPNE must be required to ensure that all impacts to this neighborhood are satisfactorily mitigated. This would include all potential noise, odor, or additional traffic impacts. It should be noted that the Land Section of the ENF Form was not completed. As the project is a redevelopment of a previously used industrial site, the responses in this section are not likely to have revealed any otherwise unidentified potential impacts.

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However, responses would have quantified the amount of land occupied for certain uses (buildings, parking areas, etc.) and would have identified the project's consistency with current City Master Plan and the current Regional Policy Plan of the Southeast Regional Planning and Economic Development District (the regional planning agency whose territory includes New Bedford). Previous environmental studies at the site included a Phase 1 Environmental Assessment and a Limited Subsurface Investigation, by SAGE Environmental. These reports are not included in the EENF, but a table of reported releases to the environment from the Phase 1 Environmental Assessment is provided, showing three releases reported to MassDEP between 1994 and 2008. All three were assigned Release Tracking Numbers (RTNs), and all three either had the RTN retracted or had audits completed. Six previous spills or releases were also identified, between 1978 and 1994, with minimal information on remedial actions.

2) ***Economic Development***

It is recognized that this project would entail a significant economic investment, which would bring a positive return to the City in increased tax revenue and water usage fees.

3) **Rail Infrastructure, Waste, and Energy Efficiency**

a) **Rail Infrastructure:** PPNE is proposing to add a rail stub in order to utilize rail as an option for shipping out waste materials after processing. This is an important component of the project and is seen as a benefit as it mitigates truck traffic which is already increased significantly.

This rail siding requires the crossing of a Bordering Vegetated Wetland (BVW) and a perennial stream with associated Riverfront area. The ENF states that less than 5000 s.f. of BVW will be impacted by the rail crossing. The plans show that retaining walls will be utilized to minimize wetland impacts from the rail crossing. The wetland boundaries in the vicinity of the crossings have not yet been verified by the Conservation Commission and therefore the square footage of Resource Area impacts cannot be confirmed. This should be provided.

Rail transport of outgoing material is identified as beneficial for many aspects of the project, including greenhouse gas emissions, other air pollutant emissions, efficient energy usage, and traffic considerations. However, rail transport is faced with uncertainties: The owner of the rail line is not identified; no mention is made of discussions with the railroad owner about installing the proposed rail spur; and MSW is proposed to be baled, wrapped, and shipped in gondola (open-topped) rail cars. At present, CSX, the largest railroad network in the eastern US, will only haul MSW in sealed intermodal containers on flat-bed rail cars. If this policy does not change, the facility must either pack MSW in sealed intermodal containers or ship it off site in trucks.

The project will be supported by a grant of $500,000 from the Massachusetts Department of Transportation's Industrial Rail Access Program. There is no mention of contingency if this financing does not come through.

b) **Waste:** The EENF states (erroneously) that the Crapo Hill Landfill is located in New Bedford, and that District member communities "*are not expected to utilize the proposed facility for MSW disposal.*" However, there may be an advantage to some dialog between the District (and/or its member communities) and the project's proponent, to consider some use of the proposed facility to prolong the life of Crapo Hill, and/or to address long range planning for when the Crapo Hill Landfill does close.

The proposed facility consists of three primary components: A glass bottle processing facility, to accept 200 tons per day (tpd) of glass bottles for crushing and shipment to end-users; A municipal solid waste (MSW) processing facility, that will accept 1,500 tpd for processing and transfer. The proponents expect to extract up to 20%, or 300 tpd, of material for recycling, and ship 1,200 tpd of waste for out-of-state disposal; A wastewater biosolids (sludge) processing facility that will accept 50 tpd dry weight (or up to 600 tpd wet weight), and ship dried product for end use or disposal. Inbound material will arrive by truck. Outbound material will be transported by rail, with some truck shipment as necessary. The waste shed area and waste sources are not identified, although District member communities are specifically noted as "not expected to use the proposed facility for MSW disposal" (Draft Site Suitability Application, pg 58).

i) Glass Facility: The glass processing facility is alternately described as replacing the proponent's existing glass "beneficiation" operation from their facility at 969 Shawmut Ave, New Bedford, but is also identified as "the relocation and upgrade of the glass recycling operation that Strategic Materials previously operated in Franklin, MA to the 100 Duchaine Boulevard site. The new glass recycling facility will be owned by PPNE and will be operated in conjunction with Strategic Materials" (Draft Site Suitability Application Narrative, p. 10.). The facility is proposed to receive 200 tpd of glass bottles collected through the Massachusetts bottle deposit system for crushing, sizing and separation by color, and shipment off site for re-use or disposal. The proponent's parent company is experienced in various aspects of product destruction and container processing.

ii) MSW Facility: As described in the EENF, the MSW facility is essentially a "Dirty Material Recovery Facility (MRF)", or a mixed waste processing facility, with a goal of extracting 20% of incoming material for recycling from raw waste. Such facilities are labor-intensive and face substantial worker safety challenges. They do not require any consumer or waste hauler separation of recyclable materials from waste and have largely fallen out of favor within the waste industry, displaced by single-stream recyclables collection and processing in a "Clean MRF". Massachusetts has devoted considerable effort into educating consumers and the waste industry about recycling and has for many years tried to encourage separation and recycling at all stages of the waste generation-collection-handling-disposal processes. Waste entering a "Dirty MRF" that has already been stripped of recyclable material will likely have a very low recyclables recovery rate. Operation of the MSW facility as described does not appear consistent with the general consensus of what the future of waste handling in Massachusetts should be. The MSW tipping (or receiving) building is 50,000 square feet, which appears adequate for the proposed tonnage; the tipping floor appears best configured for direct load of waste into intermodal rail cars. It appears likely the operation will target loads specific for processing and then move those loads into the processing facility, which appears to be insufficient at 103,000 square feet, for handling 1,500 tpd of mixed waste. For comparison, the E. L. Harvey Materials Recycling Facility in Hopkinton, Massachusetts, which is permitted for 600 tpd of single-stream recyclables or mixed waste, is 80,000 square feet in size.

iii) Biosolids Processing Facility: The biosolids processing facility is expected to receive and process 50 tpd dry weight of biosolids. At the low end of the range of solids content presented in the EENF, this will actually be 600 tpd of raw material. The proposed receiving and storage facilities for the thickened and dewatered biosolids appear to be adequately sized with appropriate redundancy. The building size of 30,000 square feet may be insufficient, unless an additional upper level is included. Very little detail is provided on the design for the railcar loadout system. Additionally, there is no mention of combustion and explosion mitigation measures associated with the dried biosolids. Dried biosolids are a known explosion hazard, especially during storage. Also, the dryer does not have a standby unit, and there is no mention of the impacts to the process if one or more driers become unavailable.

c) **Energy Efficiency:** PPNE is proposing to add an additional 1.9 MW of solar power in the form of PV panels to the already 1.5 MW generated onsite. This is a net Greenhouse Gas mitigation for the project and is a good use of the sites non-programmable rooftops.

The solar power component will need to be supported through the Solar Massachusetts Renewable Target (SMART) Program, and the requested Phase 1 MEPA waiver is "*imperative*" for SMART Program support. There is no mention of contingency if SMART program support does not come through.

4) **Traffic and Trip Generation**

a) ***Traffic/Trip Generation:*** PPNE has included a traffic impact study which states that the facility will generate 418 new truck trips per day (209 in/out) and 150 employee trips per day (75in/out). This is a significant increase over the existing conditions of 76 vehicle trips per day. To be conservative, this includes the contingency that all outgoing material will be by truck instead of by rail. Truck traffic in tons per load and in distribution throughout the day is estimated based on data from the SEMASS facility in Rochester, Massachusetts. Traffic from the existing NWD Trucking facility on the site is deducted, as this facility is expected to relocate.

Truck estimates appear to be accurate, except that the fraction from the biosolids component appears to be somewhat low (at the low range of solids content of the incoming material, each truck as presented would carry 30 tons, which is high). Facility traffic will be present from 6:00 am to 6:00 pm Mondays through Saturdays, with the biosolids component also creating traffic on Sundays. Only a small portion of the traffic is expected to occur during peak hours (7:30 am – 8:30 am, and 3:00 pm – 4:00 pm). Seven local intersections were studied, including Philips Road, Braley Road, the Route 140 exit ramps, and intersections within the Business Park. A 2025 "Build" scenario was projected to result in only two minor reductions in Level of Service at intersections.

It is recommended that PPNE describe Transportation Demand Management (TDM) strategies in effort to reduce the impacts associated with these trips, such as carpool and vanpool preferential parking designation, working with SRTA to locate transit service accommodations, shuttle services, bicycle parking accommodations, and other options. It would further be recommended that along with a traffic analysis the proponent should provide a report on how the added vehicle traffic would impact the road conditions and add to their maintenance.

5) ***Emissions, Odor, Sound***

a) ***Emissions, Odor:*** PPNE analyzed emissions associated with stationary onsite combustion sources, mobile diesel equipment, dust from materials handling, and potential odor sources (biosolids, MSW). Their plan proposes to avoid, minimize, and mitigate impacts to air quality and smell through the use of best industry practices, wet scrubbing and ionization. It goes on to state that National and State Ambient Air quality standards and standards for Air Toxics will not be exceeded 'in residential areas.'

As this project is located in an industrial area, we ask that PPNE clarify air quality impacts at the facility itself, particularly for the benefit of employees of PPNE who will be exposed to this air every day as well as the nearby neighborhood. The City should be able to peer review the air quality report at the time when PPNE returns to the planning board for a Site Plan modification in order to ensure the plant employees and residential neighborhood to the east of the site is protected from any toxics in the air.

b) *Sound:* PPNE analyzed sound levels associated with the proposed plant operations, taking into account sounds generated from tipping activities, fans and exhaust towers, and both indoor and outdoor activities. The project will be subject to Massachusetts State laws as administered by the DEP, which regulate noise under air pollution. The controls/mitigation include using an electric yard engine for moving rail cars within the site, employing low-noise air quality control and ventilation mechanisms such as fans and stacks, and a noise barrier wall between the biosolids cooling towers and residential area to the south. It would be recommended that the City peer review the sound assessment report at the time when PPNE returns to the planning board for a Site Plan modification in order to ensure the residential neighborhood to the east of the site is protected from excessive decibels or pure tone sounds.

6) ***Wetlands, Water Resources***

a) *Wetlands:* Wetland replication has not been shown on the plans. The Conservation Commission has a policy of requesting a 1 ½ to 1 ratio of wetland mitigation to wetland impacts. The wetland replication area should be constructed in an area that is currently developed or grassland such that mature upland trees in the 100' Buffer Zone do not need to be cut to facilitate the replication area. The Conservation Commission also has a policy of maintaining a 25' setback of undisturbed land between wetland resource areas and proposed development (with the exception of wetland crossings). Incursions into the 25' setback have been noted in several locations and it is hoped the plans can be redesigned to maintain an undisturbed setback.

b) **Water Resources:** It appears a portion of the new rail spur would cross through the high yield aquifer while the remaining rail siding, recycling, MSW and biosolids facilities would be within the medium yield aquifer. Long Term Pollution Prevention Plans shall be requested for each component of the facility. Spill control plans shall also be requested with respect to the diesel fuel for the rail cars and other on-site fuel facilities. The proponent should prepare a Pollution Prevention and Emergency Response plan for both the construction phase and normal operations that identifies potential contamination sources, threats of Hazardous Material and Hazardous Waste releases to the environment, describes material storage and handling details, containment and contingency plans for spill response, and documents regular inspection and employee education opportunities. Areas used for vehicle maintenance and loading docks should install a mechanical shut-off valve or other flow-arresting device between the catch basin or other stormwater-capture structure draining this area and the leaching structures.

7) **Wastewater and Stormwater**

a) *Wastewater:* PPNE is expected to use 13,150 GPD of water and will generate 83,125 Gallons Per Day (GPD) of wastewater (biosolids drying will be extracting water from the product). It is recommended that the proponent demonstrate through a groundwater study that the project will not have adverse impacts on groundwater levels or adjacent surface waters and wetlands. It has also recommended an infrastructure analysis be done that the proponent demonstrate the current piping and pump station is sufficient to handle the proposed new water and wastewater use. This would include the new loads impact to the wastewater treatment facility. This would determine if a pre treatment facility would be needed either on site or at the Industrial Park Pump station. The plant loadings should include nitrogen loads.

b) *Stormwater:* The rail siding also crosses a stormwater detention facility which was constructed under SE49-0738 to capture runoff from a construction stockpiling facility. This Order of

Conditions has expired and does not have a Certificate of Compliance. The applicant/owner shall be required to obtain a Certificate of Compliance prior to any other work commencing on site. Following this, the Notice of Intent for Phase I will have to modify the design of the stormwater facilities and stockpile area to accommodate the rail siding. Additionally, runoff from the idling MSW trucks and recycling trucks may contain trash which will enter into the stormwater system.

A plan for keeping the pavement clean and preventing the clogging of the stormwater facilities is needed. It is also of concern to the city that the plans seem to show removal of existing catch basins as well as serious increase in impervious areas. Also noted would be an explanation of how any contaminated run off from the waste areas will be dealt with.

In conclusion, in the course of the City's review it has become evident that many environmental considerations should be understood much better than they are at present and will require significant attention going forward. It is in this context that I encourage MEPA to require the proponent to issue an Environmental Impact Report. Only a continued robust program of impact analysis will put MEPA, the public, and state and local officials, in a position to decide if this particular project, at this particular location, makes sense for New Bedford, our region, and the Commonwealth. Thank you for your consideration.

Sincerely,

Jon Mitchell

CC: Energy and Environmental Affairs Secretary Matthew Beaton
Senator Mark Montigny
Representative Paul Schmid
Representative Christopher Hendricks
New Bedford Planning Board

Czepiga, Page (EEA)

From:	Claudia Ostiguy <cbostiguy@gmail.com>
Sent:	Sunday, March 31, 2019 2:18 PM
To:	Czepiga, Page (EEA)
Subject:	Additional Comment Period Extension

EEA No. 15990 Parallel Products of New England, New Bedford

Page Czepiga
Environmental Analyst
MEPA Office

Ms Czepaga,
I appreciate and thank you and Secretary Matthew Beaton, for the extension to accept comments expressing thoughts and concerns regarding the establishing of Parallel Products of New England in the North End of New Bedford.

It is my understanding that MEPA, establishes regulations and reviews thresholds for projects that are of a nature, size or location, likely to cause damage to the environment, directly or indirectly.

Residents from many housing developments, 2 Elementary Schools and businesses in the actual Business Park that Parallel is joining, were stunned to learn of this invasive industry popping up, seemingly overnight, in our area.

New Bedford, has struggled for decades in its attempt to be a clean city. We are well aware of environmental challenges that impact health, and quality of life issues.

At this time, our concern is Phase I, and the final step, the Environmental Impact Report. Should this certification be granted Phaze II, which would be an even greater challenge, would begin.

Parallel's site is in the south end of the Business Park, directly across from a residential housing development with over 300

homes. (NOTE: there are many other residential sites impacted as well.)
Since Parallel has established their facility at this site, the landscape that blocked view and access to the previous businesses has been severely altered. With the recent building of new homes that abut the Parallel property, the dense tree line and vegetation that once buffered the park and the main Street (Phillips Rd) and the housing development (Pine Hill Acres) has been reduced to a few trees.
You can see the plant.
You can see stalls filled with recyclables. You can see dozens of vehicles including front end loaders.
You can hear the disruptive noises.
There's a faint odor detected, which will most probably get worse as the warmer weather arrives and the work load increases.

We are informed that this industry will be processing six days a week from 6 AM - 6PM and possibly some Sundays.
This brings up not only the din from the plant, but brings up the issue of trucks, 18 wheelers in fact, which will be delivering 1,500 TONS of recyclables/MSW daily. This fleet will be taking Rte 140 South and Exit 7, Braley Road Exit, which leads into the Business Park. What you may not be aware of is that this exit, with 4 ramps, 2 on and 2 off is just West of an Elementary Magnet School. This area is already a huge logistical problem. Braley Road is impassible twice a day when the Pulaski School opens and closes. Buses, private vehicles, block the way so that Emergency Vehicles, should they be activated, have a difficult time getting through either to the Business Park or residential areas. There's also the Business Park traffic as well that adds to this frustrating problem. These tractor trailers may in all likelihood avoid Exit 7 and take Exit 5 which will have them take Phillips Road. This two lane street is not designed or able to take the load of heavy trucks and would directly travel by residential homes. Once at the plant, these trucks will sound back

up bell noises, powerful engine noises and the actual sound of dumping products.

Even before this project is completed, we have lost our peace of mind. We feel disrespected and neglected. Many of us have bought homes in this bedroom community with the thought of enjoying our homes inside and outdoors. Many are retired elderly. All our hard work and sacrifices to sustain and enjoy our homes will literally be erased with noise, air pollution and traffic jams. This is just the tip of the iceberg.

We were here first! We are being invaded and taken over. It's disheartening to learn that the powers that be are supporting 50 jobs over the welfare of thousands of taxpaying citizens.

I respectfully request that at this time, you do not give EIR Certification to Parallel Products of New England in New Bedford.

Parallel must inform our community directly of their plans. Give us this time to get educated before anything else moves ahead.

Sincerely,
Claudia Ostiguy
426 Valley Road
New Bedford, MA 02745
cbostiguy@gmail.com
508-995-7613

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
Telephone: 617-626-7300
Facsimile: 617-727-0030

Charles D. Baker
Governor

Karyn E. Polito
Lt. Governor

Matthew A. Beaton
Secretary

Judith F. Judson
Commissioner

29 March 2018

Matthew Beaton, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Parallel Products, New Bedford, Massachusetts, EENF #15990

Cc: Maggie McCarey, Director of Efficiency Programs, Department of Energy Resources
Judith Judson, Commissioner, Department of Energy Resources

Dear Secretary Beaton:

We've reviewed the Expanded Environmental Notification Form (EENF) for the above project. The proposed project consists of the following:

- 115,000-sf of lighted buildings for MSW tipping and glass processing;
- 30,000-sf of semi-heated, lighted, and ventilated building for biosolids processing.

The proponent is proposing the following improvements for GHG mitigation:

- Lighting power density reduction of 10% for all buildings;
- Heating efficiency improvement (from 85% to 90%) for biosolids processing building;
- Installation of 1.9-MW of additional solar PV.

The following requires clarification in the next submission:

- For all buildings, clarify the planned code pathway and which two of the six C406.1 measures are being included;

- For the semi-heated biosolids processing building, provide the following:
  - Information about building construction (metal building, metal-framed, etc);
  - Envelope information (both roof and walls): R-value for insulation between studs, stud spacing, and R-value of continuous insulation;
  - Space heating output per area (btu/hr-ft^2).

Our recommendations are as follows:

1. Evaluate reducing lighting power density to 20%.
2. Evaluate using cold-climate heat pumps for space heating for the biosolids buildings.
3. Provide a schedule for installation of the planned 1.9-MW solar PV system.

Sincerely,

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

Czepiga, Page (EEA)

From: Marlene Pollock <marlenepollock929@gmail.com>
Sent: Wednesday, March 27, 2019 8:32 AM
To: Czepiga, Page (EEA)
Subject: Parallel Products Project

Ms. Czepiga,
I am writing to ask you to delay any approval of this project, since it is a significant undertaking, yet there has been almost very little notice to people in New Bedford about it. I just found out about it and I am very active in the community, especially around environmental issues.

In addition, I understand that any meetings that have been held about this project have not been well publicized, nor at times to allow people to attend. There needs to be public hearings, with effective publicity through newspapers, radio, social media, etc. to let people know about these hearings, and to schedule them with enough notice at times that people can attend.

Please delay any procedures moving toward approval of this project until the public can fully find out about it and weigh in on it, especially those whose homes abut the project directly.

Sincerely,

Marlene Pollock

--
Marlene Pollock
Organizer
Coalition for Social Justice
New Bedford & Cape Cod
508-982-8751

Learn more about CSJ's work:
https://youtu.be/scwkT1Ic6ZY?list=PLkDkZsSMuETz_2Whez0pX8R-Q0tz102x7

MassDEP

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

March 22, 2019

Mathew A. Beaton,
Secretary of Environment and Energy
Executive Office of Energy &
Environmental Affairs
100 Cambridge Street, Suite 900,
ATTN: MEPA Office,
Boston, MA 02114

RE: ENF Review EOEEA #15990
NEW BEDFORD.Parallel Products of New England (PPNE) at 100 Duchaine Boulevard

Dear Secretary Beaton,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the Parallel Products of New England (PPNE) Project at 100 Duchaine Boulevard, New Bedford, Massachusetts (EOEEA # 15990). The Project Proponent provides the following information for the Project:

The Site is an industrially zoned, approximately 71-acre parcel, located within the New Bedford Business Park. The Site location and property boundaries are shown in Figure 1 using an aerial view. The Site was previously developed by Polaroid and already includes access roads, parking areas, and various buildings. Much of the existing infrastructure will be used in developing the proposed Project. New buildings will be constructed for glass processing, municipal solid waste (MSW) and construction and demolition (C&D) waste tipping, and biosolids drying.

PPNE is proposing to develop the Site in two phases. Phase 1 construction will consist of the construction of a glass processing building and equipment and construction of a rail sidetrack from the main line rail to the 100 Duchaine Boulevard Site. The glass processing area will consist of a 27,500 sf building to house the processing equipment.

Phase 2 of the Project includes the construction of a municipal solid waste (MSW) processing/handling facility and the biosolids processing facility. Currently, significant quantities of MSW and biosolids are being trucked out of state for treatment and disposal. PPNE will construct a facility to collect and process this material in Massachusetts and then ship the residual waste out of state by rail for disposal.

The processing proposed will also significantly increase transportation efficiencies and reduce greenhouse gas emissions. The proposed solid waste handling facility will accept up to 1,500 tons per

day of MSW delivered to the facility by truck. The proposed facility will process the MSW to extract recyclable material from the MSW. PPNE expects to recover and recycle approximately 20% of the MSW received, which is supports the Massachusetts solid Waste Master Plan and is state-of-the-art for the Commonwealth. The non-recyclable fraction of the MSW along with the C&D residuals/bulky waste will be then loaded in rail cars for transport to out of state disposal sites, primarily landfills.

Bureau of Water Resources Comments

Wetlands Comments: The Wetlands Program has reviewed the Parallel Products LLC EENF (EEA# 15990) and offers the following comments. The Project Proponent acknowledges that work will occur within Areas Subject to Protection under M.G.L. c. 131, § 40; and that a Notice of Intent (NOI) will be filed with the New Bedford Conservation Commission and the Department. The EENF indicates that the Project will alter 4,436 square feet of Bordering Vegetated Wetland (BVW), 350 square feet of Land under Waterbodies & Waterways (LUWW), 1500 square feet of Riverfront Area, and 60 linear feet of inland Bank. The EENF states that the resource area alterations are associated with the construction of a proposed railroad spur, and that replication will be provided for the impacted BVW. The EENF also states that the impacts to BVW have been reduced by incorporating retaining walls into the crossing design to reduce the culvert length and minimize the amount of fill. The EENF does not address the potential use of a span or bridge design to further reduce or eliminate impacts to BVW, inland Bank and LUWW. The EENF does not indicate whether the proposed railroad spur crossing meets the stream crossing standards. The NOI should include a discussion of alternative designs for the proposed railroad spur crossing and address the stream crossing standards. The NOI should also include the Riverfront Area alternatives analysis required by 310 CMR 10.58(4)(c).

The Wetlands Protection Act Regulations for Inland Bank (310 CMR 10.54(4)(a)5.) state that a Project or Projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. The Project proposes to alter 60 linear feet of inland Bank and therefore is required to undertake a Wildlife Habitat Analysis as part of the NOI submission. Please be aware, however, that in accordance with 310 CMR 10.54(4)(a)(6), the impact on bank caused by the installation of a stream crossing in compliance with the Massachusetts Stream Crossing Standards is exempt from the requirement to perform a wildlife habitat evaluation.

Water Management Comments. According to the ENF, it is expected that the New Bedford Water Department will supply 13,150 gallons per day (gpd) of water for this Project. New Bedford has the capacity to provide the requested volume for this Project based on its recent water use. However, MassDEP noticed that there was a discrepancy between the water use and wastewater generation volume presented in the ENF. MassDEP expects that the water being supplied by the New Bedford Water Department may change but New Bedford still has the ability to supply up to 83,125 gpd of water. MassDEP suggests the Proponent evaluate and implement conservation efforts that incorporate Best Management Practices (BMPs) at the Project Site. MassDEP also encourages Project Proponents that add additional demand to the public water system (PWS) to work with the PWS to mitigate the additional demands proposed by the Project.

Wastewater Comments: The City of New Bedford has an EPA approved Industrial Wastewater Pretreatment Program (IPP). The Proponent has had initial discussions with the City regarding the wastewater generated by the Project. The City and the Proponent will determine the proper monitoring, metering and pretreatment necessary to comply with the City's IPP.

Underground Injection Control Comments. The Proponent details the uses of a comprehensive stormwater management system to collect, convey, treat and control stormwater discharges associated with the Project. The Proponent should be aware that the conveyances of stormwater through underground stormwater infiltration structures are subject to the jurisdiction of the MassDEP *Underground Injection Control (UIC)* program. These structures must be registered with MassDEP UIC program through the submittal of a BRP WS-06 UIC Registration application through MassDEP's electronic filing system, eDEP. The statewide UIC program contact is Joe Cerutti, who can be reached at (617) 292-5859 or at joseph.cerutti@state.ma.us . All information regarding on-line (eDEP) UIC registration applications may be obtained at the following web page under the category "Applications & Forms": https://www.mass.gov/underground-injection-control-uic.

Industrial Stormwater, Sector N - Recycling Facilities. Under the 2015 Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), Sector N (SIC code 5093) recycling centers, commonly referred to as material recovery facilities (MRF), that accept waste for sorting and distribution, including material recovery facilities that receive paper, glass, plastic, and aluminum from non-industrial sources are required to apply for industrial stormwater permit coverage.

Common requirements for coverage under an industrial stormwater permit include development of a written stormwater pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent or NOI.

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters.

BMPs must be selected and implemented to limit erosion on areas of your Site that, due to topography, activities, soils, cover, materials, or other factors are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

For additional information on Sector N of the industrial stormwater program see https://www.epa.gov/sites/production/files/2015-10/documents/sector_n_scraprecycling.pdf

Bureau of Waste Site Cleanup Comments

Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed Project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000].

There are no listed MCP disposal sites located at or in the vicinity of the site that would appear to impact the proposed Project area. Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer (Oliver) at: http://maps.massgis.state.ma.us/map_ol/oliver.php Under "Available Data Layers" select "Regulated Areas", and then "DEP Tier Classified 21E Sites". MCP reports and the compliance status of specific disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: https://eeaonline.eea.state.ma.us/portal#!/search/wastesite

The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this Project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.

Bureau of Air and Waste Comments:

Air Quality Comments. Construction and operation activities shall not cause or contribute to a condition of air pollution due to dust, odor or noise. To determine the appropriate requirements please refer to:

- 310 CMR 7.09 Dust, Odor, Construction, and Demolition
- 310 CMR 7.10 Noise

Construction-Related Measures. MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.

Massachusetts Idling Regulation. MassDEP reminds the Proponent that unnecessary idling (i.e., in excess of five minutes), with limited exception, is not permitted during the construction and operations phase of the Project (310 CMR 7.11). With regard to construction period activity, typical methods of reducing idling include driver training, periodic inspections by site supervisors, and posting signage. In addition, to ensure compliance with this regulation once the Project is occupied, MassDEP requests that the Proponent install permanent signs limiting idling to five minutes or less *on-site.*

Spills Prevention. A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases.

Solid Waste Comments. As a result of its review of the Expanded Environmental Notification Form ("EENF") for the Parallel Products of New England Project at 100 Duchaine Blvd New Bedford ("Project" or "Site" or "facility") EEA No. 15990, the Massachusetts Department of Environmental Protection (MassDEP) Solid Waste Management Section (Solid Waste) is providing the following comments regarding solid waste permitting and the management of solid waste/recyclable and asbestos materials generated from the Project pursuant to Massachusetts Solid Waste Regulations 310 CMR 16.00: *Site Assignment Regulations For Solid Waste Facilities* and 310 CMR 19.000: *Solid Waste Management* and Asbestos Regulations 310 CMR 7.15.

EENF Project Information:

The EENF denotes Parallel Products of New England (PPNE or Proponent) is proposing to develop the site in two phases. Phase 1 development consists of building a glass beneficiation operation and the construction of approximately 1.9 MW of solar power energy generation. This operation will recycle the glass containers that are collected through the Massachusetts bottle deposit system. Phase 1 construction does not trigger any MEPA review thresholds. The Phase 1 activity is included in this EENF as required by 301 CMR 11.01 (c) Segmentation.

PPNE is requesting a Phase 1 Waiver to allow the construction of the Phase 1 infrastructure to begin prior to the acceptance of the Single EIR required for Phase 2 construction.

PPNE has been operating a recycling operation at 969 Shawmut Avenue, New Bedford for the past 11 years. Since purchasing the 100 Duchaine Blvd Site in 2016, PPNE has been repairing the infrastructure at the Site to accommodate future company operations. In addition to the operations detailed in the EENF, PPNE will be moving all of its recycling operations currently located at 969 Shawmut Avenue to the 100 Duchaine Boulevard site which, in addition to glass recycling, includes aluminum and plastics container recycling. The relocation of the Shawmut Avenue operations is currently in progress and as a result operations are currently split between the two facilities. PPNE has submitted a Solid Waste permit (i.e., General Permit) for the proposed recycling operations at the Duchaine Blvd facility and is currently conducting plastics recycling at the Site.

Phase 2 of the Project includes the construction of a 1,500 ton per day municipal solid waste (MSW) processing/handling facility and a 50 dry tons per day biosolids processing facility. The proposed facility will process the MSW to extract recyclable material from the MSW. A processing facility will be built to dry biosolids into a Class A biosolid.

Additionally, the EENF states that "Demolition and construction activity at the Site will result in the generation of solid waste. The construction and demolition waste generated by the Project will be sent to licensed construction and demolition waste processers to maximize recycling of the waste materials." During the MEPA scoping session, PPNE clarified that existing structures may be renovated or demolished as part of the site development.

Solid Waste Comments:
PPNE identified the following Solid Waste permits required for each phase of the proposed Project:

Phase I:

1. General Permit for Recycling Operations

Phase II:

1. Site Suitability (BWP SW-01)
2. Authorization to Construct a Large Handling Facility (BWP SW-05)
3. Authorization to Operate a Large Handling Facility (BWP SW-06)

A. Solid Waste Permitting:

PPNE submitted a **General Permit Certification** on May 11, 2018 for its glass, paper cardboard, metal and plastics recycling operations at the Site and is required to submit an "Annual Certification Statement for the General Permit pursuant to 310 CMR 16.06(1)(a)3. Refer to webpage link: https://www.mass.gov/how-to/general-permit-initial-annual-certification-recycling-composting-digestion.

The **Site Suitability Permit Application (BWP SW-01)** requires submittal of the EEA Secretary's Certificate on the ENF or EIR as appropriate. Refer to weblink: https://www.mass.gov/how-to/sw-01-38-site-suitability-report.

An **Authorization to Construct a Large handling Facility Permit Application (BWP SW-05)** may only be submitted if MassDEP issues a Decision on the Site Suitability application finding that the proposed Site is suitable for the proposed Project and the New Bedford Board of Health issues a Site Assignment for the Project property pursuant to the requirements of 310 CMR 16.00, Site Assignment Regulations for Solid Waste Facilities. Refer to weblink: https://www.mass.gov/files/documents/2016/08/uw/sw0529ap.pdf?_ga=2.260746381.1049696916.1553003081-1847519295.1541521730.

PPNE will be required to submit an **Authorization to Operate a Large Handling Facility Application (BWP SW-06)** pursuant to 310 CMR 19.029, Applicable Permit and Certification Procedures for Operation, Construction, Modification or Expansion of a Solid Waste Facility. Refer to weblink: https://www.mass.gov/how-to/sw-06-10-20-operate-an-existing-facility

B. Management of Solid Waste and Asbestos Materials from Demolition and Construction Activities

- Waste materials that are determined to be solid waste (*e.g.,* construction and demolition waste) and/or recyclable material (*e.g.,* metal, asphalt, brick, and concrete) shall be disposed, recycled, and/or otherwise handled in accordance with the Solid Waste Regulations including 310 CMR 19.017: *Waste Bans.*

  Asphalt, brick and concrete (ABC) rubble, such as the rubble generated by the demolition of buildings or other structures must be handled in accordance with the Solid Waste regulations. These regulations allow, and MassDEP encourages, the recycling/reuse of ABC rubble. The Proponent should refer to MassDEP's Information Sheet, entitled *" Using or Processing Asphalt Pavement, Brick and Concrete Rubble, Updated February 27, 2017 "*, that answers commonly asked questions about ABC rubble and identifies the provisions of the solid waste regulations that pertain to recycling/reusing ABC rubble. This policy can be found on-line at the MassDEP website: https://www.mass.gov/files/documents/2018/03/19/abc-rubble.pdf

- Demolition and Asbestos Containing Waste Material: The proposed Project includes the demolition of structures which may contain asbestos. The Project Proponent is advised that demolition activity must comply with both Solid Waste and Air Quality Control regulations.

Please note that MassDEP promulgated revised Asbestos Regulations (310 CMR 7.15) that became effective on June 20, 2014. The new regulations contain requirements to conduct a pre-demolition/renovation asbestos survey by a licensed asbestos inspector and post abatement visual inspections by a licensed asbestos Project monitor. The Massachusetts Department of Labor and Work Force Development, Division of Labor Standards (DLS) is the agency responsible for licensing and regulating all asbestos abatement contractors, designers, Project monitors, inspectors and analytical laboratories in the state of Massachusetts.

In accordance with the revised Asbestos Regulations at **310 CMR 7.15(4),** any owner or operator of a facility or facility component that contains suspect asbestos containing material (ACM) shall, prior to conducting any demolition or renovation, employ a DLS licensed asbestos inspector to thoroughly inspect the facility or facility component, to identify the presence, location and quantity of any ACM or suspect ACM and to prepare a written asbestos survey report. As part of the asbestos survey, samples must be taken of all suspect asbestos containing building materials and sent to a DLS certified laboratory for analysis, using USEPA approved analytical methods.

If ACM is identified in the asbestos survey, the Proponent must hire a DLS licensed asbestos abatement contractor to remove and dispose of any asbestos containing material(s) from the facility or facility component in accordance with **310 CMR 7.15,** prior to conducting any demolition or renovation activities. The removal and handling of asbestos from the facility or facility components must adhere to the Specific Asbestos Abatement Work Practice Standards required at **310 CMR 7.15(7).** The Proponent and asbestos contractor will be responsible for submitting an ***Asbestos Notification Form ANF-001*** to MassDEP at least ten (10) working days prior to beginning any removal of the asbestos containing materials as specified at **310 CMR 7.15(6).**

The Proponent shall ensure that all asbestos containing waste material from any asbestos abatement activity is properly stored and disposed of at a landfill approved to accept such material in accordance with **310 CMR 7.15 (17).** The Solid Waste Regulations at **310 CMR 19.061(3)** lists the requirements for any solid waste facility handling or disposing of asbestos waste. Pursuant to **310 CMR 19.061(3) (b) 1,** no asbestos containing material; including VAT, asphaltic-asbestos felts or shingles; may be disposed at a solid waste combustion facility.

C. Suitability Criteria:

- The Water Resources Map submitted within the Draft Site Suitability Report appears to indicate that riverfront area lies within the proposed waste handling area. The Proponent should review the requirements of 310 CMR 16.40(3)(d)(6) and consider modifying the proposed waste handling area.

- Figure 6-1 of the Sound Level Assessment Report depicts new residential dwellings southeast of the Site on the western side of Phillips Road. The new residential dwellings are not identified in Appendix A Insert 3 Land Use Plan. It is unclear if these dwellings are located within 500 feet of the waste handling area.

  It appears that the Proponent's Sound Level Assessment Report has not considered all potential sound sources from proposed facility operations. Pursuant to 310 CMR 7.00 Air Pollution Control Section 7.10: U Noise, MassDEP regulates all sounds emanating from a solid waste facility operation including the operation of: waste handling equipment inside and outside the building; waste delivery vehicles on-Site inside and outside the building; and fixed mechanical equipment. Potential sound sources include both the movement of waste handling equipment and the sound produced during materials loading, unloading and transfer.

- The Site borders the Acushnet Cedar Swamp State Reservation. The EENF states "the siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, state or municipal parklands or conservation land, or other open space held for natural resource purposes" however they did not offer any explanation or mitigating factors to support their claim.

- Proponent should provide a detailed description of the movement of empty and full railcars for the Site including the five new rail spurs within the proposed Site assigned area and the extended sidetrack along the western property boundary adjacent to the existing rail line. The Department recommends that the Proponent provide this information in the SEIR.

- Traffic Impact Study. The Traffic Impact Study performed by McMahon Associates indicates that two study intersections will operate at a traffic volume greater than their capacity for some turning movements and that one intersection has a crash ratio higher than the statewide and District 5 average. The Proponent has not proposed or recommended any mitigation. The Proponent should discuss these intersections with the roadway overseeing agency, MassDOT or the City of New Bedford as appropriate, regarding the necessity for and development of mitigation measures.

  The Proponent presented assumptions regarding the distribution incoming waste volume by vehicle capacity, which directly affected the predicted Project related traffic volume. The Proponent is advised that, during MassDEP permitting, the Proponent must commit to limiting the maximum number of vehicles utilizing the site to that presented in the traffic study, or the Proponent must revise the traffic study to reflect the maximum proposed Site traffic flow rate.

If you have any questions regarding the Solid Waste Management Program comments above, please contact Mark Dakers at (508) 946-2847 or Cynthia Baran at (508) 946-2887.

BAW Business Compliance and Recycling Comments: Massachusetts and the New England Region have had a difficult time finding outlets for recycling container glass after the Ardagh Glass plant (Milford, MA) closed in early 2018. The result has been a significant price swing driving costs up for municipal recycling programs. MassDEP has been actively trying to identify and support new markets for container glass working with municipalities and recycling businesses. The Parallel Products of New England, Inc. Phase I project will enhance glass processing in the region offering alternative markets for those collecting and diverting container glass from disposal. Parallel Products extensive background in handling, processing and marketing recycled container glass will increase competition in a currently oversupplied market resulting in lower costs for those entities looking to recycle the material.

Environmental Justice Comments:
After reviewing relevant Environmental Justice analyses presented in the Expanded ENF, MassDEP offers the following comments.

As stated in the report the city of New Bedford is an environmental justice community meeting all three criteria (M/I/E) with 69.6% or 66,180 residents residing in an EJ block group. The total population of the city of New Bedford based on the 2010 U.S. Census is 95,072.[1]

The Expanded ENF states that the proposed PPNE Project exceeds the MEPA threshold for new solid waste processing capacity of 150 or more tons per day, and the wastewater mandatory threshold of 150 or more of sewage sludge, triggering the requirement for filing an Environmental Notification Form and a mandatory Environmental Impact Report. Pursuant to the 2017 EEA EJ Policy any Project that exceeds the ENF thresholds for solid waste or wastewater and involves a Project Site located within one mile of an EJ population will be required to implement enhanced public participation under MEPA. The proposed outreach as written in the report meets some of the requirements in the EJ Policy. However MassDEP recommends the following additional outreach tools listed below:

- Non-Traditional Information Repositories (houses of worship, community centers, along with the traditional repositories – libraries, government offices)
- Contact EJ Community Leaders
- Ensure notice to the community prior to and during the public meeting and permitting process to ensure the community has opportunities to get involved.

Many EJ populations are located in densely populated urban neighborhoods, in and around the state's oldest industrial sites (i.e., New Bedford) while some are located in suburban and rural communities. These high –minority, low income neighborhoods are host to or are in close proximity to many of the states contaminated and abandoned sites, regulated facilities and sources of pollution.

The Environmental Justice Areas Criteria by Block Group map (Figure 3 in the Expanded ENF) indicates that there are two daycares and one school located within the one-mile buffer zone of the Site and another school located just outside of the one-mile buffer zone. It is noted in the report using MassDPH's Environmental Public Health Tracker that New Bedford has statistically higher rates of environmentally-related health outcomes including but not limited to pediatric asthma, COPD, asthma related ED visits. The close proximity of the school and daycares to the Project site and the Project's potential increase in truck traffic, air pollution (emissions) and potential noise and odor pollution raises a concern of the potential impact, to these vulnerable populations (children and the elderly). Potential Project-related impacts to these populations should be discussed in the EIR and addressed during this permitting process.

Additionally, MassDEP recommends that Project-related air pollution and environmental impact information be shared with EJ communities in alternative format (translation, interpreter services) if applicable. This information should be provided using terms that are easily understood in an effort to ensure the community understands the Project, its potential impacts, and can provide meaningful input.

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[1] Data provided by the 2010 Unites States Census – American Fact Finder at https://factfinder.census.gov/faces/nav/jsf/pages/community_factsxhtml.

Proposed s.61 Findings
The "Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form" may indicate that this Project requires further MEPA review and the preparation of an Environmental Impact Report. Pursuant to MEPA Regulations 301 CMR 11.12(5)(d), the Proponent will prepare Proposed Section 61 Findings to be included in the EIR in a separate chapter updating and summarizing proposed mitigation measures. In accordance with 301 CMR 11.07(6)(k), this chapter should also include separate updated draft Section 61 Findings for each State agency that will issue permits for the Project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation.

Other Comments/Guidance
MassDEP supports the Proponents request for the Secretary to grant a Phase I waiver.

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this proposed Project. If you have any questions regarding these comments, please contact George Zoto at (508) 946-2820.

Very truly yours,

Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/GZ

Cc: DEP/SERO

ATTN: Millie Garcia-Serrano, Regional Director and Acting BAW Deputy Regional Director
David Johnston, Deputy Regional Director, BWR
Gerard Martin, Deputy Regional Director, BWSC
Jennifer Viveiros, Deputy Regional Director, ADMIN
Jim Mahala, Chief, Wetlands and Waterways, BWR
Holly Johnson, Assistant Director for Operations and Special Projects/Boston
Deneen M. Simpson, Environmental Justice Director & Program Manager/Boston
Greg Cooper, Deputy Director - Consumer Programs/Boston
Daniel Gilmore, Wetlands and Waterways, BWR
Mark Dakers, Chief, Solid Waste, BAW
Alison Cochrane, Solid Waste, BAW
Douglas Coppi, Solid Waste, BAW
Daniel Connick, Solid Waste, BAW
Duane LeVangie, Chief, Water Management Act, BWR/Boston
Shi Chen, Water Management Act, BWR/Boston
Joseph Cerutti, Underground Injection Control Program, BWR/Boston
Allen Hemberger, Site Management, BWSC

Czepiga, Page (EEA)

From:	Gilmore, Daniel (DEP)
Sent:	Friday, April 05, 2019 9:42 AM
To:	Czepiga, Page (EEA); Mahala, Jim (DEP)
Cc:	Zoto, George (DEP); Hobill, Jonathan (DEP)
Subject:	RE: Response to MassDEP comments

Hi Page,

The response letter addresses the alternative designs for the proposed crossing. That information should be clearly and concisely included in the NOI. The response states the stream crossing will be designed in accordance with the Stream Crossing Standards. The NOI plans should clearly demonstrate the design meets the standards. The response letter states that the Riverfront Area in New Bedford is only 25 feet which is accurate. However, I believe that the alternatives analysis should be augmented when the NOI is filed. If the proponent is contending that the site is previously developed or degraded and that the project is a Redevelopment Project, then the NOI should include information on how the proposal will meet the requirements of 310 CMR 10.58(5).

Dan

Daniel F. Gilmore
MassDEP Wetlands & Waterways Program
Southeast Regional Office
20 Riverside Drive
Lakeville, Massachusetts 02347

Telephone: 508-946-2808
FAX: 508-947-6557

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

March 29, 2019

Matthew Beaton, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: New Bedford – Parallel Products of New England, Inc. - EENF
(EEA #15990)

ATTN: MEPA Unit
Page Czepiga

Dear Secretary Beaton:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the proposed Parallel Products of New England, Inc project in New Bedford, as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

Robert LeFay /FOR

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

Ten Park Plaza, Suite 4150, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

cc: Jonathan Gulliver, Administrator, Highway Division
Astrid Glynn, Administrator, Rail and Transit
Patricia Leavenworth, P.E., Chief Engineer, Highway Division
Mary-Joe Perry, District 5 Highway Director
Neil Boudreau, Assistant Administrator of Traffic and Safety Engineering
Planning Department, City of New Bedford
Southeastern Regional Transit Authority
Southeast Regional Planning and Economic Development District
PPDU Files

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

MEMORANDUM

TO: David Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E, Manager
Public/Private Development Unit

DATE: March 29, 2019

RE: New Bedford: Parallel Products of New England – EENF
(EEA #15990)

The Public/Private Development Unit (PPDU) has reviewed the Expanded Environmental Notification Form (EENF) for the Parallel Products of New England, Inc. project in New Bedford. The project entails the construction of a solid waste facility to process municipal solid waste (MSW) and construction and demolition (C&D) of materials. The existing site consists of the NWD Trucking facility located at 100 Duchaine Boulevard and is bounded by a CSX rail line to the east, Phillips Road to the west, industrial properties to the north and undeveloped land to the south. The project is expected to be built over time in two phases. Phase I development consists of building a glass Beneficiation operation and the construction of approximately 1.9 MW of solar power energy generation. Phase II entails the construction of a MSW transfer station and biosolids drying facility. Phase II is expected to be constructed approximately two years after the construction of Phase I.

The project is expected to generate approximately 418 new truck trips per day (209 truck trips entering, 209 truck trips existing) based on empirical data collected from a similar solid waste facility operations. In addition, employees will contribute approximately 150 vehicle trips (75 entering, 75 exiting) for a total of 568 vehicle trips accessing the site on an average weekday.

The project does not exceed any transportation thresholds but exceeds MEPA thresholds for wastewater and solid waste and therefore is required to prepare an Environment Impact Report (EIR). The Proponent has requested a waiver to proceed with the construction of Phase I, pending the completion of the Environment Impact Report (EIR) for the project.

The project does not require a Vehicular Access Permit from MassDOT but has applied for an Industrial Rail Access Program (IRAP) grant in the amount of $500,000. The grant will be used for the construction of a rail side track along the CSX Transportation line to meet the needs of the glass processing facilities as part of Phase I. The rail side will be expanded in Phase II to meet the needs for transport of solid waste. The Proponent will use the rail side for the outbound shipment of MSW, glass and dried biosolids.

The facility, when at full capacity, expects to ship 1200 tons per day (tpd) of MSW residuals, 50 tpd of dried biosolids and 250 tpd of glass. The rail side track at full operations could reduce by up to 110 the number of truck trips in and out of the site.

The EENF includes a Transportation Impact Assessment (TIA) that includes an evaluation of the study area transportation network and presents an analysis of existing and future build conditions for each intersection. The TIA is in general conformance with MassDOT/EOEEA Guidelines for *EIR/EIS Traffic Impact Assessment.*

Study Area

The study locations for which traffic analyses were conducted are as follows:

- Route 140 Northbound on/off Ramps/Braley Road intersection;
- Route 140 Southbound on/off Ramps/Braley Road intersection;
- Braley Road/Theodore Rice Boulevard at Phillip Road intersection;
- Theodore Rice Boulevard/Duchaine Road intersection;
- Duchaine Boulevard/Samuel Barner Boulevard intersection;
- Phillips Road/Samuel Barner Boulevard intersection; and
- Duchaine Boulevard/Site Driveway intersection.

The study area is adequate for capturing the traffic impacts of this development.

Trip Distribution

The project trip distribution on the study area network was based on expected access to/from Route 140. The majority of traffic entering the site is expected to use Route 140 to Braley Road with a small portion of traffic coming from the site expected to use Phillips Road to access the proposed site.

Safety

Crash rates for the study area intersection were calculated using MassDOT data for the five-year period from 2011-2015. Based on the data, the crash rates for all study area intersections are below the state and district averages for signalized intersection. Two unsignalized intersections are experienced crash rates slightly higher than the state and district averages. The additional traffic volumes associated with the project is not expected to significantly impact safety at these intersections. There are no Highway Safety Improvement Program (HSIP) high crash cluster intersections in the study area.

Traffic Operations

Capacity analyses were conducted for the weekday AM and PM peak hours for 2018 Existing, 2025 No-Build, and 2025 Build (full build) conditions, for the study area intersections.

In the 2025 No-Build, traffic operating conditions at most intersections are expected to experience no significant changes, except for one approach movement where level of service will worsen from B to C. Likewise, 2025 Build conditions experience slightly increased delays compared to the 2025 No-Build conditions, but the delays were not significant enough to impact LOS in most cases.

Parking

The project will provide 428 parking spaces to accommodate both trucks and employees on site. The proposed number of parking spaces is a reduction from the current number of existing parking spaces.

Multimodal Access and Facilities

Despite the proposed land use primarily oriented towards truck traffic, the Proponent should seek the opportunity to provide multimodal accommodations to access the site. The roadway network in the vicinity of the site provide sufficient shoulder widths to encourage bicycle travel. We note that the Southeastern Regional Transit Authority (SRTA) provides bus service along Duchaine Boulevard and Phillips Road, with bus stops located within walking distance to the site along Duchaine Boulevard and at the intersection of Phillips Road with Heritage Court. Pedestrian accommodations exist along Phillips Boulevard. We encourage the Proponent to design their site drive in accordance to Complete Streets standards to facilitate opportunities to walk and bike to the site.

Transportation Demand Management Program

The Proponent should develop a Transportation Demand Management (TDM) program aimed at reducing site trip generation. MassDOT understands that the project primarily generate truck traffic; nevertheless, the following TDM measures are recommended with the goal of reducing vehicle trips by employees of the development:

- Offer direct deposit for payroll transactions;
- Implement off-peak shift start/end times for employees;
- Provide preferential parking for carpools and vanpools;
- Offer onsite employee services such as a cafeteria.
- Provide information on transit options as a mean of travel to the site.

MassDOT does not object to the Proponent's request for a Phase I waiver for the project. The proponent should address the details of the above comments in the SEIR and submit a copy of the MEPA Certificate for this project as part of their grant application for the IRAP funding. If you have any questions regarding these comments, please contact me at (857) 368-8862.

Secretary of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston Ma.02114
Attn: Page Czepiga, MEPA

Parallel Products of New England, LLC
file No. 15990

Dear MEPA Officials, my wife and I are 52 yr residents of a residential area that is located within a few hundred feet of the property of the proposed project. I have read the Expanded Environmental Notification report submitted by Green Seal Environmental Inc. on behalf of the petitioner.

I understand that the petitioner is requesting 1. waiver to begin immediate construction on a portion of the Phase1, glass recycling facility before submittal or receipt of permits of approval, 2. approval of the environmental permit for the complete construction and operation of Phase 1., and 3. the approval and permits for future construction and operation of a regional Municipal Solid Waste Plant and Bio-solids Drying facility. Some construction has already begun on Phase 1 as noted in the report and is readily observable at the site today.

It appears to me that the report is incomplete as it does not present enough information For MEPA to evaluate the requirements for site suitability as stated in 310CMR 16.40 which requires a 500 Foot clearance for the proposed facility from occupied residences. The map shown on report insert 3A obtained from the city of New Bedford published in 2015 shows that 500 Foot clearance from the facility property boundary encompasses 44 houses east of Phillips Rd. and another 6 that have been built since, on the west side of Phillips Rd. south of the facility. While some may argue that the operation of the facility will not occur on the facility boundary line, the access roads into the glass delivery area of the site are close enough to the eastern edge of the property boundary to still encompass at least half of the houses identified above.

These issues are affected by the infringement of the 500 foot clearance requirement. One is noise. Second is dust. Third is odor.

NOISE

In Phase 1., noise will be generated by truck traffic at the glass handling facility, and by the front end loaders that move the open dumping of glass into the glass crushing and classification building, as well as the unloading of the processed glass to trucks, and the movement of rail cars (future). The traffic study projected 108 trucks per day for the glass plant which drops to 54 once the rail is operational shown Appendix E of the Trip Generation study.
A noise analysis and evaluation was conducted. It included baseline measurements in 4 receptor locations: at the southeast property line and three locations east and north east at or near the residences. Modeling was used to project upon the baseline noise the additive effect of the proposed facility operation. Results showed a 3 to 8 Db rise in noise at some of the receptor locations. Equipment similar to that proposed for the facility were used together with noise studies done in other waste handling sites together with assumptions, stated that the10 Db criteria will be met.

Now, the nature of the noisiest part of the proposed plant occurs in the receipt and handling in the glass in Phase 1. which is located on the east side of the property, the area closest to the residences. Noise is generated by trucks dumping on the pavement, followed by the scraping of a front end loader bucket. This operation occurs in an open area covered only with a roof canopy to house the solar panels.

Two operating issues arise; 1. the sporadic and frequent nature of the 'bang and clank' equipment that may continue as late as 10Pm, 2. the probable magnification and echo effect of this noise generated in the canyon where this unloading operation takes place, which is about 30' below the residences east of Phillips Rd. AND inside the 500' clearance requirement.

When these two issue are taken into account, it is questionable that the modeling predictions of noise at the residences affected are within the 10Db requirements. Additionally the unloading operation noise is not steady but sporadic; composed of frequently variable sound changing in pitch and frequency, which increases its annoyance to the human ear. It is easier to fall asleep to a quiet bedroom fan than to a noisy party outside your bedroom window.

DUST

Dust will be generated by all phases of the proposed facility, dust that is now not present in our neighborhood. About 50% of the winds in our area blow from the southwestern to the western sector, which will carry dust and aerosols north and mostly east into the nearby residences. Mitigation strategies have been proposed that include housing the Phase 2 operations inside buildings. However, the Phase 1. truck unloading and reloading of glass and front end loading does not take place inside a building.

It is probable that some of this dust will be blown into the nearby residences as a nuisance, falling on parked automobiles, drying clothes, open decks, swimming pools, and outdoor play equipment. Even if the analysis show that no air quality requirements are breached, other mitigation efforts should be done to minimize this nuisance. Likely, spillage from glass carrying dump trucks along the eastern boundary access and egress roadway will generate unmitigated additional dust.

ODOR

An analysis of odor was submitted with the report which stated that odor is mostly a subjective measure. One human's nose may be more sensitive than another nose, and as such, a proxy metric has been used to evaluated the impact of odor. Dilution of the odorous air with equal or multiple volumes of air are the criteria used. Highly odorous emissions need up to 5 volumes of air as opposed to only one volume for slightly odorous emissions, according to the science presented, to reach an acceptable level. Some mitigation is offered for the emissions of the proposed bio-solids drying plant with a scrubber.

Questions arise about whether this strategy, or analysis is adequate, given that the noxious odors travel the same ambient wind currents that move the dust from the site to the residences. Will the bio_solids drying plant shut down when the scrubber is not in service? As a frequent user of the recycle facility at Shawmut Ave. in New Bedford, I can personally attest to the noxious and pungent odor emanating from the simple off loading of sludge waste water trailers discharging into underground tanks. This odor permeates the entire recycle area.

Keeping in mind that the proposed bio-solids facility is on the property that is not 500 ' from the residences and that it is proposed as a regional facility to operate 24 hours a day, it is questionable that the nearby residences will avoid receiving objectionable odors.

ENVIRONMENTAL JUSTICE

In order to protect the minority and under served population, an analysis of environmental justice is presented in the report . It focused on the health statistics of the New Bedford population as compared to the surrounding towns. The results showed that New Bedford has statistically higher incidences of cancer, heart disease, COPD and asthma than do either the state average or the surrounding towns. Both environmental and lifestyle factors are postulated as the reason for New Bedford's higher than average disease rate.

When an additional burden of noise, dust and odor is imposed on a community with compromised health to begin with, it is questionable that the minor benefit of a few new jobs of the proposed regional facility outweighs the health costs borne by its citizens. As shown in the preceding discussion, the 500' clearance requirement, has approximately 100 homes whose occupants are exposed to the environmental impacts of the proposed facility.

SITE HISTORY AND COURT CHALLENGE

Although not included in the report, it is instructional to know about the history of the site and adjacent areas. Thee building directly west of the site now owned by Eversource, was formally a film winding facility. Originally it was owned by the bankrupt Polaroid Corp. until the late 90"s. Later owned by another firm for the same purpose.

In 1990 a developer proposed to locate a 250Mw coal fired power plant about ½ mile west of the present Eversource building to serve the Polaroid plant and to sell the extra capacity to the electric utility. A construction permit was issued by MEPA over the objections of the local GNB-NO-COAL group of citizens and the Massachusetts Attorney Generals Office.

The Massachusetts Supreme Court rescinded the permit based on lack of need. The developer appealed the Court decision and reapplied for the permit. Again both GNB-NO-COAL, and the Attorney Generals Office objected to the issuance of the permit for the same reason. About 4 years passed since the permit was first requested. While preparing for another trip to the Supreme Court, the developer withdrew his application for the permit. As it turned out, the Polaroid Corporation went bankrupt and the electric utility was able to meet the electrical system demand without the unneeded Coal Fired power plant.

PRESENT SITE ACTUAL CONDITIONS

On March 17, 2019 I walked around most of the Eastern portions of the site in order to compare the maps presented in the report to the actual existing conditions. A large pile of crushed glass has already been stored under the north open canopy at the south eastern corner of the site. The pile occupies the entire area of the 100' by 275'area with heights from 6' to 12' in height. Using conservative estimates of 75lb/ft3 and a median height of 9',the pile contains approximately 9000 tons of crushed glass. A photo is attached. Solar panels are in operation on the roof of this canopy as well as the identical south canopy about 70' away. No glass is currently stored under the south canopy.

The open space between the canopy storage areas is not shown on the maps C1, C2 and C2A but appear as parking lots. In order to move the pile to another facility or through the future proposed glass processing facility over 750,12 yd trucks are needed or an even greater number of front end loader trips . These operations are not described in the report. Additionally, the need to provide glass storage in the future is likely due to outages that interrupt operations in the processing building. This adds noise and dust beyond what is reported.

Presently there is some demolition and other activity around the area of the proposed glass processing building during the week which I can hear from the outside of my house. Has approval been given for this storage and construction before the public comment period is over?

RECOMMENDATIONS

1. All MEPA officials responsible for approving this proposed regional waste handling project need to visit the site and the surrounding residential areas. This licensing process is more about minimizing the impact on the community than on protecting the environment. Since 100 residences are within 500', as shown in the report, of the site boundary and are 30' above the site, residents have visual impact in addition to the environmental ones reported using projections, modeling and assumptions. When at the site, ask yourself honestly, would you buy any of the houses presently for sale on the west side of Phillips Rd. south of the site? I would appreciate being invited for any planned site visit.

2. Phase 1 is separable and distinct from Phase 2. Set aside the permitting process for Phase2. Delay MSW and Bio-solids drying portion, which have Air quality requirements of Phase2, until there is a demonstrated need. Does Parallel Products have signed contracts for the waste deliveries ? The report states that the city of New Bedford does not plan to use this proposed regional MSW & Bio-solids facility. The need for the proposed regional MSW and Bio-solids waste handling facility is questionable since the petitioner does not have a firm construction schedule. As was the case in the history of the proposed unneeded Coal-fired power plant, a large capacity regional facility is proposed to enhance economic viability for owners at odds with residence concerns.

3. Delay the waiver to construct the regional glass processing facility. Address the site suitability requirements which were stated to be preliminary until the air quality permit was received. No waiver was requested for relief from the 500' clearance required between the site and occupied houses by Massachusetts law.310CMR16.40

Early construction before permit receipt was requested so that the petitioner could receive approval to construct solar power qualified under the new SMART incentive program. According to the list of applicants to this program dated March 15, 2019, application nos. 65 and 68 for a total of 1.346Mw have already been approved. My site visit confirmed that the largest part of the solar power associated with Phase 1 is in service. The Solar Power is no longer an issue when Phase 1, is separated from Phase 2.

Closure of existing glass processing facilities in Massachusetts that received glass from recycling centers was stated as another reason that immediate construction approval was requested to avoid the longer haul to other facilities much further away. It is evident considerable storage of crushed glass now exists on the proposed site and should not be used as pressure for MEPA to approve the facility. The petitioner has other options that may be costly, but it is not the responsibility of MEPA to protect the petitioner's profit, poor planning or business model

FINALLY

In closing, I pray that MEPA would not place proposed large regional projects higher in value than local concerns which impacts its citizens. I see the purpose of respecting the environment, codified in numerous laws and requirements, as important to protect the humans living on the planet from harmful competing interests. A peaceful and pleasant residential neighborhood environment is a treasure. Unfortunately there are no scientific metrics to establish its worth when only the environment is measured.

It is interesting to note that Massachusetts has the oldest State Constitution. Together with the National Constitution, these documents stem from the individual rights of the people to life, liberty and the pursuit of happiness and authorize the Government to protect these rights by establishing just laws. Our Judiciary system is established not only to judge if laws are breached but to test that the laws are just.

MEPA, as an executive agency, can and should take a reasoned approach in this instance to judge the merit of this petition before you; and to exercise its authority to benefit the citizens of Massachusetts.

ATTACHMENTS

1. Older satellite image of proposed site showing adjacent residential area east of Phillips Rd. Note the blue 500'scale at the lower right of the image and the houses along Ridgewood Road. The south eastern part of the site appears as a parking lot, which it is today, with a canopy over the lots and solar panels on the roof. Not shown in this image are the 8 houses built on the west side of Phillips rd. One house is less than 100 feet from the south east bend on the access road, which remains unsold nearly one year after completion.

2. 9000 ton crushed glass pile taken 3-17-2019, located under the northern part of the southern lot.

Respectfully,

Robert H. Ladino 3-18-19

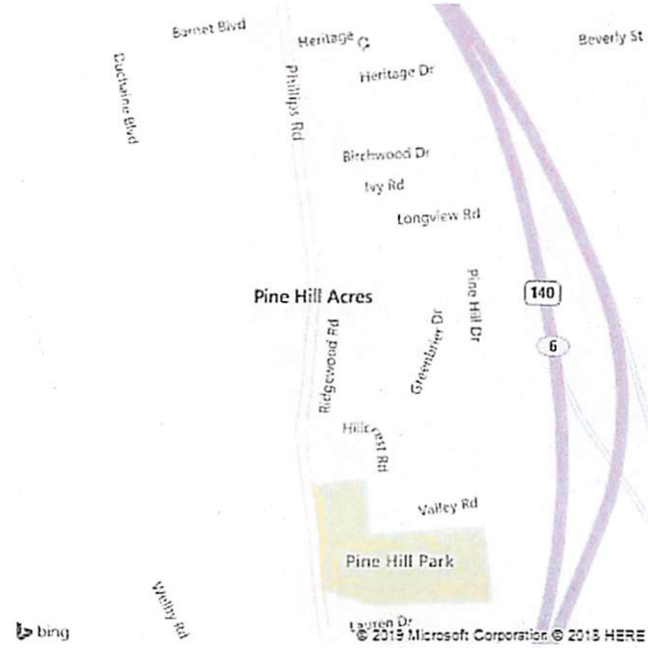
Robert H. Ladino
bobladino@comcast.net
508-269-9120

bing maps

ATTACHMENT NO. 1

Notes

old satellite image



ATTACHMENT NO.2

Czepiga, Page (EEA)

From: Roger A. Cabral <rogercabral@comcast.net>
Sent: Tuesday, March 26, 2019 7:05 PM
To: Czepiga, Page (EEA)
Subject: Parallel Products / New Bedford industrial Park

I just learned of this project which is proposed for the New Bedford Industrial Park. I'm very concerned by the fact that this project has not received a lot of attention and that many of the neighbors are unaware of what is proposed. Given the nature of this proposed project I think that a WELL PUBLICIZED public meeting is appropriate. I also think that all neighbors within a mile of the site should be notified by mail about the meeting. I believe that the New Bedford Industrial Park is the wrong place for a business of this nature.

Roger A. Cabral
9 Bow Drive
Acushnet, MA
508-642-9173

Czepiga, Page (EEA)

From:	Ron <rrcrt@aol.com>
Sent:	Tuesday, April 02, 2019 6:09 PM
To:	cstrupczewski@verizon.net; Czepiga, Page (EEA)
Cc:	cbostiguy@gmail.com; ritalapre@gmail.com; brad.markey@newbedford-ma.gov; desk@wpri.com; kjohnston@abc6.com; 5investigates@wcvb.com; antonio.cabral@mahouse.gov; chris.hendricks@mahouse.gov; christopher.markey@mahouse.gov; paul.schmid@mahouse.gov; william.straus@mahouse.gov; Ian.Abreu@newbedford-ma.gov; Naomi.Carney@newbedford-ma.gov; Debora.Coelho@newbedford-ma.gov; Hugh.Dunn@newbedford-ma.gov; Brian.Gomes@newbedford-ma.gov; Dana.Rebeiro@newbedford-ma.gov; Linda.Morad@newbedford-ma.gov; Joseph.Lopes@newbedford-ma.gov; Maria.Giesta@newbedford-ma.gov; Scott.Lima@newbedford-ma.gov; Jon.Mitchell@newbedford-ma.gov
Subject:	Re: EEA15990 Paralles Products - New Bedford Business Park

It is my understanding that Secretary Matthew Beaton has allowed residents till April 05, 2019 to write their opposition for Parallel Products, Inc. of New England for its expansion in the New Bedford Business Park and also their considering of adding a Wastewater Sludge Facility.

I reside in the Briarwood development which there are approximately 300 homes, there are two entrances from Braley Road into Briarwood and two exits from Briarwood onto Braley Road, Braley Road is a highly used thoroughfare going to and from Route 140, Acushnet Avenue and Phillips Road.

In the mornings starting at 7 AM we have a traffic problem on Braley Road with school buses, vehicles, parents dropping their children off for school at the Pulaski School, vehicles parked on both sides of Braley Road. It is a problem exiting from Briarwood onto Braley Road.

We have two large nursing homes and the VIBRA Hospital of S.E. MA in the Sassaquin area throughout the day ambulances are going back and forth, we have a Fire Station on Acushnet Avenue south of Braley Road. These emergency vehicles are always using Braley Road because of Route 140.

There will be a problem at Parallel Products, Inc we will have with garbage trucks and trailer trucks coming off of route 140 North and South bound it will be a nightmare, traffic will be backed up on Rt 140 North and South bound exit 7 as vehicles, garbage trucks, and 18 wheeler's are trying to exit off the highway onto Braley Road on the way to the Parallel Products Inc property, then they will be returning back to Route 140.

There will be Garbage trucks and 18 wheeler's to avoid the traffic jam off of exit 7 North bound they will use exit 5, they will proceed north on Phillips Road to enter the unnamed road of the New Bedford Business Park, south of Braley Road entrance closer to the Parallel Products, Inc property, this will now cause another traffic jam.

The study evaluated traffic impacts based on 284 inbound trips and 284 outbound trips (trucks carrying material and employee trips traveling to and from work). This is on Route 140 North and South as well as our streets leading to the Industrial Park.

I would not be surprise if fatalities could occur because of the numerous amount of garbage trucks and trailer trucks coming off of Rt 140 North and South bound onto Braley Road from 6 AM to 6 PM Monday to Saturday, and possibly on Sunday's going to Parallel Products, Inc.

As it is the New Bedford Business Park is a busy area with numerous businesses such as the large Service Center, Dunkin Donuts, Titleist Golf Ball, MA Registry of Motor Vehicles, Acushnet Co., American Circuit Breaker, Alberox Corp, N.E. Plastics, Milhench, AFC Cable, Epec, ete, etc.

Here in Briarwood we pay high house taxes, as does Pine Hill Acres and other housing developments off of Phillips Road, and other homes in the area, imagine the smell of garbage, imagine the rats we will have. Yes they will invade the businesses in the New Bedford Business Park, Briarwood, Pine Hill Acres, homes off of Phillips Road, homes in Freetown, Sassaquin, Acushnet Ave here in the far North End, lets not forget the Seagulls flying over dropping their poop on our homes and back yards where children will be playing, a child possibly being bitten by a rat.

There is the old N-Star building and property at the waterfront, garbage can come in by boats, barges, Trucks off of I-195 to Rt 18, and by Rail. There is the Building 19 property that trucks can come in, there is the railroad tracks next to the property, and the property is across the street from Parallel Products, Inc property at 969 Shawmut Avenue on Hathaway Road. These are one of two excellent locations for Parallel to be located.

Please stop Parallel from coming into the New Bedford Business Park.

Ron R. Cabral
67 Blaze Road
New Bedford, MA 02745
E-mail: RRCRT@aol.com

Page Czepiga
Environmental Analyst
(617) 626-1021
page.czepiga@mass.gov

MEPA Office
100 Cambridge St., Suite 900, Boston, MA 02114

TOXICS ACTION CENTER

Re: Parallel Products

Dear Ms. Czepiga

My name is Claire B.W. Miller and I am the lead community organizer for Toxics Action Center. We are a 32-year old public health and environmental non-profit. We work in all six north-eastern states side by side with communities to clean up and prevent pollution. I am writing in concern about construction of glass processing, a MSW processing and handling facility, biosolids drying & gasification facility, and railside track in a designated Environmental Justice neighborhood. This facility plans to process 1,500 tons per day of municipal solid waste, recieve construction and demolition, and process biosolids 24 hours a day, with an expected 418 new truck trips- all next to a residential neighborhood.

We firmly believe that community involvement in decisions is key. **Please consider granting a significant and fair extension to the deadline for public comments.**

As I'm sure you know, this location is a designated Environmental Justice neighborhood. As part of the Environmental Justice Policy of 2017, MEPA has obligations. These are screenshots from the EJ Policy:

Enhancing the Review of New MEPA Projects in EJ Populations

17. **Enhanced Analysis of Impacts and Mitigation Under MEPA.**[3] In addition to the enhanced public participation requirements specified in section 16 above, enhanced analysis will be required as part of the Environmental Impact Report (EIR) scope for projects that:

- (1) Exceed a mandatory EIR threshold for air, solid and hazardous waste (other than remediation projects), or wastewater and sewage sludge treatment and disposal; *and*
- (2) Are located within one mile of an EJ Population (or in the case of projects exceeding a mandatory EIR threshold for air, within five miles of an EJ Population)[4]. The project proponent may submit actual air modeling data on the project's area of potential air impacts in its EIR scope to modify the presumed five-mile impact area referred to in condition (2) above.

Enhanced analysis of impacts and mitigation may include analysis of multiple air impacts; data on baseline public health conditions within the affected EJ population; analysis of technological, site planning, and operational alternatives to reduce impacts; and proposed on-site and off-site mitigation measures to reduce multiple impacts and increase environmental and energy benefits for the affected EJ Population.

18. **Review of Thresholds.** As required by Executive Order 552, MEPA shall seek and consider stakeholder input on which thresholds are appropriate for enhanced participation and/or enhanced analysis.

19. **Collaboration with the Director of EJ.** For any projects triggering the MEPA EJ thresholds, as defined by this Policy, the MEPA Office shall collaborate with the Director of Environmental Justice to

ensure that appropriate measures are taken by project proponents to address any potential environmental impacts the project may have on the existing EJ population. This will include, but not be limited to

> **16. Enhanced Public Participation Under MEPA.**[1] As part of the Secretary's commitment to Environmental Justice, enhanced public participation will be required for the following projects as they undergo review in accordance with MEPA:
>
> - (1) Any project that exceeds an Environmental Notification Form (ENF) threshold for air, solid and hazardous waste (other than remediation projects), or wastewater and sewage sludge treatment and disposal[2]; and
> - (2) The project site is located within one mile of an EJ Population (or in the case of projects exceeding an ENF threshold for air, within five miles of an EJ Population).
>
> Enhanced public participation may include use of alternative media outlets such as community or ethnic newspapers, use of alternative information repositories, and translation of materials or interpretation services prior to and during public meetings where the relevant EJ Population uses a primary language other than English in the home.
>
> When scheduling public meetings, EEA shall recommend that project proponents consider the time of the meeting, availability of public transportation to locations, and whether locations are child-friendly and culturally appropriate. To the extent feasible, meetings should be held in places that community members already routinely use and feel comfortable visiting. Additionally, EEA shall recommend that project proponents consider whether outreach efforts need to include an educational component to ensure that community members have the information necessary to evaluate a project's potential impacts.

I would appreciate a phone call to discuss the way that these measure- particularly the public meetings have been/will be met- especially given that the EJ Director Position is currently vacant. Thank you for your consideration of these comments and for your service to all the residents of the Commonwealth.

Respectfully,

Claire B.W. Miller
Lead Community Organizer
Toxics Action Center

Czepiga, Page (EEA)

From:	Tracy Wallace <wallacetracy99@gmail.com>
Sent:	Wednesday, March 27, 2019 8:41 AM
To:	Czepiga, Page (EEA)
Subject:	Re: Parallel Products proposed project

Hello Page,

Thank you very much for this information. I would like to add some additional comments in regards to the MEPA EENF complete report. Within the project description, it states that the site is zoned Industrial C, page 67 (page 28). That is not entirely true, the site is also zoned residential and zoned mixed business. There is no mention of the residential zoning of abutting properties, of which Parallel Products purchased two newly built homes. The full site is not zoned industrial C when consulting the site plan presented to the planning board of New Bedford in January 2017. During the presentation on March 7th the presenter indicted no production of Methane gas, however on page 13 of the complete report states the PPNE may decide to add gasification in the future to the site. The gasification process creates syn gas. Syn gas composition is known to be 7% Methane, when Methane mixes with other gases hydrogen sulfide is created, which is the rotten egg odor. Due to the location of several residential neighborhoods being within meters of the facility, this would have a dramatic impact on the community and its quality of life. This is fairly new technology and its effects on the surrounding communities are unknown. I would also like to call your attention to the Waste to Energy Project in Stamford, CT that was voted down by the Waste Pollution Control Authority in early 2010 after losing faith in its technical and economic feasibility, finding the drier itself produces significant emissions and there would be negligible economic benefit. The supervising engineer of Stamford's Water Pollution Control Authority stated that the overwhelmingly unpleasant smell that wafted in the air was due to the trucks that were parked carrying the waste. He stated in winter months, it's bad. In summer months, it'll be even more exaggerated. The complete report states that odor from the MSW and bio solids site will be minimized with ionization and wet scrubbing and by stacks ten feet above the bio solids facility and stacks from the MSW building. The study within the report mentions odor is subjective. There is no real way to know if the odor will be a nuisance or not. It also appears the stacks will be visible from the surrounding residential neighborhoods, this can decrease a property value of up to 13%. A collection of property value impacts is available from the Center for Health, Environment and Justice. The noise from heavy truck traffic lowers property value at a rate of 30 to 50 times greater than cars. This is because at 50 feet heavy trucks emit noise 16 times louder than car traffic. With regard to accidents, a fatality is twice as likely when a car is involved in a crash with a truck vs. another car. The studies included in the complete report regarding traffic, noise, odor and air quality impacts were done using conservative assumptions and computer modeling, which often does not translate to reality. The creation of waste sites tends to be around lower socio-economic communities and it seems this is of no exception. Environmental racism is environmental injustice that occurs in practice and in policy within a racialized context, exposing neighborhoods that are economically and racially disadvantaged to hazardous waste. This facility would never be put next to residents of a wealthier community. I ask you this, would you want to live within 500m or 1000m of a MSW and Bio Solids facility?

Sincerely,
Tracy L. Wallace M.Ed
Resident of New Bedford

On Mon, Mar 11, 2019 at 5:00 PM Czepiga, Page (ENV) <page.czepiga@state.ma.us> wrote:

Tracy,

Czepiga, Page (EEA)

From: Tracy Wallace <wallacetracy99@gmail.com>
Sent: Friday, March 08, 2019 12:43 PM
To: Czepiga, Page (EEA)
Subject: Parallel Products proposed project

Hello Page,

I would like to take this opportunity to thank you and everyone who attended the meeting yesterday March 7, 2019. Everyone was very nice and welcoming. I would also like to take this opportunity to express my concern with Phase 2 of the proposed project by Parallel Products at the Industrial Park in the City of New Bedford. I would first like to bring your attention to the original site plan proposed by Parallel Products in January 2017, and approved on March 21, 2017 with conditions. Mr. Cusson, of Parallel Products, stated in the meeting yesterday that the intention of the site was always to have been a waste site. That is not indicated in the original site plan. The site plan is for cooler storage/warehouse and additional parking, etc.... The original proposed plan also brings attention to the inadequacy of the storm drains and the undersized stormwater basins that were to be addressed when the Certificate of Compliance was applied for. There is no statement within the site plan that indicates Parallel Products intent to move their entire operation from the Shawmut Ave location to the proposed Duchaine Blvd location. I find this to be in direct contrast to the statement made by Mr. Cusson. Regarding the MSW transfer location being moved to Duchaine Blvd, there is cause for concern due to the proximity of the residential developments in the area. The Shawmut Ave location is not in as close proximity to residential areas as the proposed Duchaine location would be. I also encourage you to visit the Shawmut Ave location. If you drive down Shawmut Ave toward the airport, there is a distinct amount of trash deposited over the roads as well as an odor. There are also concerns regarding health risks when living in close proximity to a transfer station, those include, asthma, shortness of breath, respiratory disease, cardiac disease, stroke, allergies, etc.... The proposed bio solids facility that is also part of the Phase 2 portion of the project is cause for concern as well. When researching bio solids, there appears to be much debate over their efficacy. Bio solids could contain heavy metals, hormones, antibiotics, steroids, etc... all that would be reentered into the environment if used. When describing the project the presenter indicated that there would be no methane gas production, it would not be anaerobic, nor would it use flocculants or bugs. It does not appear to be drying beds or an incinerator either, so how is this going to be done? Would there be a way to obtain more information about the process? The presenter also indicated that a chemical scrub would be used to clean the facility and control for odor. Where would these chemicals go after scrubbing the facility? Into the municipal water system? If a cleaning agent is needed, then there is going to be an odor. The presenter also mentioned studies conducted regarding traffic, noise, and odor, all not having a significant impact on the surrounding community. He pointed out that there would be an impact at the stop sign/intersection of Braley Rd. and Phillips Rd. I would like to mention that there is an older condominium complex at that intersection that would be impacted by the increased noise of the addition of 584 trips to the area. Is there a way to obtain copies of the studies which were conducted? A young man attended the meeting yesterday as well, he is a resident of the area. He stated he lives across the street from the current Duchaine location, and indicated that there is already a noise issue. Truck noises that go well past 10pm. Recently, several new homes have been built along Phillips Rd on the same side as the proposed site. Mr. Cusson indicated that Parallel Products bought the two homes closest to the site. Why did they buy the homes? They did not buy the other homes next to those two. Are they going to tell those home owners that their backyards will soon be abutting a waste site? The presenter indicated that the glass plant (part of Phase 1) would be round the clock, but was not sure the hours of operation of the MSW transfer station or bio solids facility. He thought it would be 7am to 6pm, however there seemed to be no confirmation of that. Would there be consequences in place for violations of those hours, if those are in fact the hours? The meeting was absolutely fascinating. It definitely brings to light the amount of waste we as a society produce, and the need for effective waste management. However, it would be a shame if that need comes at the detriment of the community. I appreciate your time and consideration of my concerns.

Sincerely,

Tracy L Wallace, M.Ed
Resident of New Bedford

Czepiga, Page (EEA)

From: Vincent Carolan <vincent.h.carolan3@gmail.com>
Sent: Friday, March 29, 2019 2:59 PM
To: Czepiga, Page (EEA)
Subject: Industrial Park New Bedford

Greetings,

My name is Vincent Carolan and I am a long time resident of New Bedford and I have major concerns regarding the MSW plant and biosolids facility being built less than a mile from my house off of Exit 7 on route 140 affiliated with Parallel Products in the large Industrial Park on Duchaine Boulevard. It has the potential to effect the quality of life via traffic, odor, noise, and pollutants and there is no upside to having this facility stationed at this location within a residential neighborhood. I strongly urge you to find alternatives. Please consider.
Sincerely,
Vincent H. Carolan III
Resident of New Bedford

Czepiga, Page (EEA)

From: Wendy Graca <wendygraca@aol.com>
Sent: Wednesday, March 27, 2019 10:05 AM
To: Czepiga, Page (EEA)
Subject: Parallel Products NE Project in NB Industrial Park

Hello Page,

I am submitting the following comments regarding the Parallel Products Project, proposed for the New Bedford Industrial Park in the North End of New Bedford. I have just recently learned of this project, and after speaking with a few local residents have found that most people are in the same uninformed "boat" as I.

Please consider granting a significant and fair extension to the deadline for public comments. Residents in the area have little to no knowledge of this project, due to poor outreach and advertisement of public meetings by the company. Also, the one public meeting I was made aware of just a few days prior (due to my making inquiring phone calls), was held at 10:00 AM on a weekday. This is a community of working class citizens. Meetings that are intended to be informative to residents regarding something that could impact their daily lives and homes should be conducted at a time when they would not need to take time off of work to attend. That is not acceptable "outreach" and does not send a message that the company is working in "good faith" and "transparency". For that reason to start, this project does not make me comfortable.

The nature and scope of this project is not to be taken lightly. Little is known about the so-called "cutting edge" technology of this facility, since there are so few of these plants in the US. It is unfair and burdensome to expect the citizens of New Bedford to take on yet another industrial project in their community without giving them all of the information, as well as the opportunity to ask questions and time to submit informed comments.

Sincerely,

Wendy M. Graca
(508) 254-6333

DEIR - CERTIFICATE

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/eea

January 30, 2020

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Parallel Products of New England
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: Parallel Products of New England, LLC
DATE NOTICED IN MONITOR	: November 22, 2019

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62I) and Section 11.08 of the MEPA regulations (301 CMR 11.00), I have reviewed the Draft Environmental Impact Report (DEIR) and hereby determine that it **adequately and properly complies** with MEPA and its implementing regulations. The Proponent may prepare and submit for review a Final Environmental Impact Report (FEIR).

I received comments from elected officials, the City of New Bedford (City) and residents opposed to the project because of its noise, air quality, odor and traffic and roadway impacts and its proximity to residences and schools. Many commenters are residents of the neighborhood adjacent to the project site and are concerned that the project would affect the quality of life of residents, change the overall character of the neighborhood and impact property values. Many commenters expressed the need for a longer comment period to review the DEIR. The Proponent is required to submit additional analyses in the FEIR documenting the project's impacts and proposed mitigation measures and responding to all comments received on the DEIR. MEPA requires Proponents to prepare documents to provide opportunities for the public to understand a project's impacts, identify additional relevant information and analyses that should be provided, challenge the assumptions of the Proponent's analyses and recommend design revisions and mitigation measures. A key purpose of MEPA is to "assist each Agency in using (in addition to applying any other applicable statutory and regulatory standards and requirements) all feasible means to avoid Damage to the Environment or, to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable." 301 CMR 11.01(1)(a). However, MEPA does not ultimately approve or deny permits for the project. For this reason, while I expect that the FEIR will serve to provide further transparency and explanations of environmental impacts and mitigation, the many concerns about the design of the project will continue to be reviewed as the final design of the project proceeds to permitting at the conclusion of the MEPA process before the Massachusetts Department of Environmental Protection (MassDEP) and the City. This certificate is not intended to prejudge the outcome of those subsequent permitting procedures.

Project Description

As described in the DEIR, the project includes the construction of a waste management facility comprised of a glass recycling/processing facility; a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste; and a biosolids drying facility that will accept 50 dry tpd of biosolids.

The project will be constructed in two phases. Phase 1 includes construction of: a 27,500-square foot (sf) building for glass recycling/processing, a 23,050-sf bunker building attached to the north side of the new glass recycling/processing building, a 22,819-sf side bunker building southeast of the new glass recycling/processing building, a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of a 1.9-megawatt (MW) solar photovoltaic (PV) array. The glass recycling/processing facility will also occupy an approximately 50,000-sf portion of an existing 92,200-sf building ("existing building"). The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks to shipment for bottle manufacturers. Phase 1 was proposed to meet an immediate regional need for glass processing in the region by providing an alternative market for glass that would otherwise be discarded. The proponent submitted an Expanded Environmental Notification Form (EENF) in February 2019 with a Phase 1 Waiver request to allow Phase 1 to proceed prior to completion of MEPA review of the second phase of the project. A Phase 1 Waiver was granted in a Final Record of Decision (FROD) issued on May 15, 2019 and no further MEPA review of the Phase 1 project components, as described in the EENF, is required. The glass recycling facility is operating in the existing building and the 27,500-sf building has been constructed but is not yet in use. Construction of the other Phase 1 components has not commenced.

The DEIR provided additional information and analysis regarding Phase 2, which includes the MSW and C&D transfer station, the biosolids drying facility and extension of the RR sidetrack to service these facilities. The transfer station will be comprised of a 48,900-sf MSW and C&D tipping and processing building attached to the west side of the existing building, which will house sorting and processing equipment to remove waste ban items and separate out recyclable materials. The MSW tipping building will have four 70-ft high (above ground level) exhaust stacks and the MSW processing building will have three 70-ft high exhaust stacks. The biosolids facility will be constructed as a stand-alone 30,000-sf building northeast of the glass recycling facility. Biosolids processing will consist of drying the biosolids to reduce the volume and tonnage of the material prior to off-site disposal. The biosolids building will include 12 40-ft high exhaust stacks. Shipment of all outbound material will primarily occur via rail car.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south, and RR tracks and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue in New Bedford to the project site. The site also contains a 1.5-MW solar PV system mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility.

Most of the northern and western parts of the site are comprised of wetland resource areas, including Bank, Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

Potential environmental impacts associated with full-build of the project include alteration of 2.8 acres of land; creation of 2.2 acres of new impervious area (18.2 acres total at the site); alteration of 4,095 sf of BVW, generation of 568 new average daily trips (adt), use of 70,150 gallons per day (gpd) of potable water, and generation of 113,750 gpd of wastewater. Of these impacts, the following are attributable to Phase 2: alteration of 2.24 acres of land, addition of 2.2 acres of impervious area, generation of 450 adt (including 300 truck trips), use of 70,150 gpd of potable water and generation of 113,750 gpd of wastewater. Construction and operation of the facilities will emit air pollutants and odors and generate noise. The project will also emit Greenhouse Gasses in connection with its energy use and trip generation.

Measures to avoid minimize, and mitigate project impacts include constructing the project on a previously altered site; enclosing all areas where discharge, handling and processing of glass, solid waste and biosolids will occur; use of rail to transport the majority of material from the site; installation of a floor drain collection system that drains to a holding tank or sanitary sewer system to prevent groundwater contamination; operation of a 3.5-megawatt (MW) canopy-mounted solar photovoltaic (PV) generating system; erosion and sedimentation controls; stormwater management controls and implementation of Best Management Practices (BMPs) to minimize odor, dust, noise, and litter impacts.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires State Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol. The project is also subject to the Executive Office of Energy and Environmental Affairs' Environmental Justice (EJ) Policy as it is located within an EJ Population and exceeds mandatory thresholds for sewage and solid waste.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 will require an Order of Conditions from the New Bedford Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP) and a new or amended Site Plan Approval from the New Bedford Planning Board.

The remainder of the project will require a Determination of Site Suitability, Authorization to Construct, and Authorization to Operate and may require a Limited Plan Approval (LPA) for air emissions from MassDEP and a NPDES General Permit (GP) for Construction and/or Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity from the U.S. Environmental Protection Agency (EPA). The project will also require a number of local permits from the City of New Bedford, including: Site Assignment from the Board of Health, a new and/or Amended Order of Conditions from the Conservation Commission, and a new and/or amended Site Plan Approval from the Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations. The impacts arising from Phase 2 also are closely related to the required State Permits, including MassDEP's site suitability standards for solid waste handling facilities.

Changes Since the Filing of the EENF

The Proponent identified the following changes to the project design since the filing of the EENF:

- The design of the southwest corner of the MSW building has been modified resulting in a reduction of the area of the building from 50,000 sf to 48,900 sf;
- The solar canopy has been expanded to cover the eastern end of the rail spurs;
- The configuration of the side building building has changed (but not its overall size);
- The bunker buildings will be completely enclosed to minimize noise impacts; and,
- The size of the proposed noise barrier adjacent to the biosolids building has increased to increase its noise mitigation value.

Review of the DEIR

The DEIR provided a detailed description of Phase 2, including plans of existing and proposed conditions, identified potential environmental impacts and described mitigation measures. It included reports documenting the project's air quality, odor, noise, and traffic impacts, its GHG emissions, and public outreach and public health data provided in accordance with the EEA Environmental Justice Policy. The DEIR included a copy of the Notice of Intent and a detailed drainage study submitted to the New Bedford Conservation Commission and described impacts to wetland resource areas and proposed BVW replication and other mitigation measures. It provided a brief description of applicable statutory and regulatory standards and requirements, reviewed how the project will meet relevant standards and provided an update on the state, federal, and local permitting process. The DEIR included a Response to Comments received on the EENF and provided draft Section 61 Findings identifying the Proponent's mitigation commitments. While providing a substantial amount of information about the project, the DEIR did not follow the format prescribed in the Scope included in the EENF. The Proponent should review the formatting requirements included in the Scope below and consult with the MEPA office prior to completing the FEIR.

Solid Waste

The DEIR provided additional information on the operation of the proposed facilities, including how C&D, baled and loose MSW, and dewatered cake and thickened wet slurry biosolids, will be delivered, transferred from vehicles, processed, and shipped-off site. It described safety measures to be implemented at the facilities and reviewed how the project would seek to meet the Site Suitability criteria. As discussed below, the ultimate determination of whether these criteria are met will be left to local and state agencies at subsequent permitting stages after the conclusion of MEPA review.

Facility Operations

According to the DEIR, MSW, C&D and biosolids will be delivered to the facility by truck between 5:00 AM and 9:00 PM, Monday through Saturday. Biosolids delivery may also occur on Sunday between 6:00 AM and 6:00 PM. The facility will receive C&D, baled MSW, and loose MSW in live floor trailers, transfer trailers, and packer trucks (respectively). All material will be deposited and processed within the tipping and processing building. Trucks will be weighed on a truck scale and backed into the proposed tipping building to tip their load. Processing equipment and manual picking lines will remove waste ban items, including recyclables, from the mixed waste and separate other recyclable materials for recycling or diversionary uses. Extracted recyclables are expected to comprise 20 percent of the MSW throughput and will be sent to recycling markets by rail or truck. The facility will include two processing lines with a total capacity of 40 tons of MSW per hour. Residual waste will be baled, shrink-wrapped, and transported via rail for disposal at off-site locations. The facility will receive Category 2 (pre-processed) and Category 3 (bulky waste with minimal recyclable material) C&D, which will be delivered to the tipping facility by in trailers. According to the DEIR, MSW to be transported by rail is currently required by CSX, the company that will provide rail service to the site, to be placed in intermodal containers that are loaded on flat bed rail cars. The Proponent expects that in the future, CSX will allow MSW that is either baled and shrink-wrapped or baled and bagged to be shipped in open-topped gondola rail cars. If the MSW transport requirements are not changed, the Proponent will not install a baler and will ship all loose material by intermodal containers. The facility is anticipated to generate 1,300 tons per day (tpd) of processed MSW and C&D for disposal, which would fill approximately 14.5 rail cars (each with a capacity of 90 tons) each day.

The biosolids processing facility will accept solids from wastewater treatment plants and will have a maximum processing capacity of 50 dry tpd. All biosolids processing will be done within a separate enclosed building with ionization and biofilter odor control systems. The facility will accept dewatered cake biosolids with a solids content between 15 percent and 30 percent and thickened wet slurry biosolids with a solids content of 5 percent to 10 percent. Wet slurry biosolids will be delivered to the site in tanker trucks, which will discharge the slurry through piping to storage tanks that will be sized to hold a volume equivalent to three days of deliveries. The slurry will be dewatered to produce a biosolids cake with a solids content of 30 percent. Approximately 52,000 gallons of wastewater per day is expected to be extracted from the dewatering process and discharged into the City of New Bedford's Sewer system. The dewatered biosolids cake will be delivered to the site in covered dump trucks. The trucks will drive into the facility and dump the material into a receiving area. The dewatered cake biosolids and dewatered slurry cake will be blended together and directed to a thermal dryer that utilizes a natural gas burner. The facility will be equipped with four dryers arranged in a parallel configuration, three of which will be typically in use and the fourth on standby if another dryer becomes unavailable; if all four dryers are inoperable, the biosolids and cake will be stored within the facility until its storage capacity is reached and no more material can be accepted. Moisture evaporated from the drying process will be condensed at a rate of 30,000 gallons per day and discharged into the City's sewer system. The biosolids will be dried to approximately 90% solids and sent via railcar or truck for disposal or for beneficial reuse as landfill daily cover. According to the DEIR, the facility will include fire alarms and fire suppression systems recommended by the National Fire Protection Association to minimize the potential the risk of fires during drying operations. The dryers will include safety features such as temperature controls, measures to minimize flammable dust from entering the dryers and a fire suppression system, and will be operated to maintain oxygen-deficient conditions within the dryer. Dried biosolids will be cooled before being transferred to storage tanks, stored in oxygen-deficient conditions and monitored for temperature.

The following Best Management Practices (BMP) were incorporated into the project design to minimize potential impacts to the site and surrounding environment:

- All tipping, handling, and loading of MSW/C&D and all biosolids processing will occur within fully enclosed buildings;
- To prevent contamination of groundwater, the tipping floor will be constructed of impervious concrete and include a floor drain collection system that drains to a holding tank, or if permitted, to the sanitary sewer system;
- Use of a fine atomized misting system within the MSW handing and processing buildings to control fugitive dust and odor;
- Regular daily clean-up and sweeping to control fugitive dust on external paved surfaces;
- Use of a negative pressure air collection system, biofilter, and ionization system to reduce odors from the biosolids facility; and
- Designing building stacks with adequate heights and exit velocities to facilitate air dispersion.

On-site Rail System

The DEIR described the movement of empty rail cars from the rail spurs to the MSW facility and of full cars from the MSW facility to the rail system for transport off-site. Five rail spurs will extend onto the site from the RR at the western edge of the property. Rail cars will be delivered and removed from the site by a locomotive and an electric rail car pusher will be used to move rail cars within the site. The southernmost spur (Track 1) will end inside the northern end of the MSW transfer station. The other four spurs (Tracks 2 through 5) will be parallel and to the north of the Track 1 and extend across to the eastern part of the site. Two of the tracks will not have any rail cars in order to receive rail cars once they are filled, and the other two will have 8 to 10 empty rail cars that will be sequentially moved, two at a time, into the MSW transfer station to be filled with waste. Two rail cars will be moved into the transfer station on Track 1, filled, and moved onto an empty track. Two more empty rail cars will then be moved onto Track 1 to be filled within the MSW transfer station, then moved to the track where the two previously-filled rail cars have been stored. This pattern will continue until 10 full cars are located on one track and eight full cars are on another track, at which point a locomotive will deliver 10 empty cars to an empty track and eight empty cars to the other empty track and haul away the 18 filled cars. The DEIR did not describe how the loading and transport of rail cars will occur for the operation of the glass recycling and biosolids processing facilities; this information should be provided in the FEIR.

Site Suitability Criteria

The regulations for siting of solid waste handling facilities (310 CMR 16.00) specify 20 siting criteria that must be evaluated for a proposed facility. The EENF included an analysis of these criteria, which was supplemented in the DEIR. The DEIR asserted that the project will comply with each criterion. However, MassDEP will make the final determination regarding site suitability based on its review of the Proponent's permit application and the New Bedford Board of Health must issue a Site Assignment for the facility.

In the DEIR, the Proponent provided supplemental information regarding the proposed facility's setbacks from residences and the Riverfront Area, and its potential impacts on the Acushnet Cedar Swamp (ACS). The DEIR included land use maps showing that all waste handling facilities will be greater than 500 feet away from residences and other sensitive uses and will not be located in the Riverfront Area. To support the Proponent's finding that the project will not adversely impact the ACS, the DEIR stated that the sites are separated by the RR and a drainage swale, that waste handling will occur within buildings located at least 800 feet away from the ACS and that treated stormwater will be discharged into and will travel through a wetland system for a distance of 4,000 feet before entering another wetland system that is hydraulically connected to the ACS.

Wetlands/Stormwater

According to the DEIR, Phase 2 will not impact wetland resource areas. As previously described in the EENF, Phase 1 includes the construction of a three-sided culvert to provide a stream crossing for the main rail spur in the western part of the site. The DEIR provided updated information about the impacts and proposed mitigation associated with the crossing and included a copy of the Notice of Intent filed with the New Bedford Conservation Commission in October, 2019 (DEP File #049-0831). The proposed stream crossing will impact 4,936 sf of BVW, 60 lf of Bank, 504 sf of LUW and 2,110 sf of Riverfront Area. A BVW replication area of 8,208 sf will be constructed adjacent to the wetland impacted to the crossing. The Proponent will restore a 4,425-sf area of Riverfront Area by planting native vegetation with wildlife habitat value. According to the DEIR, the stream crossing has been designed to conform to the Massachusetts Stream Crossing Standards and will include a span exceeding 1.2 times the bankfull width of the stream, a natural bottom substrate matching adjacent sections of the stream and a wide and tall opening relative to the length of the crossing.

The project will increase impervious area by 2.2 acres. The Notice of Intent included in the DEIR described the proposed stormwater management system and reviewed how it will comply with MassDEP's Stormwater Management Standards (SMS). The stormwater management system will be designed to reduce peak discharge rates and flow volumes under post-development conditions compared to existing conditions, remove at least 80 percent of Total Suspended Solids (TSS) in runoff prior to discharge and infiltrate runoff to recharge groundwater. The project is considered a land use with higher potential pollutant loading (LUHPPL); in addition to standard requirements of the SMS, the stormwater management system must be designed to treat the first inch of runoff and remove 40 percent of the TSS prior to discharge into an infiltration system. Runoff will be directed through new drain pipes to BMPs such as sediment forebays and constructed wetlands. The project also includes Low Impact Design (LID) measures such as rain gardens. The DEIR included a Long-Term Pollution Prevention Plan and a Long Term Operation and Maintenance Plan that described operational measures to minimize release of pollutants and maintenance activities and schedule. The project's compliance with the Wetlands Regulations (310 CMR 10.00), including the SMS, will be determined by the New Bedford Conservation Commission or, upon an appeal of the conservation commission's decision, by MassDEP.

Water/Wastewater

According to the DEIR, the project's water demand will be 70,150 gpd, including approximately 2,250 gpd to be used by employees and 67,900 gpd used for operation of the facility (e.g., biosolids building cooling tower makeup water, misting system and washdown water). The project will generate 113,750 gpd of wastewater, including 2,250 gpd associated with employees, 52,000 gpd from dewatering of biosolids, 53,000 gpd from drying of biosolids and 9,500 gpd from blowdown of the cooling tower at the biosolids building. The site is connected to the City's water and sewer systems as a result of the previous use of the site. In connection with applying for increased water and sewer use, the Proponent has been coordinating with the City to establish the capacity and condition of the water and sewer systems and compliance and mitigation requirements.

The City has expressed concern that the project's wastewater discharges may include concentrations of polyfluoroalkyl substances (PFAS) that would contaminate effluent and solids produced at the City's wastewater treatment plant. According to supplemental information provided by MassDEP, while there are no state or federal effluent standards currently for PFAS, MassDEP is evaluating the implications of PFAS in wastewater, including potential sources of PFAS in the influent from industrial dischargers, and potential effects of elevated PFAS concentrations in the effluent on downstream water supplies. [1] To the extent these efforts result in new effluent limits or testing requirements, the Proponent should be prepared to comply with those requirements. The project's wastewater discharges must also conform with any requirements the City may impose through its EPA-approved Industrial Wastewater Pretreatment Program (IPP). The Proponent must address potential contamination of wastewater and solids generated by the project in the FEIR by analyzing its ability to conform to any future regulatory requirements through installation of new testing equipment or testing as needed, or other means. More detail on this type of analysis is provided in the Scope below.

Traffic and Transportation

The EENF had previously provided an analysis of the project's transportation impacts, including a review of existing roadway conditions, a summary of crash data and traffic safety concerns and an analysis of traffic operations at area intersections under existing and proposed conditions; in the DEIR, the Proponent provided a transportation analysis that specifically addressed the vehicle trips generated by Phase 2. Because Phase 2 was included as part of the Full Build condition evaluated in the EENF, the results of the traffic study are similar. As required by the Scope for the DEIR, the DEIR provided a revised traffic analysis, including queue lengths, reflecting the four-way stop-sign controlled intersection at Braley Road/Theodore Rice Boulevard at Phillips Road. As noted in the Scope below, a revised analysis must be provided in the FEIR to support the method of calculating truck trip generation, clarify impacts of each phase and review potential mitigation measures.

The analysis in the DEIR was prepared in general conformance with the EEA/Massachusetts Department of Transportation (MassDOT) *Transportation Impact Assessment (TIA) Guidelines* issued in March 2014. It included a detailed description of existing and proposed roadway conditions, traffic patterns and crash data. The DEIR provided traffic counts in the study area, trip generation estimates and likely travel routes for vehicles arriving to and departing from the site under proposed conditions. It described future No Build and Build traffic operations over a seven-year planning period and identified mitigation measures that will be implemented to minimize impacts to the local transportation network, including Transportation Demand Management (TDM) measures. The DEIR analyzed the transportation impacts of the project in a study area including the following intersections:

- Route 140 Northbound Ramps at Braley Road;
- Route 140 Southbound Ramps at Braley Road;
- Braley Road/Theodore Rice Boulevard at Phillips Road;
- Theodore Rice Boulevard at Duchaine Boulevard;
- Duchaine Boulevard at Samuel Barnet Boulevard;
- Phillips Road at Samuel Barnet Boulevard; and,
- Duchaine Boulevard at Site Driveway.

[1] See January 29, 2020 email from Stephanie Cooper to Alex Strysky. MassDEP does plan to finalize standards for drinking water this year, and has already finalized PFAS standards for its c. 21E hazardous waste clean-up program.

Vehicles are expected to travel to the site from Exit 7 on Route 140 to Braley Road/Theodore Rice Boulevard to Duchaine Boulevard and to follow the same route back to Route 140 when leaving the site.

Trip Generation

According to the DEIR, Phase 2 will generate 300 truck trips per day on each day the facility is open, in addition to the 108 truck trips per day generated by Phase 1. Employees of the facility, including Phase 1 and Phase 2 components of the project, will generate 150 adt. Accordingly, at full buildout the project will generate 558 adt, including 408 truck trips. As noted in the DEIR, each trip represents one trip either to or from the site. Estimates of the volume and hourly distribution of truck trips was based on observations of truck traffic patterns and the number of each type (size) of trucks used to deliver and transport waste at a similar facility in Rochester. According to the DEIR, the trip generation estimate is conservative because it assumes that all material will be brought to the site and transported from the site by truck. The actual number of truck trips are expected to be approximately 300 trips per day for the full buildout because most of the material will be transported from the site by rail.

Traffic Operations

The DEIR compared traffic operations in the study area under Existing 2019, No Build 2026 and Build 2026 conditions. The Existing 2019 scenario incorporated traffic counts collected in 2018, a background annual growth rate in traffic volume of one percent per year and the trips generated by Phase 1. The No Build 2026 was based on traffic volumes in the Existing 2019 scenario with added trips due to the background growth rate over the seven-year period. The Build 2026 condition was developed by adding trips generated by Phase 2 to the No Build 2026 traffic volumes.

The DEIR provided a capacity analysis, including volume-to-capacity (v/c) ratios, delay and Level of Service (LOS) designations, under each scenario for intersections in the study area during weekday morning and evening peak periods. The LOS reflects the overall peak period operations based on the average delay per vehicle entering an intersection, including traffic speed, delay, and capacity. In general, LOS D reflects an acceptable level of operations. The analysis indicated that under Existing 2019 conditions, intersections generally operate at an overall LOS D or better, except for the following:

- The northbound movement at the Route 140 Northbound Ramps at Braley Road operates at LOS F in both weekday peak periods;
- The southbound movement at the Route 140 Southbound Ramps at Braley Road operates at LOS F in both weekday peak periods;
- The eastbound movement at the Braley Road/Theodore Rice Boulevard at Phillips Road intersection operates at LOS F in the weekday evening peak period; and,
- The westbound movement at the Braley Road/Theodore Rice Boulevard at Phillips Road intersection operates at LOS F in both weekday peak periods.

Under the No Build 2026 and Build 2026 scenarios, all intersections are expected to operate under the same conditions as the Existing 2019 scenario. Several intersections experiencing significant delays and congestion under existing conditions (LOS F) will continue to do so under future conditions; project-generated traffic is not expected to cause any additional intersection movements to operate below LOS D. However, queue lengths at the intersection of Braley Road/Theodore Rice Boulevard at Phillips Road appear to extend to the Route 140 ramps under certain conditions. The FEIR should include a more detailed assessment of the project's contribution to lengthened queues at this intersection during peak periods.

Transportation Demand Management (TDM)

The project will implement a TDM plan to minimize single-occupant vehicle (SOV) trips to the site. As proposed in the DEIR, the TDM plan will include the following:

- Transit subsidies and/or reimbursement program for employees;
- Inform employees of transit options and bicycle and pedestrian facilities;
- Work with Southeastern Regional Transit Authority (SRTA) to improve transit service to the site;
- Implement an employee carpool program;
- Offer direct deposit to employees;
- Provide preferential parking for carpools and vanpools;
- Provide bike racks and other bike storage amenities to encourage bicycling to work by employees; and,
- Work with the City of New Bedford to Provide striped bicycle lanes on Duchaine Boulevard and shared bicycle markings along Theodore Rice Boulevard to connect the site to bicycle facilities on Braley Road.

Greenhouse Gas Emissions

The DEIR included a revised GHG analysis based on the updated site plan and comments submitted by the Department of Energy Resources (DOER) on the EENF. Conditioned buildings that must meet Building Code energy requirements include the glass processing building, the glass recycling north bunker building, and the biosolids building. According to the DEIR, the conditioned buildings will meet or exceed the applicable energy requirements of the Building Code, including the following energy-related features:

- Building envelope: Wall and roof insulation with an R-value of R-19; the biosolids will additionally have a roof insulation linear system with R-11;
- Space heating: gas heating systems (82 percent efficiency) in the glass processing and biosolids buildings;
- Ventilation: Variable frequency drives (VFD) will be incorporated into the ventilation system of the biosolids building; and,
- Lighting: LED lighting will be used throughout the site (including non-conditioned spaces) and the buildings will have a lighting power density (LPD) that is at least 20 percent below the Building Code baseline.

If the project includes only the design features listed above, stationary-source GHG emissions generated the project were estimated as 11,241 tons per year (tpy), a reduction of 152 tpy (approximately 1.3 percent) compared to the baseline design corresponding to minimum

Building Code requirements. This reduction is small, given that "stretch code" communities (currently over 275 cities and towns in the Commonwealth) requires 10 percent more reductions in GHG emissions as compared to minimum Building Code levels. The project will include a 3.5-MW solar PV generating system that will offset 1,649 tpy of GHG emissions. The DEIR included an evaluation of the use of electric cold climate heat pumps to provide space heating. The analysis concluded that GHG emissions associated with heating would decrease by up to 42 percent compared to the proposed gas-fired system, but that the system would be too costly to install and operate. Comments from DOER request clarification of several aspects of the project design and GHG modelling, the selection of a biosolids building space heating system of lower efficiency than the one proposed in the EENF and the reduced roof insulation in the glass recycling building under construction. As indicated in the Scope below, the FEIR will be required to address DOER's comments and provide an updated analysis.

The DEIR calculated the project's mobile-source emissions associated with vehicle trips to the site associated with hauling of waste and employees and the use of front-end loaders to move waste within the site. These GHG emissions were estimated to be 1,721 tpy. The DEIR also compared GHG emissions associated with the off-site transport of processed waste to out-of-state landfills recycling facilities by truck and rail car. The use of rail for this purpose is estimated to reduce GHG emissions by approximately 60 percent (18,802 tpy) compared to the use of trucks. The FEIR should include a revised mobile-source estimate, as necessary, if the estimate of truck trips increases.

Noise

The DEIR included a revised a Sound Level Assessment Report which provided a description of the applicable noise regulatory requirements including the MassDEP Noise Policy, a brief explanation of noise terminology, a summary of the results of the complete ambient sound level monitoring program, and a discussion of the sound level modeling analysis for the proposed project. The facility will operate 24 hours per day, seven days per week, with waste deliveries to the site from 5:00 AM to 9:00 PM. The revised analysis modelled the following primary noise sources:

- Glass recycling building: eight sidewall inlet and exhaust fans;
- MSW/C&D transfer station: tipping and loading, front-end loaders operating inside the building and seven exhaust fans on the rooftop; and,
- Biosolids facility: two dewatering process exhaust fans on the rooftop, a makeup air fan at ground level, a biofilter exhaust stack equipped with an induced draft fan at ground level and four cooling towers; apart from the rooftop fans, all equipment will be on the west side of the building to provide shielding from the residential neighborhood.

According to the DEIR, noise generated by tipping/dumping and spreading of waste by front end loaders was modelled with three garage doors open at all times to produce a conservative analysis; however, the facility will typically operate with all doors closed. The analysis also modelled updated site conditions that are expected to minimize noise intensity, including enclosing glass recycling operations in two bunker buildings, use of an electric rail car pusher, fan silencers on the inlet/exhaust fans and induced draft fan, use of a low-noise makeup air handling unit and construction of a 100-ft long, 24-ft high L-shaped sound barrier along the southwestern corner of the biosolids building to shield the residential neighborhood from noise generated by equipment on that side of the building.

Sound levels were measured at four locations at the western and eastern boundaries of the site and at two locations closer the residential neighborhood east of Phillips Road to establish background noise levels. The analysis modelled four sound levels at four nearby residential buildings under facility operating conditions. The model predicts that daytime noise levels at the four residential sites will increase by 2-3 decibels (dBA) over existing sound levels and that nighttime sound levels will increase by 6-8 dBA compared to existing conditions. According to the DEIR, the project will comply with the MassDEP Noise Policy because the increase over background noise levels is modelled as less than 10 dBA. The modeling results also indicated that the project is not expected to create any "pure tone" conditions, as defined by MassDEP, when combined with existing background sound levels at any modeled receptor locations. The project's noise levels modelled in the DEIR are generally less than those modelled in the EENF due to the updated site conditions described above, which have been designed to minimize noise impacts.

The DEIR included an analysis of the noise impacts of on-site truck traffic based on the Federal Highway Administration (FHWA) Traffic Noise Model (TNM). Noise levels were modelled for the peak hour of trucking activity based on the traffic study estimate of the number of truck trips to the site anticipated throughout the day. Modelled noise levels from peak hour on-site trucking activity were compared to modelled existing sound levels at the same four residential locations. Noise levels under operating conditions were modelled to be below FHWA's threshold of 66 dBA and will increase by up to 3 dBA, below the Massachusetts Department of Transportation's significance threshold of a 10dBA increase over existing sound levels. Noise impacts from trucks will be minimized by enforcing a low speed limit on roadway leading to the site and prohibiting truck idling and queuing on the east side of the site closest to residential areas.

Comments from MassDEP note that the Sound Level Assessment Report did not analyze all noise sources. The noise model omitted waste delivery vehicles, processing equipment, tipping and loading of biosolids and glass, loading and movement of rail cars and short duration sounds such as backup alarms. In addition, the DEIR did not evaluate a full range of mitigation measures that could be implemented at the site to minimize noise impacts. The Proponent will be required to provide a revised noise analysis in the FEIR.

Air Quality

The DEIR included an updated analysis of the project's air and odor emissions incorporating design refinements since the EENF was filed. It provided estimates of emissions from the project, included air dispersion modelling based on emission rates, exhaust parameters and weather patterns and compared the results to state and federal standards. According to the DEIR, sources of emissions include boiler and dryer emissions through stacks on the biosolids and glass recycling buildings, vents on the biosolids, glass recycling and transfer station buildings, cooling towers associated with the biosolids building, processing equipment and trucks.

The DEIR summarized the results of an air dispersion model that predicted the spread of air pollutants emitted by the project from both stationary and mobile sources. The analysis used the Environmental Protection Agency's (EPA) AEROMOD model, which incorporates emissions from the site, local meteorological data, orientation of buildings and stacks and surrounding terrain to estimate concentrations of air contaminants outside the site boundary. The analysis modelled criteria air pollutants regulated by the EPA through the National Ambient Air Quality Standards (NAAQS), including carbon monoxide (CO), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$) and sulfur dioxide (SO_2). According to the DEIR, the project's emissions will not contribute to an exceedance of any of the NAAQS established for these criteria pollutants.

The DEIR also included an evaluation of the project's emissions of non-criteria air pollutants using MassDEP Air Toxics Guidelines. MassDEP has establish allowable ambient limits (AAL) for chemicals and threshold effect exposure limits (TELs), which are developed through an analysis of health effects of the pollutants. Non-Threshold Effects Exposure Limits (NTELs) are developed to represent exposure limits to carcinogenic chemicals associated with a one in a million excess cancer risk over a lifetime of exposure to the chemical. The TEL addresses non-cancer health effects of a chemical, including impacts to sensitive populations such as children, and takes into account pathways such as indoor air, food, soil and water, in addition to outside air. The AAL corresponds to the lower of either NTEL or TEL, which for this analysis corresponded to the TEL. According to the DEIR, the project will not cause an off-site exceedance of either the AAL or TEL for any of the pollutants. The DEIR identified site design features that will further minimize air quality impacts, including the maintenance of a vegetated buffer between the site and residential areas, support for a truck restriction on Phillips Road, monthly monitoring of air emissions and development of a system to track odor, noise and dust complaints.

The air quality analysis evaluated the maximum 5-minute-averaged odor concentrations associated with the emissions from the biosolids and MSW facilities at on-site and off-site receptors. The analysis included odor mitigation measures to be implemented by the Proponent, including handling material indoors, the use of biofiltration with carbon/zeolite polishing, ionization and the proposed configuration and location of stacks and vents. According to the DEIR, the odor concentrations were below the concentrations identified in MassDEP's draft odor policy. As detailed below in the Scope for Solid Waste, the Proponent should provide supplemental information on air quality impacts, including a plan for ongoing monitoring.

Environmental Justice and Public Outreach

The DEIR described public outreach conducted by the Proponent since the filing of the EENF and included a report providing baseline health data consistent with the enhanced analysis of impacts and mitigation required by the EJ Policy. The Proponent has prepared a project fact sheet, consulted with community groups to expand distribution of information about the project and held community meetings in the evenings of April 29, 2019 and January 6 and 7, 2020 with Portuguese and Spanish language translators in attendance. Many commenters expressed concern that many residents potentially impacted by the project remain unaware of its details. As recommended by MassDEP, the Proponent should continue its outreach efforts by scheduling additional public meetings and site visits. The Proponent requested an extension of the comment period from the standard 30 days to 62 days to facilitate public review of the DEIR, and has committed to providing notice of the FEIR at least 30 days prior to the comment period to allow for at least a 60 day review period for the FEIR.

The DEIR included an Environmental Justice report that reviewed baseline public health data for areas within one mile of the site, including sections of New Bedford, Acushnet and Dartmouth, available on the Department of Public Health's (DPH) Massachusetts Environmental Public Health Tracking (EPHT) website. The analysis reviewed rates of asthma hospitalizations and emergency room visits for the years 2000-2015; incidences of cancer for the years 2000-2013; rates of Chronic Obstructive Pulmonary Disease (COPD) hospitalizations and emergency room visits for the years 2000-2015; rates of Acute Myocardial Infarction (AMI) hospitalizations for the years 2000-2015; and prevalence of pediatric asthma for the years 2009-2017 (based on data from three schools in New Bedford). According to the DEIR, the data indicate that New Bedford suffers from elevated incidences of these parameters as compared to statewide averages, while Acushnet and Dartmouth have rates similar to or lower than the statewide average. As detailed in the Air Quality section above, the DEIR included analyses of the project's air emissions that indicated that the project will not exceed air quality standards that are protective of human health.

The DEIR Scope required the Proponent to evaluate the future climate conditions, such as extended periods of drought and extreme temperatures, on air quality within the EJ populations. As a potential measure of the effects of extreme temperature, the DEIR summarized EPHT data on incidences of heat-related illness hospitalizations and emergency room visits in the area. Heat-related illness hospitalizations were not statistically elevated at the community and county levels compared to the statewide average; emergency room visits due to heat-related illness were elevated at the county level, but not at the community level. The DEIR also indicated that no air stagnation watches or warnings were issued by the National Weather Service (NWS) for Bristol County from 1986 to 2018. The FEIR should provide a more detailed explanation and analysis of air quality impacts under future climate conditions.

As described in the Scope below, the FEIR should include additional analysis regarding factors related to air quality that may contribute to public health impacts for EJ communities, including a plan for ongoing monitoring of air pollution, noise and odor and supplemental analysis of weather related impacts. The risk of drinking water contamination appears low because all waste processing will occur within buildings equipped with floor drains leading to holding tanks or the sanitary sewer system. However, there is some indication that the presence of PFAS in treated wastewater could pose health risks. For this reason, the FEIR should also include additional analysis of potential measures to address future regulatory changes related to PFAS in wastewater, as described in the Scope below.

Hazardous Waste

The DEIR included a draft Spill Contingency Plan identifying proposed measures to be implemented by the Proponent to prevent and minimize releases of oil and other hazardous materials at the site. Measures to prevent spills include enclosing the facility operations, monitoring loading and refueling operations, and performing daily inspections of equipment and storage containers. Spill containment equipment, such as absorbent booms, spill pillows, wood chips, vermiculite and sand will be stored on-site in well-marked locations. Any used material will be placed in 55- or 85-gallon drums that will be stored, handled and disposed of as hazardous material.

Construction Period

The FEIR identified construction-period mitigation measures to minimize noise and impacts to air, water, and wetlands. The measures include sedimentation and erosion controls, minimizing emissions from construction equipment using emission control devices such as oxidation catalysts, minimizing idling by construction vehicles and complying with the City's hours of construction and noise limitations.

Conclusion

Based on a review of the DEIR, comments letters and consultation with State Agencies, I have determined that the DEIR adequately and properly complies with MEPA and its implementing regulations. The MEPA regulations indicate that a DEIR can be determined adequate, even if certain aspects of the Project or issues require additional description or analysis in a FEIR, provided that it is generally responsive to 301 CMR 11.07 and the Scope. The DEIR was generally responsive to the Scope included in the EENF Certificate. It provided a detailed description of Phase 2, identified potential environmental impacts and described mitigation measures. As noted above and by several commenters, the FEIR did not provide all of the information and analyses required in the DEIR Scope and included inconsistencies in the description of project components and operations. The Proponent should provide detailed and comprehensive responses to the issues identified in the Scope below in order to avoid the need for foiling supplemental documentation after the FEIR.

SCOPE

General

The FEIR should follow Section 11.07 of the MEPA regulations for outline and content, in addition to the information and analyses identified in this Scope. While providing much of the information and analysis required in the Scope for the DEIR, the DEIR was not prepared in the format specified in the Scope, which required a full and self-contained description and analysis of the project and a comprehensive narrative with a separate chapter for each of the categories in this Scope. Each chapter should provide an overview of the topic, additional information and analysis in response to the Scope, and a narrative to explain and support the analysis of the project's impacts and mitigation. Each chapter should include relevant documentation and tables extracted from technical appendices to supplement the narrative; supporting information should not be presented only in the appendices. Technical documentation, such as drainage calculation, traffic counts and similar data, should be provided in a digital format such as CD-ROM, DVD, flash drives or download. The FEIR should be prepared following these specifications, and those identified in specific sections of the Scope below, in order to facilitate the understanding of the project by agencies and the public, including how the project will meet all relevant regulatory standards and all mitigation measures incorporated into the design of the facility's buildings and operations and exterior features of the site or provided at off-site locations. I encourage the Proponent to consult with the MEPA office prior to filing the FEIR to ensure that it has been prepared consistent with the MEPA regulations and this Scope to avoid the need for supplemental MEPA review of the project.

Many commenters requested additional extensions of the comment period to provide sufficient time for a detailed review of the extensive technical documentation provided in the DEIR. I note that the MEPA regulations do not provide for an extension of the comment period on a FEIR beyond the 30-day period specified in the statute and regulations. However, the Proponent has agreed to distribute the FEIR at least 30 days prior to the formal start of the comment period to ensure that the public has at least 60 days to review the document.

Project Description and Permitting

The FEIR should include a detailed and consistent description of the project, including existing and proposed conditions at the project site at a legible scale. It should include dimensions of all existing and proposed buildings and structures, including height of buildings and stacks, plans showing the uses of and/or within each existing and proposed structure, a delineation of uses on exterior areas of the site under existing and proposed conditions, a quantification of the existing and proposed uses within each structure and on exterior areas, boundaries of wetland resources area under existing and proposed conditions and graphical and quantitative comparisons of impervious area under existing and proposed conditions. The FEIR should show areas of land alteration for buildings, roadways, parking, wastewater, water and stormwater infrastructure, lawns and landscaping, and other project components. The FEIR should clearly and consistently describe the project, including building designs and other components. All analyses presented in the FEIR should be based on the same structural and operational designs of the project.

The FEIR should include an analysis of the project that demonstrates that the Preferred Alternative includes all feasible means to avoid Damage to the Environment, or to the extent that Damage to the Environment cannot be avoided, that it includes measures to minimize and mitigate Damage to the Environment to the maximum extent practicable. It should clearly describe any changes to structural and operational components of the project from the designs presented in the EENF and the DEIR, including plans illustrating the changes, a narrative describing and quantifying the changes and any associated impacts. The FEIR should provide a brief description and analysis of applicable statutory and regulatory standards and requirements, and a description of how the project will meet those standards and provide an update on the state, federal, and local permitting process. It should include a table listing all required state, local and federal permits or other approvals and the status of the permit application. It should specifically identify any changes to the list of required permits since the filing of the EENF and DEIR.

Environmental Justice and Public Outreach

As detailed below, the FEIR must include additional information about the operations of the facility and potential public health, environmental and transportation impacts. The Proponent should continue its public outreach efforts to ensure that the additional information is available and presented to the public. MassDEP recommends that the Proponent schedule additional public meetings and site visits at times that are convenient to the public. Consistent the public outreach efforts already conducted, I commend the Proponent for committing to distribute the

FEIR at least 30 days prior to the start of the MEPA public comment period to facilitate public review of the document.

According to the DEIR, the Proponent will be required by MassDEP to monitor emissions on a monthly basis. In addition, the Proponent will prepare a a system to log odor, noise and dust complaints associated with the operation of the facility to be provided to MassDEP and the New Bedford Board of Health. The FEIR should include additional details on the air quality parameters to be monitored, ongoing modelling of the cumulative concentration of contaminants affecting sensitive receptors and the method by which the data will be made available to the public. It should include a draft of the complaint log sheet and describe response measures and mitigation action levels that will be implemented by the Proponent.

The FEIR should expand upon the DEIR's discussion of potential climate-related air quality impacts. It should review NWS data on air quality alerts based on air quality index and discuss how extreme temperatures might affect the frequency and severity of future air quality alerts. As described below, supplemental analysis of odor, noise and wastewater impacts should be provided.

Solid Waste

The FEIR should respond to comments from MassDEP and the City of New Bedford requesting clarification of the delineation of the waste handling site assignment areas on the Land Use plan included in the DEIR. It should review the site assignment boundary relative to adjacent agricultural lands and describe any changes to the site assignment area that may be necessary. The FEIR should explain why the waste handling areas are shown on the plan to include exterior portions of the site despite the Proponent's commitment to limit waste handling operations to enclosed buildings. Any waste handling activities outside of the buildings should be described.

The FEIR should include a revised or supplemental plan of rail car movements showing how loading of material from the glass recycling and biosolids buildings will occur. It should explain and illustrate with plans how the rail cars will be moved from the rail car storage spurs to each of the buildings while all buildings are in operation. The FEIR should explain how long waste material may be stored in rail cars waiting to be transported off site, describe any potential odor, air quality or nuisance impacts that may result and identify mitigation measures.

The City of New Bedford expressed concern that the wastewater discharged into the City's sewer system could add PFAS to its wastewater treatment system. Because PFAS is not removed by wastewater treatment systems, the City notes that the PFAS could impact the environment by its presence in treated wastewater discharges and potentially affect the City's ability to meet future effluent standards. While the Proponent does not state any current plans to land-apply or sell biosolid residuals as fertilizer, the FEIR should review how the biosolids facility may be operated if it is subject to future PFAS standards related to both its wastewater and solids (residuals) imposed by state, federal or City regulations. It should evaluate alternatives for monitoring and managing PFAS , including, at a minimum, refusing to accept biosolids from treatment plants with elevated PFAS levels; on-site testing and treatment of solids and wastewater to achieve PFAS standards; and alternate disposal methods, such as transport of wastewater and dried solids to an off-site treatment facility. The FEIR should describe any facilities that may be necessary to address PFAS-contaminated biosolids, including expanded or additional buildings.

Traffic

The FEIR should include a revised traffic analysis prepared in accordance with the EEA/MassDOT *Transportation Impact Assessment (TIA) Guidelines* that compares intersection operations under Existing, Phase 1 Build, 2026 Baseline and 2026 Full Build scenarios. In addition to weekday morning and evening peak periods, it should analyze traffic operations for the Saturday midday peak period for all scenarios. The FEIR should discuss how the lengths of project-generated trucks contribute to lengthened queues at study area intersections. It should include diagrams showing queues at the Braley Road/Theodore Rice Boulevard at Phillips Road intersection at all peak periods, describe any impacts to traffic using the Route 140 ramps and identify any necessary mitigation measures. The FEIR should include modelled queue lengths that may be supplemented by field observations.

As requested by MassDEP, the FEIR should include additional documentation and analysis in support of the truck trip generation estimate, including peak hours, used in the DEIR. It should discuss how traffic patterns at the Rochester facility were used to the model the project's volume and hourly distribution of truck trips. The FEIR should provide greater detail on the average truck load used to calculate the number of trucks required to deliver waste to the project site and clarify whether outbound truck trips from the biosolids facility were included. If necessary, the traffic analysis should incorporate this revised data.

The DEIR identified TDM measures to be implemented by the Proponent but did not propose roadway improvements to mitigate the project's traffic impacts. The FEIR should identify any roadway mitigation measures to be implemented by the Proponent based on the results of the revised traffic analysis and/or consultation with MassDOT and the City. According to MassDEP, the FEIR must include commitments to restrict project-generated truck traffic to the truck route identified in the DEIR (Route 140 to Braley Road/Theodore Rice Boulevard to Duchaine Boulevard) or revise the traffic study to evaluate other routes that could be used by trucks. The FEIR should include a commitment by the Proponent to restrict project-generated truck access on Phillips Road and provide a protocol showing how this could be implemented and monitored. It should provide additional detail concerning the Proponent's recommendation that a general truck exclusion be implemented on Phillips Road.

Noise

The FEIR should include a revised analysis that takes into account additional potential sound sources identified by MassDEP, including waste delivery vehicles inside and outside the building; MSW, biosolids and glass processing equipment; biosolid and glass tipping and loading; loading and movement of rail cars; and short duration sounds from the outdoor operation of waste handling equipment, delivery vehicle back-up alarms, and dump truck tailgates. The Proponent should consult with MassDEP prior to completing the FEIR for guidance on establishing the ambient sound level based on the 7-day average of the lowest daytime and nighttime hourly L90 levels, modeling of all potential sound sources as described above, and modeling and analysis of project-generated sound sources using L90 sound levels.

The FEIR should identify measures to be implemented by the Proponent to mitigate project-generated noise to the maximum extent practical using a top-down approach.

Greenhouse Gas Emissions

The FEIR should address the questions and comments in DOER's comment letter, which is incorporated herein by reference. It should clarify which buildings were included in the energy model, the number of ventilation fans on the glass processing building, and the apparent reduction in the energy-efficiency of the biosolids building heating system. The FEIR should provide additional details regarding the lighting needs of the facility in the format specified in DOER's comment letter and explain how the analysis credited LPD with respect to Building Code requirements. It should address DOER's comments concerning the design of the biosolids building envelope and the wall insulation proposed in the conditioned buildings.

The FEIR should include commitments to GHG mitigation measures and provide a revised analysis comparing a Base Case design to the Preferred Alternative incorporating energy-efficient design measures. As requested by DOER, the FEIR should provide a table listing all energy systems, minimum Code requirements for the systems, proposed systems and the difference in performance. According to the DEIR, the Proponent has constructed the roof of the glass recycling building without R-11 linear system insulation committed to in the EENF. The FEIR should address the building's compliance with the Building Code, any necessary changes to the building that may be required to meet Code requirements and mitigation measures to compensate for the elimination of this mitigation measures described in the EENF. At a minimum, the FEIR should commit to GHG mitigation measures included in the EENF. I note that a new Building Code will be in effect by the time the FEIR is filed. The building designs described in the FEIR should be updated to reflect the updated Building Code. The FEIR should provide the additional analyses identified in DOER's comment letter regarding Alternative Energy Credits applicable to heat pumps and opportunities for achieving above-Code building envelopes. It should provide an update on the status of construction of the PV system and, if necessary, provide a revised schedule for its completion. The FEIR should review the proposed biosolids drying equipment and document that energy-efficient models will be used.

Mitigation and Draft Section 61 Findings

The FEIR should include a separate chapter summarizing proposed mitigation measures for both Phase 1 and Phase 2. This chapter should also include draft Section 61 Findings for each State Agency that will issue Permits for the project. The FEIR should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation (either funding design and construction or performing actual construction), and contain a schedule for implementation. To ensure that all GHG emissions reduction measures adopted by the Proponent in the Preferred Alternative are actually constructed or performed by the Proponent, the FEIR must include a to self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above should be incorporated into the draft Section 61 Findings.

Response to Comments

The FEIR should contain a copy of this Certificate, and a copy of each comment letter received. Based on the large volume of form letters received, copies of form letters may be provided electronically. To ensure that the issues raised by commenters are addressed, the FEIR should include a separate chapter with direct responses to comments to the extent that they are within MEPA jurisdiction. A single response to form letters can be provided. This directive is not intended, and shall not be construed, to enlarge the scope of the FEIR beyond what has been expressly identified in this certificate. The Proponent should provide a direct response to individual responses or to groups of indexed comments raising the same issue. Responses must specifically address each comment letter on the DEIR; references to a chapter or extensive section of the FEIR are not adequate.

Circulation

The Proponent should circulate a hard copy of the FEIR to any State and City Agencies from which the Proponent will seek permits or approvals, and to any parties specified in Section 11.16 of the MEPA regulations. The Proponent must circulate a copy of the FEIR to all other parties that submitted individual written comments. In accordance with 301 CMR 11.16(5), the Proponent may circulate copies of the FEIR to these other parties in CD-ROM format or by directing commenters to a project website address. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. The Proponent should send correspondence accompanying the CD-ROM or website address indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. In addition, a hard copy of the FEIR should be made available for review at the New Bedford Public Library. The FEIR submitted to the MEPA office should include a digital copy (e.g., CD-ROM, USB drive) of the complete document.

January 30, 2020
Date

K. Theoharides
Kathleen A. Theoharides

Comments received:

62 form letters expressing concern about the project beginning "In early February of this year…"
21 form letters expressing concern about the project beginning with "First, let me thank you…"

10/31/2019	William J. Pires
11/22/2019	Charles Kennedy
11/25/2019	Tracy Wallace
11/26/2019	Sharon Pickering
12/01/2019	Vincent Carolan
12/01/2019	Claudia B. Ostiguy
12/01/2019	Ken Costa
12/03/2019	Robert H. Ladino
12/04/2019	Nelson Ostiguy
12/06/2019	Paul Schofield
12/07/2019	Michael J. McHugh
12/08/2019	David Amaral
12/09/2019	Carol Strupczewski
12/11/2019	Wendy M. Graça
12/13/2019	Senator Mark Montigny, Second Bristol and Plymouth District
12/16/2019	Claudia B. Ostiguy
12/18/2019	Robert H. Ladino
12/23/2019	Richard W. Fournier
12/23/2019	Jennifer Silva
12/26/2019	Kayla Trahan
12/27/2019	Claudia and Stanley Koska
12/30/2019	William Andrews
01/02/2020	Karen A. Chin
01/03/2020	Michelle T. Roza
01/03/2020	Carl E. Roza
01/03/2020	William Andrews
01/05/2020	Carl P. Anctil
01/05/2020	Corine Anctil
01/05/2020	Jenna Anctil
01/06/2020	Thomas Grota
01/06/2020	Betty Grota
01/07/2020	Richard Hatten
01/08/2020	Becca Kurie
01/09/2020	Donna Poyant
01/10/2020	Thomas Rua
01/12/2020	Jose Da Costa
01/13/2020	Brittny Furtado
01/14/2020	Kenneth Costa
01/14/2020	Deborah J. Fleet
01/15/2020	Eileen S. Dunleavy
01/15/2020	Giselda Rodrigues
01/15/2020	Robert H. Ladino
01/16/2020	Barbara J. Bouchard

01/17/2020	Carole Sherman
01/20/2020	Roger Cabral
01/20/2020	Charles F. Kennedy
01/20/2020	Susana Carreiro
01/20/2020	Manuel Carreiro
01/20/2020	Frances Heggie
01/21/2020	Rita Lizotte
01/22/2020	Tracy L. Wallace
01/22/2020	William Andrews
01/22/2020	Brad Markey, New Bedford City Council
01/22/2019	Elizabeth Saulnier
01/22/2020	Town of Acushnet Board of Selectmen
01/22/2020	Lisa Marie Andrews
01/23/2020	Representative Paul A. Schmid, 8th Bristol District
01/23/2020	Ariane Lambert
01/23/2020	KP Law on behalf of the City of New Bedford
01/23/2020	Massachusetts Department of Environmental Protection (MassDEP)/Southeast Regional Office (SERO)
01/23/2020	Elizabeth Isherwood
01/23/2020	Wallace A. Greely
01/23/2020	Alexia Orphanides
01/23/2020	Rick Kidder
01/23/2020	Department of Energy Resources (DOER)
01/29/2020	Massachusetts Department of Environmental Protection (MassDEP)

KAT/AJS/ajs

FEIR - CERTIFICATE

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

April 2, 2021

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Parallel Products of New England
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: Parallel Products of New England, Inc.
DATE NOTICED IN MONITOR	: February 24, 2021

Pursuant to Section 11.08(8)(c)(2) of the MEPA regulations, I hereby determine that the Final Environmental Impact Report (FEIR) submitted on this project **does not adequately and properly comply** with the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62I) and with its implementing regulations (301 CMR 11.00), and therefore requires the filing of a Supplemental FEIR. Specifically, I find that further analysis of the project's impacts and mitigation measures is required to satisfy the MEPA requirements that the project's environmental impacts have been clearly described and fully analyzed or that it has incorporated all feasible means to avoid Damage to the Environment.

I received over 450 comment letters from elected officials, the City of New Bedford (City), legislators, community and environmental organizations, and residents, including more than 350 letters opposed to the project because of its noise, air quality, odor and traffic impacts and its proximity to residences and schools. I note these topics were a significant focus of the Scope for the FEIR. Most commenters opposed to the project also highlighted the environmental burden placed on Environmental Justice (EJ) populations and residents in nearby sections of New Bedford associated with the cumulative impacts of existing solid waste facilities, including active and inactive landfills, hazardous waste sites and traffic congestion. The need to address the disproportionate environmental burden experienced by EJ populations was recognized by Governor Baker and the Massachusetts Legislature with the recent passage into law of Senate Bill 9 - An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy, which includes provisions that significantly increase protections for EJ communities across the

Commonwealth. Regulations for administering the EJ-related provisions of this legislation will be developed in the near future. The MEPA review process offers an appropriate forum for addressing cumulative environmental impacts, including those disproportionally affecting EJ populations.

The information and analyses to be provided in the Supplemental FEIR are necessary to comprehensively address the issues identified in comment letters submitted by the City and others and issues identified in the Scope for the FEIR, issued on January 30, 2020. As detailed below, the Scope is largely consistent with comments provided by the Massachusetts Department of Environmental Protection (MassDEP), which identify information that will be required during the solid waste permitting process, including additional analyses of the project's noise and traffic impacts and potential discharges of per- and polyfluoroalkyl substances (PFAS). The Supplemental FEIR will provide an opportunity for public review and comment on this information prior to the project entering the permitting phase.

Project Description

As described in the FEIR, the project includes the construction of a waste management facility comprised of a glass recycling/processing facility; a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste; and a biosolids drying facility that will accept 50 dry tpd (400 wet tpd) of biosolids, which are residual solid materials left over from the treatment of sewage at municipal wastewater treatment plants (commonly referred to as sludge).

The project will be constructed in two phases. Phase 1 includes construction of: a 27,500-square foot (sf) building for glass recycling/processing ("Glass Processing Building"), a 23,050-sf bunker building ("Glass Processing Bunker Building") attached to the north side of the Glass Processing Building, a 22,819-sf side bunker building ("Glass Processing Side Bunker Building") southeast of the Glass Processing Building, a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of a 1.9-megawatt (MW) solar photovoltaic (PV) array. The glass recycling/processing facility will also occupy an approximately 50,000-sf portion of an existing 92,200-sf building ("existing building"). The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks for shipment to bottle manufacturers. Phase 1 was proposed by the Proponent to meet a regional need for glass processing by providing an alternative market for glass that would otherwise be discarded. The proponent submitted an Expanded Environmental Notification Form (EENF) in February 2019 with a Phase 1 Waiver request to allow Phase 1 to proceed prior to completion of MEPA review of the second phase of the project. A Phase 1 Waiver was granted in a Final Record of Decision (FROD) issued on May 15, 2019 and no further MEPA review of the Phase 1 project components, as described in the EENF, is required. The glass recycling facility is operating in the existing building and in the 27,500-sf Glass Processing building. Construction of the other Phase 1 components has not commenced.

Phase 2 includes the MSW and C&D transfer station, the biosolids drying facility ("Biosolids Building") and extension of the RR sidetrack to service these facilities. The transfer station will be comprised of a 48,900-sf MSW and C&D tipping and processing building attached to the west side of the existing building, which will house sorting and processing equipment to remove waste ban items and separate out recyclable materials. The MSW tipping building will have four 70-ft high (above ground level) exhaust stacks and the MSW processing building will have three 70-ft high exhaust stacks. The biosolids facility will be constructed as a stand-alone 30,000-sf building northeast of the glass recycling facility. Biosolids processing will consist of drying the biosolids to reduce the volume and tonnage of the material prior to off-site disposal. The biosolids building will include twelve (12) 40-ft high exhaust stacks. Shipment of all outbound material will primarily occur via rail car. According to the FEIR, two changes have been made to the project design since the filing of the Draft Environmental Impact Report (DEIR) to minimize noise impacts. The Biosolids Building has been expanded to allow delivery trucks to enter the building and unload the wet biosolids, and a proposed 24-ft high noise barrier will be lengthened to 325 ft and extended along the eastern and southern end of the RR spurs to shield sounds from locomotives, railcar coupling and mechanical equipment at the Biosolids Building.

According to the FEIR, MSW, C&D and biosolids will be delivered to the facility by truck between 5:00 AM and 9:00 PM, Monday through Saturday. Biosolids delivery may also occur on Sunday between 6:00 AM and 6:00 PM. The facility will receive C&D, baled MSW, and loose MSW in live floor trailers, transfer trailers, and packer trucks (respectively). All material will be deposited and processed within the tipping and processing building. Trucks will be weighed on a truck scale and backed into the proposed tipping building to tip their load. Processing equipment and manual picking lines will remove waste ban items, including recyclables, from the mixed waste and will separate other recyclable materials for recycling or diversionary uses. Extracted recyclables are expected to comprise 20 percent of the MSW throughput and will be sent to recycling markets by rail or truck. The facility will include two processing lines with a total capacity of 40 tons of MSW per hour. Residual waste will be baled, shrink-wrapped, and transported via rail for disposal at off-site locations. Baled waste delivered to the site will not be further processed by transported off-site. The facility will receive Category 2 (pre-processed) and Category 3 (bulky waste with minimal recyclable material) C&D, which will be delivered to the tipping facility in trailers. Processed MSW will be baled and shrink-wrapped prior to being loaded onto rail cars. The facility is anticipated to generate 1,300 tpd of processed MSW and C&D for disposal, which would fill approximately 15 rail cars each day.

The biosolids processing facility will accept solids from wastewater treatment plants and will have a maximum processing capacity of 50 dry tpd (400 wet tpd). All biosolids processing will be done within a separate enclosed building with ionization and biofilter odor control systems. The facility will accept dewatered cake biosolids with a solids content between 15 percent and 30 percent and thickened wet slurry biosolids with a solids content of 5 percent to 10 percent. Wet slurry biosolids will be delivered to the site in tanker trucks, which will discharge the slurry through piping to storage tanks that will be sized to hold a volume equivalent to three days of deliveries. The slurry will be dewatered to produce a biosolids cake with a solids content of 30 percent. Approximately 52,000 gallons per day (gpd) of wastewater is expected to be extracted from the dewatering process and discharged into the City's sewer system. The dewatered biosolids cake will be delivered to the site in covered dump trucks. The trucks will drive into the facility and dump the material into a receiving area. The dewatered cake biosolids and dewatered slurry cake will be blended together and directed to a thermal dryer that utilizes a natural gas burner. The facility will be equipped with four dryers arranged in a parallel configuration, three of which will be typically in use and the fourth on standby if another dryer becomes unavailable; if all four dryers are inoperable, the biosolids and cake will be stored within the facility until its storage capacity is reached and no more material can be accepted. Moisture evaporated from the drying process will be condensed at a rate of 30,000 gpd and discharged into the City's sewer system. The biosolids will be dried to approximately 90 percent solids and sent via railcar or truck for disposal or for beneficial reuse as landfill daily cover. According to the FEIR, the facility will include fire alarms and fire suppression systems recommended by the National Fire Protection Association to minimize the potential the risk of fires during drying operations. The dryers will include safety features such as temperature controls, measures to minimize flammable dust from entering the dryers and a fire suppression system, and will be operated to maintain oxygen-deficient conditions within the dryer. Dried biosolids will be cooled before being transferred to storage tanks, stored in oxygen-deficient conditions and monitored for temperature. Dried biosolids will not be marketed or sold for reuse as fertilizer.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south, and RR tracks and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue in New Bedford to the project site. The site also contains a 1.6-MW solar photovoltaic (PV) system mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility.

Most of the northern and western parts of the site are comprised of wetland resource areas, including Bank, Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

Potential environmental impacts associated with full-build of the project include alteration of 2.8 acres of land; a net addition of 0.3 acres of new impervious area (18.03 acres total at the site); alteration of 4,095 sf of BVW, 45 linear feet (lf) of Bank, 4,700 sf of Bordering Land Subject to Flooding and 4,700 sf of Riverfront Area; generation of 718 new average daily trips (adt), including 418 daily truck trips; use of 70,150 gallons per day (gpd) of potable water, and generation of 113,750 gpd of wastewater. Of these impacts, the following are attributable to Phase 2: alteration of 2.24 acres of land, generation of 478 adt (including 328 truck trips), use of 70,150 gpd of potable water and generation of 113,750 gpd of wastewater. Construction and operation of the facilities will emit air pollutants and odors and generate noise. The project will also emit Greenhouse Gasses (GHG) in connection with its energy use and trip generation.

Measures to avoid minimize, and mitigate project impacts include constructing the project on a previously altered site; enclosing all areas where discharge, handling and processing of glass, solid waste and biosolids will occur; use of rail to transport the majority of material from the site; installation of a floor drain collection system that drains to a holding tank or sanitary sewer system to prevent groundwater contamination; operation of a 3.9-megawatt (MW) canopy-mounted solar PV generating system; erosion and sedimentation controls; stormwater management controls and implementation of Best Management Practices (BMPs) to minimize odor, dust, noise, and litter impacts.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires State Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol. The project is also subject to the Executive Office of Energy and Environmental Affairs' Environmental Justice (EJ) Policy as it is located within an EJ Population and exceeds mandatory thresholds for sewage and solid waste.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 received an Order of Conditions (DEP File No. SE49-0381) from the New Bedford Conservation Commission on July 30, 2020 and an amended Site Plan Approval from the New Bedford Planning Board on December 23, 2020.

The remainder of the project will require a Determination of Site Suitability, Authorization to Construct, and Authorization to Operate from MassDEP and a NPDES General Permit (GP) for Construction and/or Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity from the U.S. Environmental Protection Agency (EPA). The project will also require a number of local permits from the City, including: Site Assignment from the Board of Health (BOH), a new and/or Amended Order of Conditions from the Conservation Commission, and a new and/or amended Site Plan Approval from the Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations. The impacts arising from Phase 2 also are closely related to the required State Permits, including MassDEP's site suitability standards for solid waste handling facilities.

Review of the FEIR

The FEIR described the project and its environmental impacts and identified mitigation measures. It provided detailed site plans, including existing conditions and site conditions under Phases 1 and 2. It included a review of the project's permitting status, a response to comments received on the DEIR and draft Section 61 Findings. As noted below, the FEIR did not adequately respond to several issues raised in the Scope. These issues should be addressed in the Supplemental FEIR.

Environmental Justice and Public Outreach

The Scope included in the DEIR Certificate required the FEIR to: describe how the project's air emissions will be monitored during operation of the facility to track its contribution to contaminants affecting sensitive receptors and the data made available to the public; develop a system for logging odor, noise and dust complaints associated with the operation of the facility and identify response measures; and include additional information about the operations of the facility and potential public health, environmental and transportation impacts, including a review of potential climate-related air quality impacts and an expanded discussion of how extreme temperatures might affect the frequency and severity of future air quality alerts issued by the National Weather Service (NWS).

According to the Proponent, the modeling of the project's air emissions previously provided in the DEIR, and summarized in the FEIR, described a worse-case scenario based on maximum site processing rates. The analysis documented that concentrations of air contaminants emitted by the facility will be below MassDEP's air permitting thresholds and MassDEP has not identified the need for an air permit for the project. According to the FEIR, the results of the air dispersion model address cumulative air impacts and varying climate conditions. As described in the FEIR, the ambient air toxic standards are intended to address the cumulative effect of the project's emissions and the project's emissions of criteria pollutants are evaluated against the standards after adding background pollutant concentration for other sources. The air dispersion model was prepared using methods prescribed by the EPA and incorporated weather conditions reflected in five years of hourly weather data; according to the FEIR, dispersion of pollutants is affected by colder temperatures rather than the prolonged period of high temperature projected under future climate conditions. As detailed below, the Supplemental FEIR should include a review of the analysis of the project's air emissions written in non-technical language.

Public Outreach

The FEIR described additional public outreach efforts conducted by the Proponent prior to filing the FEIR, including two virtual meetings held in December 2020. The Proponent will be required to continue to inform the public and seek additional input about the project during the subsequent permitting process. In connection with the MassDEP's Site Assignment review, the Proponent will be required to develop a Public Involvement Plan (PIP); the Supplemental FEIR should include an outline of public participation measures that may be included in the PIP.

I appreciate that the Proponent distributed the FEIR 30 days prior to the start of the formal MEPA comment period to provide additional time for public review of the project The public will continue to have opportunities to learn about the project and to review and comment on subsequent permit applications. Commenters on the FEIR and previously-filed MEPA documents for this project will receive a copy of the Supplemental FEIR as described below and will have an opportunity to comment during the 30-day comment period. The project will also require three permits or approvals from MassDEP. The Site Suitability review will include a 21-day comment period and the Authorization to Construct permit review will include a 30-day public comment period; MassDEP may also allow for a 21-day comment period in connection with the issuance of a provisional Authorization to Operate permit. In addition, the BOH must hold a public hearing prior to making a decision on the Site Assignment.

The FEIR included a draft of a log sheet that will be used by the Proponent to document complaints received from the public regarding noise, odor and/or dust generated by the facility. Upon receipt of a complaint, staff of the facility will note weather conditions, attempt to confirm the odor, noise and/or dust impact reported by the complainant, implement mitigation measures to eliminate or minimize the impact, evaluate the cause of the complaint and determine whether new practices or procedures are necessary to avoid a repetition of the impact, and respond to the complainant. In the FEIR, the Proponent committed to monitoring the facility's emissions of Volatile Organic Compounds (VOC) and Particulate Matter (PM_{10}) by tracking monthly mass rates of air emissions and applying an air emissions factor based on the corresponding tonnage of processed glass, MSW and biosolids. The Proponent has proposed to make this data available for review by MassDEP, and if requested by MassDEP to do so, publicly available. As detailed below, the Supplemental FEIR should include additional details about the distribution of air quality data and implementation of the complaint logging system.

Solid Waste

The Scope for the FEIR required additional information about the delineation of the waste handling site assignment areas, the proposed site assignment boundary relative to adjacent agricultural lands, movement of rail cars through the site and potential modifications that could be made to the facility and its operations to address potential future regulations concerning the handling, treatment and disposal of PFAS in wastewater and biosolids.

The FEIR included an updated land use plan with a revised site assignment boundary that establishes a 100-ft buffer between mapped agricultural soils to the west of the site and the proposed site assignment area. The change to the proposed site assignment area boundary will not affect the proposed layout of the proposed facility. The FEIR clarified that the waste handling area shown on the land use plan includes all areas that meet the regulatory criteria for waste handling pursuant to Site Assignment Regulations (310 CMR 16.00); however, the Proponent has committed to conduct all waste handling and processing within the enclosed buildings.

According to the FEIR, the Proponent anticipates that most waste will be transported off-site by rail. The FEIR included additional details regarding the movement of rail cars from the RR tracks to the west to on-site rail spurs and loading tracks. One track (Track 1) will pass into loading areas within the MSW and Glass Handling buildings to minimize noise associated with loading of waste into the rail cars. The other four spurs (Tracks 2 through 5) will be parallel to and north of the Track 1 and extend to the eastern part of the site. Empty rail cars stored on two of the tracks will be sequentially moved onto Track 1, loaded, then moved back onto two empty tracks until hauled away. This pattern will continue until 10 full cars are located on one track and eight full cars are on another track, at which point a locomotive will deliver 10 empty cars to an empty track and eight empty cars to the other empty track and haul away the 18 filled cars. Dried biosolids will be trucked in covered containers from the Biosolids building to the loading area within the MSW building, loaded onto a rail car on Track 1, and transported off-site with the other wastes as described above.

The Scope for the FEIR required the Proponent to review how the biosolids facility may be operated if it is subject to future PFAS standards applicable to wastewater and/or solids (residuals) imposed by state, federal or City regulations. According to the FEIR, construction of the biosolids facility will not commence for at least a year and will be designed in accordance with all applicable regulations that will be in place at that time. During the review period, the Proponent acknowledged that future PFAS regulations may influence the design, construction and operation of the biosolids drying facility in the following ways:

- No changes may be necessary if the facility as currently designed is determined to comply with future standards and/or if the City's wastewater treatment system is modified to address PFAS in wastewater;
- A pre-treatment system may have to be added to the project to remove or reduce PFAS prior to discharge of wastewater into the City's sewer system;
- The facility may accept only wet biosolids that have been processed or treated to meet PFAS standards; or,
- The Proponent may decide to eliminate biosolids drying from the project or cease operations of the biosolids drying facility.

Standards for PFAS in drinking water were promulgated in 2020 and MassDEP is developing regulations to address potential human and ecological exposure to PFAS from other sources. Many commenters, including MassDEP and the City, identified the need for additional analysis of potential discharges of PFAS from the biosolids handling, transport and drying process; this analysis should be provided in the Supplemental FEIR.

Traffic

The FEIR included an updated traffic analysis prepared in accordance with the EEA/MassDOT *Transportation Impact Assessment (TIA) Guidelines* used to analyze transportation-related impacts of projects subject to MEPA review. The analysis compared traffic volumes and roadway and intersection operations under 2020 Base, 2020 Existing, 2027 No Build and 2027 Build conditions. Traffic conditions prior to the addition of truck and vehicle traffic generated by Phase 1 of the project are reflected in the 2020 Base scenario; because traffic counts could not be collected due to abnormally low traffic volumes associated with the COVID-19 pandemic, previously-collected counts from 2018 were adjusted using traffic counts collected by MassDOT prior to the pandemic in February 2020. The 2020 Existing condition was developed by adding truck and automobile trips generated by Phase 1 of the project to the 2020 Base scenario. Future conditions were modeled by increasing traffic volumes in the 2020 Existing scenario by one percent per year over the seven-year study horizon and are represented by the 2027 No Build condition. The 2027 Build condition was developed by adding the truck and automobile trips generated by the full buildout of the project to the 2027 No Build scenario. The analysis reviewed traffic operations at the seven same intersections that were studied in the DEIR:

- Route 140 Northbound (NB) Ramps at Braley Road;
- Route 140 Southbound (SB) Ramps at Braley Road;
- Braley Road/Theodore Rice Boulevard at Phillips Road;
- Theodore Rice Boulevard at Duchaine Boulevard;

- Duchaine Boulevard at Samuel Barnet Boulevard;
- Phillips Road at Samuel Barnet Boulevard; and,
- Duchaine Boulevard at Site Driveway.

Vehicles are expected to travel to the site along a route from Route 140 to Braley Road/Theodore Rice Boulevard and onto Duchaine Boulevard, and to follow the same route in reverse when leaving the site. The FEIR included a commitment to prohibit trucks associated with the facility from using Phillips Road, which abuts the residential neighborhood east of the site, to travel to or from the facility; this prohibition will be included in contracts with waste haulers which will specify financial penalties for trucks using Phillips Road and will ban repeat offenders from using the facility.

The FEIR included revised trip generation estimates for the project. Phase 2 will generate up to 328 truck trips per day on each day the facility is open, in addition to the 90 truck trips per day generated by Phase 1, for a total of up to 418 truck trips per day under full-build conditions. Employees of the facility will generate 150 trips per day in Phase 1 and an additional 150 trips in Phase 2 for a full-build total of 300 daily trips. Estimates of the volume and hourly distribution of truck trips were based on observations of truck traffic patterns and the number of each type (size) of trucks used to deliver and transport waste at facilities in Rochester and Taunton. Under 2027 Build conditions, Phase 2 of the project will generate a total of 478 daily trips, including 59 vehicle trips in the morning peak period and 59 trips in the evening peak period. According to the FEIR, the trip generation estimate is conservative because it assumes that all material will be brought to the site and transported from the site by truck; the number of truck trips will be lower if the proposed rail service to the site is implemented.

The results of the revised analysis of traffic operations at study area intersections provided in the FEIR are consistent with the DEIR analysis. According to the FEIR, several intersections in the study area experience congestion and long delays under existing conditions and project-generated traffic will further exacerbate these conditions. I note that the analysis indicated that the level of service (LOS) of the westbound left turn at the Route 140 SB Ramps at Braley Road will degrade from LOS D under 2027 No Build conditions to LOS E under 2027 Build conditions. An LOS D indicates an acceptable level of traffic operations through an intersection; an intersection operating at LOS E or LOS F will experience increased congestion and delays. The FEIR documented that several intersections, most notably Route 140 NB Ramp at Braley Road and Braley Road/Theodore Rice Boulevard at Phillips Road, operate at LOS E or LOS F with long delays and queues under the Existing 2027 and No Build 2027 conditions. The addition of project-generated traffic, as modeled under the 2027 Build scenario, will cause even longer delays and queues at these intersections, including queues that may cause traffic to back up onto Route 140.

According to the FEIR, roadway mitigation to address the impacts of project-generated traffic is not necessary because the project will cause minor delays at intersections that already operate over capacity under existing conditions. In addition, the FEIR suggested that the project's traffic impacts may be less than represented in the FEIR because the analysis assumed that all waste will be transported off-site by truck rather than by rail. As noted above, the traffic analysis in the FEIR documented that project-generated traffic will cause lengthened queues at the Route 140 NB off-ramp that may extend beyond the ramp onto the highway and add to delays and congested at intersections that already experience poor levels of traffic operations. The FEIR also included a traffic signal warrant analysis for the Braley Road/Theodore Rice Boulevard at Phillips Road intersection that confirmed that the intersection meets traffic volume and delay criteria for installation of a traffic signal under both 2020 Existing and 2027 Build conditions. As detailed in the Scope below, the Supplemental FEIR should provide additional transportation information as requested by MassDEP and review potential mitigation measures to address the impacts identified above.

Noise

The FEIR included a revised noise analysis that incorporated additional sources of noise identified by MassDEP in its comment letter on the DEIR, including waste delivery vehicles inside and outside the buildings; MSW, biosolids and glass processing equipment; biosolid and glass tipping and loading; loading and movement of rail cars; and short duration sounds from the outdoor operation of waste handling equipment, delivery vehicle back-up alarms, and dump truck tailgates. Project-generated noise was modeled as either continuous noise or incidental noise. Continuous noise sources included exterior fans associated with the MSW, Biosolids and Glass Processing Buildings; cooling towers, biofilter exhaust stack and makeup air fan associated with the Biosolids Building; MSW tipping, dumping and moving with three open bay doors on the west side of the MSW Building; an open railcar loading bay door on the west side of the MSW Building; and exhaust and ventilation systems at the Glass Processing Bunker Building. Incidental sources included back-up alarms on trucks operating on the west side of the MSW Building; an idling locomotive near the northeast corner of the MSW Building; and railcar couplings at the eastern end of the rail spurs. Noise generated from these sources was modeled under the assumption that the following noise mitigation measures have been incorporated into the project design:

- Siting of noise generating equipment and material handling routes away from residences;
- Reducing truck backup alarms by arranging a forward traffic flow for unloading of biosolids;
- The use of an electric rather than diesel-powered rail car pusher;
- Conducting all waste handling activities within enclosed buildings;
- The use of low noise equipment, silencing equipment and insulated walls to minimize noise from stationary equipment;
- Require trucks to drive through the site at slow speeds and locate truck scales away from residences; and
- Construction of a 325-ft long, 24-ft high L-shaped sound barrier around the eastern and southern ends of the rail spur to shield noise generated by locomotives, railcar coupling and ground level equipment at the Biosolids Building.

The analysis of continuous noise sources assumed that all stationary equipment was operating at full load at the same time. Sound levels produced by continuous and incidental sources were modeled separately and compared to ambient sound levels at five residences nearest to the project site. The analysis indicated that the continuous and incidental sources will cause an increase of up to eight decibels (dBA) and 10 dBA, respectively, at one of the residences. According to the FEIR, the results indicate that the project will comply with

MassDEP's Noise Policy, which prohibits an increase of more than 10 dBA over ambient conditions. As detailed below, MassDEP has identified additional analyses that must be provided to support the conclusions of the noise analysis, including more information to support the analysis of noise impacts and mitigation measures identified in the FEIR.

Greenhouse Gas Emissions

The FEIR provided additional information about the project's stationary-source GHG emissions in response to the Scope included in the DEIR Certificate. It clarified that full energy models were prepared for the Biosolids, Glass Processing and Glass Processing Bunker buildings, which are considered to be conditioned spaces; the unconditioned space in the MSW Building and the Glass Processing Side Bunker Building were modeled only with respect to energy use associated with the lighting and ventilation needs of these buildings. The FEIR confirmed that the 90-percent efficient heating system originally proposed for the Biosolids building is not feasible because a direct-fired burner cannot be used in the building due to the risk of combustion of gases produced in the drying process. The Proponent has proposed to use an 82-percent efficient heating system in the Biosolids Building, which exceeds the minimum Building Code requirement for an 80-percent efficient heating system.

As described in the FEIR, the proposed buildings will emit 11,721 tons per year (tpy) of GHG, a 0.7 percent reduction compared to the emissions produced by buildings designed to meet the Baseline energy requirements of the Building Code (11,833 tpy). This marginal improvement is due to the use of an 82-percent efficient heating system rather than an 80-percent efficient heating system and reduced lighting power density (LPD) in the buildings.

According to the Department of Energy Resources (DOER), the proposed buildings appear to have been designed to meet outdated Building Code energy conservation requirements. While the GHG Policy allows for a Proponent to use a consistent baseline throughout MEPA review of a project, the building designs must meet all applicable standards of the Building Code that is in effect when the application for a Building Permit is filed with the City. As noted by DOER, the project design includes only two of the three specific measures identified under Section C406 of the Building Code and therefore may not be eligible to be granted a Building Permit by the City. The FEIR also indicated that the Glass Processing Building constructed in Phase 1 of the project does not comply with the Building Code because it was constructed without a required roof insulation liner. In the FEIR, the Proponent requested that the project be allowed to forgo retrofitting the Glass Processing Building with this required energy conservation measure. The Proponent should consult with the City to determine what additional improvements can be made to the existing Glass Processing Building in order to conform to the Building Code and to ensure that the project's other buildings are designed to meet all requirements of the Building Code that are in effect at the time a Building Permit application is filed. The Supplemental FEIR should review additional measures that will be incorporated into the design of the existing and proposed buildings to conform to Building Code requirements.

The FEIR documented that the project will reduce mobile-source GHG emissions by approximately 60 percent (18,802 tpy) by using rail rather than trucks to transport waste off-site. In the FEIR, the Proponent committed to installing a 1.9-MW solar PV system in addition to the existing 1.6-MW PV system; during the review period, the Proponent indicated that an additional 0.4 MW PV system will be constructed if the electric utility approves of the interconnection. The

FEIR did not review the proposed biosolids drying equipment and document that energy-efficient models will be used, as previously requested in the Scope for the FEIR; this information should be provided in the Supplemental FEIR.

Conclusion

As noted above, the FEIR did not adequately address the requirements of the Scope included in the DEIR Certificate and additional information and analysis is necessary to demonstrate that the project has taken all feasible measures to avoid, minimize, and mitigate impacts. As such, I cannot find that the FEIR and supplemental information have satisfied the regulatory requirements to ensure that the project's environmental impacts have been clearly described and fully analyzed and that the project takes all feasible means to avoid Damage to the Environment. In addition, comments from MassDEP identified additional information and analysis requested in the agency's comments on the DEIR that will be required to determine whether impacts will be avoided, minimized, and mitigated to the extent feasible and to demonstrate compliance with permitting requirements. Accordingly, I am requiring the Proponent to file a Supplemental FEIR pursuant to Section 11.08(8)(c)(2) of the MEPA regulations.

SCOPE

General

The Supplemental FEIR should follow Section 11.07 of the MEPA regulations for outline and content, and include the information and analyses identified in this Scope. It should clearly demonstrate that the Proponent has sought to avoid, minimize and mitigate Damage to the Environment to the maximum extent feasible. I expect the Supplemental FEIR will provide a comprehensive response to comments on the FEIR that specifically address each issue raised in the comment letter; references to a chapter or sections of the Supplemental FEIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response. The Supplemental FEIR should identify measures the Proponent will adopt to further reduce the impacts of the project since the filing of the FEIR, or, if certain measures are infeasible, the Supplemental FEIR should discuss why these measures will not be adopted.

The information and analyses identified in this Scope should be addressed within the main body of the Supplemental FEIR and not in appendices. In general, appendices should be used only to provide raw data, such as drainage calculations, traffic counts, capacity analyses and energy modeling, that is otherwise adequately summarized with text, tables and figures within the main body of the Supplemental FEIR. Information provided in appendices should be indexed with page numbers and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the Supplemental FEIR to materials provided in an appendix should include specific page numbers to facilitate review.

The Supplemental FEIR should address, in a detailed and comprehensive manner, issues raised in comment letters submitted by MassDEP and DOER, which are incorporated by reference herein. In general, information and analyses provided in response to these comment letters should be incorporated into the main body of the Supplemental FEIR rather than provided solely in the Response to Comments section.

Project Description and Permitting

The Supplemental FEIR should provide a description of the project, including updated plans that clearly identify existing and post-development conditions. It should include a detailed description of all project components and activities associated with each phase. The Supplemental FEIR should identify and describe State, federal and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. It should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards. The Supplemental FEIR should include a comprehensive list of all mitigation measures and draft Section 61 Findings that include a detailed list of all mitigation commitments. As noted above, the information and analyses required in this Scope largely reflect the information identified by MassDEP that will be required during the permitting process; the Proponent should consult with MassDEP and the MEPA Office prior to filing the Supplemental FEIR to ensure that the document is responsive to this Scope.

Solid Waste

The Solid Waste Site Assignment Regulations (310 CMR 16.00) require MassDEP to determine whether the site is suitable for the proposed facility based on Site Suitability Criteria listed at 310 CMR 16.40. The regulations specify that a determination that the site is suitable for the proposed solid waste management facility include an evaluation of whether the impacts of the facility "by itself, or in combination with impacts from other sources within the affected area, constitute a danger to public health or safety or the environment." The information and analyses related to MassDEP's evaluation of site suitability provided in the Supplemental FEIR, including those addressing noise and traffic, should address this standard to the extent possible. To assist in characterizing impacts from other sources, the Supplemental FEIR should identify existing solid waste facilities, including those identified in the City's comment letter, describe how they are clustered geographically, and summarize the authorized operation and capacity of the facilities. The Supplemental FEIR should evaluate on-site and off-site measures to adequately mitigate environmental impacts. I encourage the Proponent to consult with MassDEP and the MEPA Office prior to completing these analyses.

The Supplemental FEIR should provide a comprehensive review of potential pathways for discharges of PFAS into air, soil and water resources associated with the biosolids drying process and as a result of any potential uses of the dried biosolids. It should provide a detailed analysis of direct and indirect impacts that may result from emissions of PFAS into the air. According to MassDEP, the solid waste permits may require that the Proponent reduce and monitor PFAS impacts to the environment. The Supplemental FEIR should review potential PFAS reduction measures and monitoring procedures. It should review potential permitting requirements related to the discharge of wastewater into the City's sewer system, including any pre-treatment for removal of PFAS and other pollutants.

Noise

According to MassDEP, the Noise Policy identifies a sound level increase of 10 dBA as an enforcement standard, rather than a design standard. The Supplemental FEIR should document that the project's noise impacts will be mitigated to the maximum extent practical by evaluating a full set of potential noise control measures and adopting all mitigation measures that are technologically and economically feasible. It should include a comparison of noise impacts with and without mitigation to evaluate the effectiveness of each measure. The Supplemental FEIR should include an updated noise analysis consistent with MassDEP's comment letter and the following:

- Continuous and incidental sources should be modeled together, or the Proponent should justify the separate modelling of these sources presented in the FEIR;
- Project-related sound impacts should be modeled at both the nearest inhabited building(s) and at the property line;
- The noise study should evaluate the cumulative noise impacts from the project, including waste delivery vehicles on-site both inside and outside the building;
- The assertion that facility operations will not create any pure tones must be supported by appropriate data and analyses; and,
- As appropriate, the specific BMPs should be evaluated, including measures to prevent noise generated by truck tailgates.

The Supplemental FEIR should identify appropriate mitigation to address the project's noise impacts as documented by the revised noise analysis.

Traffic

According to MassDEP, further analysis is required to support the Proponent's conclusion that the traffic impacts associated with the facility will not constitute a danger to public health or safety or the environment with consideration to traffic congestion, pedestrian and vehicular safety, and roadway configuration. The Supplemental FEIR should provide a supplemental traffic analysis that addresses MassDEP's comments and the following:

- Potential impacts to delay time and queue lengths at some study area intersections under the Build scenario and mitigation measures;
- Potential impacts to volume-to-capacity (v/c) ratio for some study area intersections under the Build scenario and mitigation measures;
- Modeling of various distribution scenarios that may occur to compensate for uncertainties regarding the normal hourly fluctuation in waste deliveries;
- Modeling of operations at study area intersections under mitigated conditions, including signalization of the intersection of Braley Road at Phillips Road/Theodore Rice Boulevard;
- Potential mitigation measures to address degradation of LOS of turning movements at the Route 140 SB at Braley Road intersection under the 2027 Build scenario;
- Potential mitigation measures to address congested conditions and delays at the intersections of Route 140 NB Ramps at Braley Road, Route 140 SB Ramps at Braley Road, and Braley Road at Phillips Road/Theodore Rice Boulevard under existing and future conditions; and,
- Potential mitigation measures to minimize extended queues throughout the study area, including the Route 140 NB Ramp.

The Proponent should consult with MassDEP, MassDOT and the City regarding this analysis and potential mitigation measures prior to filing the Supplemental FEIR.

Environmental Justice

The Proponent should continue its public outreach efforts prior to filing the Supplemental FEIR. The Supplemental FEIR should include a draft of the PIP that will be required by MassDEP in its solid waste permitting process. The PIP should address recommendations for public outreach and information efforts identified in MassDEP's comment letter and the measures listed below:

- Distribution of fact sheets and comment cards with pre-paid postage;
- Public meetings within the community with interpreter services;
- Advertisement of public meetings on radio, social media, and newspapers including The Standard Times, Portuguese Times, and New Bedford Guide;
- Outreach to EJ leaders, community leaders and municipal officials; and,
- Distribution of project-related air pollution and environmental impact information written in clear, non-technical language and translated as necessary.

The Supplemental FEIR should address how the Proponent will encourage the public to submit complaints in a confidential manner and how the complaint log and air quality data will be made available to the public in a convenient manner. It should provide a review of the analysis of the project's air emissions and baseline public health data written in non-technical language. Additionally, as noted above in the Solid Waste section, the Supplemental FEIR should include information and analyses that addresses impacts from other solid waste facilities in the area in order to provide context for the analyses in this Scope.

Greenhouse Gas Emissions

The Supplemental FEIR should respond to the issues identified in DOER's comment letter, which is incorporated by reference herein. It should review the building designs presented in the FEIR and identify additional energy conservation measures that will be incorporated into the design of the buildings to meet all Building Code energy requirements. As previously requested in the Scope for the FEIR, the Supplemental EIR should include a discussion of the proposed biosolids drying system, including energy efficiency features, and compare the proposed drying system to other drying systems with respect to energy use and GHG emissions.

Mitigation and Draft Section 61 Findings

The Supplemental FEIR provided draft Section 61 Findings for use by State Agencies. The Section 61 Findings should be provided to State Agencies to assist in the permitting process and issuance of final Section 61 Findings. The Proponent will provide a GHG self-certification to the MEPA Office that is signed by an appropriate professional (e.g., engineer, architect, transportation planner, general contractor) indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated into the project. To the extent the project will take equivalent measures to achieve the identified reductions, I encourage the Proponent to commit to achieving the same level of GHG emissions identified in the mitigated (design) case expressed in volumetric terms (e.g., tpy).

Response to Comments

The Supplemental FEIR should contain a copy of this Certificate, and a copy of each comment letter received on the FEIR. Based on the large volume of form letters received, copies of form letters may be provided electronically. To ensure that the issues raised by commenters are addressed, the Supplemental FEIR should include a separate chapter with direct responses to comments to the extent that they are within MEPA jurisdiction. A single response to form letters can be provided. This directive is not intended, and shall not be construed, to enlarge the scope of the Supplemental FEIR beyond what has been expressly identified in this certificate. The Proponent should provide a direct response to individual responses or to groups of indexed comments raising the same issue. Responses must specifically address each comment letter on the FEIR; references to a chapter or extensive section of the Supplemental FEIR are not adequate.

Circulation

The Proponent should circulate a hard copy of the Supplemental FEIR to those parties who commented on the EENF, DEIR and/or FEIR, to any State Agencies from which the Proponent will seek permits or approvals, and to any parties specified in section 11.16 of the MEPA regulations. The Proponent should consult with the MEPA Office prior to filing the Supplemental FEIR to determine whether additional distribution or outreach may be warranted to the surrounding community. Per 301 CMR 11.16(5), the Proponent may circulate copies of the Supplemental FEIR to commenters in CD-ROM format or by directing commenters to a project website address. However, the Proponent must make a reasonable number of hard copies available to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. The Proponent should send correspondence accompanying the CD-ROM or website address indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. The Supplemental FEIR submitted to the MEPA office should include a digital copy of the complete document. A copy of the Supplemental FEIR should be made available for review at the New Bedford Public Library.[1]

K. Theoharides

April 2, 2021
Date

Kathleen A. Theoharides

[1] Requirements for hard copy distribution or mailings will be suspended during the Commonwealth's COVID-19 response, to the extent public facilities are closed. Please consult the MEPA website for further details on interim procedures during this emergency period: https://www.mass.gov/orgs/massachusetts-environmental-policy-act-office.

Comments received:

335 form letters opposed to the project beginning “This letter is to express opposition…”
74 form letters in support of the project beginning “Over the last three years…”
9 form letters opposed to the project beginning “Parallel Products of New England…”

02/26/2021	Ron Cabral
02/18/2021	Robert H. and Judith B. Ladino
03/08/2021	Sherry Hanlon
03/10/2021	Robert Michael Pittsley
03/11/2021	Diane Fine
03/11/2021	Sabine von Mering
03/12/2021	John Dufresne
03/17/2021	Representative Paul Schmid
03/18/2021	Carol Strupczewski
03/18/2021	Andrea Stone
03/18/2021	Representative Christopher Hendricks
03/19/2021	Senator Mark Montigny
03/22/2021	Elizabeth Saulnier
03/24/2021	Jacob Chin
03/24/2021	Karen Chin
03/26/2021	Linda M. Morad
03/26/2021	Brad Markey
03/26/2021	Wendy M. Graca
03/26/2021	Zeb Arruda
03/26/2021	Tracy L. Wallace
03/26/2021	Conservation Law Foundation/South Coast Neighbors United, Inc./Community Action Works
03/26/2021	Mark R. Reich, KP Law on behalf of: Mayor Jon Mitchell, City of New Bedford Senator Mark C. Montigny Representative Antonio F.D. Cabral Representative Christopher Hendricks Representative Christopher Markey Representative Paul A. Schmid III Representative William M. Straus City Council President Joseph P. Lopes City Councillor Ian Abreu City Councillor Derek Baptiste City Councillor Naomi R.A. Carney City Councillor Debora Coelho City Councillor Hugh Dunn City Councillor Maria E. Giesta City Councillor Brian K. Gomes City Councillor Scott J. Lima City Councillor William Brad Markey City Councillor Linda M. Morad
03/26/2021	Massachusetts Department of Environmental Protection (MassDEP)/Southeast Regional Office (SERO)

04/02/2021 Department of Energy Resources (DOER)

KAT/AJS/ajs

SFEIR - CERTIFICATE

The Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
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Boston, MA 02114

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GOVERNOR

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LIEUTENANT GOVERNOR

Bethany A. Card
SECRETARY

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Fax: (617) 626-1181
http://www.mass.gov/envir

August 29, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
NOTICE OF PROJECT CHANGE AND
SUPPLEMENTAL FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: South Coast Renewables, LLC (formerly known as Parallel Products of New England)
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: South Coast Renewables, LLC (formerly known as Parallel Products of New England, Inc.)
DATE NOTICED IN MONITOR	: July 22, 2022

Pursuant to Section 11.08(8)(c)(2) of the MEPA regulations, I hereby determine that the Supplemental Final Environmental Impact Report (SFEIR) submitted on this project **adequately and properly complies** with the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62I) and with its implementing regulations (301 CMR 11.00).

This project was originally filed in 2019, and has been the subject of substantial public attention and scrutiny. Review of the Final Environmental Impact Report (FEIR) for the project in 2021 resulted in issuance of a Scope for an SFEIR, focused primarily on analyzing impacts from potential per- and polyfluoroalkyl substances (PFAS) discharges from the biosolids processing component of the project and further analysis of impacts on surrounding environmental justice (EJ) populations. Subsequent to issuance of the Scope for an SFEIR in April 2021, the project was amended to remove the biosolids processing and this joint Notice of Project Change (NPC)/SFEIR filing was submitted with MEPA shortly thereafter.

I received over 300 comment letters from elected officials, the New Bedford City Council, legislators, community and environmental organizations, and residents on this NPC/SFEIR filing. Most commenters expressed concerns about the project because of its noise, air quality, odor and traffic impacts and its proximity to residences and schools. Most commenters opposed to the project have highlighted the environmental burden placed on EJ populations and residents in nearby sections of New Bedford associated with the cumulative impacts of existing solid waste facilities, including active and inactive landfills, hazardous waste sites and traffic congestion. Many commenters also indicated that the Proponent did not engage the public prior to filing the NPC/SFEIR regarding the changed components of the project. The Proponent acknowledges that the removal of biosolids was the subject of negotiations with the City of New Bedford (City), and that an agreement was reached only recently such that prior engagement with the public was not possible.

While I acknowledge the strong concerns raised by the public, the NPC/SFEIR filing represents the culmination of a multi-year review through the MEPA process. The impacts of the project have been thoroughly studied, and the outstanding issues that were included in the Scope for the SFEIR have been addressed in this filing. Importantly, the significant concerns raised about PFAS contamination of the wastewater stream and air emissions associated with biosolids processing are no longer implicated by the project. I do recognize that the Proponent, by its own admission, did not engage the public on the changed components of the project prior to filing, which is inconsistent with the spirt of the EEA EJ Policy. MEPA policies now seek to ensure opportunities for enhanced public participation at every step of the permitting process. Nevertheless, the required determination upon the filing of an NPC under 301 CMR 11.10(8) is whether the change to the project "significantly increases the environmental consequences of the Project" such that it warrants further MEPA review in the form of a supplemental EIR or changes to the Scope. Because the environmental consequences of the project are clearly reduced from the proposed change, I do not find there is basis to require further review on the basis of the project change. As to the SFEIR, no substantial issues exist that cannot be addressed through subsequent permitting. I note that traffic congestion on existing roadways, particularly during school peak periods, is acknowledged by the Proponent and should continue to be addressed in permitting.

As with any MEPA project, the conclusion of MEPA review is only the beginning of state permitting procedures. It is my expectation that the Massachusetts Department of Environmental Protection (MassDEP) will require a comprehensive and public permitting process. As a solid waste facility, it is subject to the enhanced public participation protocols required by MassDEP. The Proponent is directed to comply fully with these protocols.

Project Description

As described in the NPC/SFEIR, the project includes the construction of a waste management facility comprised of a glass recycling/processing facility and a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste. As discussed below, the biosolids processing component, which was included starting with the Expanded Environmental Notification Form (EENF) filed in 2019, was removed from the project and is no longer proposed.

The project will be constructed in two phases. Phase 1 includes construction of: a 27,500-square foot (sf) building for glass recycling/processing ("Glass Processing Building"), a 23,320-sf bunker building ("Glass Processing Bunker Building") attached to the north side of the Glass Processing Building, a 21,973-sf side bunker building ("Glass Processing Side Bunker

Building") southeast of the Glass Processing Building, a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of an approximately 1.9-megawatt (MW) solar photovoltaic (PV) array mounted on rooftops and canopies. The glass recycling/processing facility will also occupy an approximately 50,000-sf portion of an existing 92,200-sf building ("existing building"). The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks for shipment to bottle manufacturers. Phase 1 was proposed by the Proponent to meet a regional need for glass processing by providing an alternative market for glass that would otherwise be discarded. The Proponent submitted an EENF in February 2019 with a Phase 1 Waiver request to allow Phase 1 to proceed prior to completion of MEPA review of the second phase of the project. A Phase 1 Waiver was granted in a Final Record of Decision (FROD) issued on May 15, 2019 and no further MEPA review of the Phase 1 project components, as described in the EENF, is required. The glass recycling facility is operating in the existing building and in the 27,500-sf Glass Processing Building. Construction of the other Phase 1 components is almost complete.

Phase 2 includes the MSW and C&D transfer station, extension of the RR sidetrack to service these facilities and construction of an additional roof- and canopy-mounted PV array with a generating capacity of 1.35 MW. The transfer station will be comprised of a 65,317-sf MSW and C&D tipping and processing building attached to the west side of the existing building, which will house sorting and processing equipment to remove waste ban items and separate out recyclable materials. The MSW tipping building will have four 70-ft high (above ground level) exhaust stacks and the MSW processing building will have three 70-ft high exhaust stacks. Shipment of all outbound material will primarily occur via rail car.

According to the NPC/SFEIR, MSW and C&D material will be delivered to the facility by truck between 6:00 AM and 7:00 PM, Monday through Friday, and from 7:00 AM to 4:00 PM on Saturday. The facility will receive C&D, baled MSW, and loose MSW in live floor trailers, transfer trailers, and packer trucks (respectively). All material will be deposited and processed within the tipping and processing building. Trucks will be weighed on a truck scale and backed into the proposed tipping building to tip their load. Processing equipment and manual picking lines will remove waste ban items, including recyclables, from the mixed waste and will separate other recyclable materials for recycling or diversionary uses. Extracted recyclables are expected to comprise 20 percent of the MSW throughput and will be sent to recycling markets by rail or truck. The facility will include two processing lines with a total capacity of 40 tons of MSW per hour. Residual waste will be baled, shrink-wrapped, and transported via rail for disposal at off-site locations. Baled waste delivered to the site will not be further processed by transported off-site. The facility will receive Category 2 (pre-processed) and Category 3 (bulky waste with minimal recyclable material) C&D, which will be delivered to the tipping facility in trailers. Processed MSW will be baled and shrink-wrapped prior to being loaded onto rail cars. The facility is anticipated to generate 1,300 tpd of processed MSW and C&D for disposal, which would fill approximately 15 rail cars each day. Prior to completion of the permitting process, the Proponent will be required to provide a financial assurance mechanism (FAM) to MassDEP that will include sufficient funds to clean up the site and remove any stored solid waste on the site in the event of an unplanned closure of the facility.

Changes Since the Filing of the FEIR

The NPC/SFEIR identified the changes to the project design listed below.

- The biosolids drying facility is no longer proposed;
- The proposed tonnage of waste to be accepted at the site has not increased since the filing of the FEIR; however, the proposed MSW tipping building has increased in size from 48,900 sf to 65,317 sf to provide more interior space for waste processing and to enclose rail tracks adjacent to the building;
- The hours during which material will be accepted at the site have been reduced from 5:00 AM to 9:00 PM Monday through Saturday and 6:00 AM to 6:00 PM to 6:00 AM to 7:00 PM Monday through Friday and 7:00 AM to 4:00 PM on Saturday (material will not be accepted on Sunday); and,
- A 1.35-MW of rooftop- and canopy-mounted solar PV will be installed in Phase 2.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, an Eversource maintenance facility to the south, and RR tracks and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue in New Bedford to the project site. The site also contains a 1.6-MW solar PV system mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility.

Most of the northern and western parts of the site are comprised of wetland resource areas, including Bank, Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

Potential environmental impacts associated with full buildout of the project include alteration of 8.2 acres of land; alteration of 4,095 sf of BVW, 45 linear feet (lf) of Bank, 4,700 sf of Bordering Land Subject to Flooding (BLSF) and 4,700 sf of Riverfront Area; generation of 718 average daily trips (adt), including 418 daily truck trips; use of 19.650 gallons per day (gpd) of water, and generation of 113,750 gpd of wastewater. Of these impacts, the following are attributable to Phase 2: generation of 460 adt (including 318 truck trips), use of 17,150 gpd of potable water and generation of 2,750 gpd of wastewater. Construction and operation of the facilities will emit air pollutants and odors and generate noise. The project will also emit Greenhouse Gasses (GHG) in connection with its energy use and trip generation.

Measures to avoid minimize, and mitigate project impacts include constructing the project on a previously altered site; reducing impervious by approximately 0.3 acres; enclosing all areas where discharge, handling and processing of glass and solid waste will occur; use of rail to transport the majority of material from the site; installation of a floor drain collection system that drains to a holding tank or sanitary sewer system to prevent groundwater contamination; operation of a 4.7-MW solar PV generating system; installation of a traffic signal at the intersection of Braley Road and Phillips Road/Theodore Rice Boulevard; erosion and sedimentation controls; stormwater management controls and implementation of Best Management Practices (BMPs) to minimize odor, dust, noise, and litter impacts.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA GHG Emissions Policy and Protocol. The project is also subject to the EEA EJ Policy, most recently revised in 2021, as it is located within an EJ Population and exceeds mandatory EIR thresholds for sewage and solid waste. The project was originally filed prior to January 1, 2022, when new MEPA regulations and protocols applicable to projects proposed near EJ populations went into effect.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 received an Order of Conditions (DEP File No. SE49-0381) from the New Bedford Conservation Commission on July 30, 2020 and an amended Site Plan Approval from the New Bedford Planning Board on December 23, 2020.

Phase 2 of the project will require a Determination of Site Suitability, Authorization to Construct, and Authorization to Operate from MassDEP and a NPDES General Permit (GP) for Construction and/or Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity from the Environmental Protection Agency (EPA). The project will also require a number of local permits from the City, including: Site Assignment from the Board of Health, a new and/or Amended Order of Conditions from the Conservation Commission, and a new and/or amended Site Plan Approval from the Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations. The impacts arising from Phase 2 also are closely related to the required Permits, including MassDEP's site suitability standards for solid waste handling facilities which are broad enough to be functionally equivalent to full scope jurisdiction for purposes of MEPA review.

Review of the NPC/SFEIR

The NPC/SFEIR was generally responsive to the Scope included in the FEIR certificate. It described the project, provided detailed site plans, including existing conditions and site conditions under Phases 1 and 2, and identified environmental impacts and proposed mitigation measures. The NPC/SFEIR included a review of the project's permitting status, a response to comments received on the FEIR and draft Section 61 Findings. A major issue identified in the Scope provided in the FEIR certificate was related to emissions of PFAS associated with the biosolids drying facility; however, that portion of the Scope is no longer applicable because the biosolids facility has been removed from the project. If biosolids drying is proposed to be added in the future, the project would require additional MEPA review and permits. The NPC/SFEIR reviewed the Proponent's public engagement efforts since the filing of the EENF and described planned public outreach in connection with the filing of the NPC/SFEIR and after MEPA review of the project has concluded. As noted above, the Proponent did not engage the surrounding communities, including EJ populations, regarding the changes made to the project that necessitated this NPC filing. While the Proponent has conducted extensive outreach with respect to the project as a whole, it acknowledges that it did not engage the public with regard to the changed components, including the removal of biosolids processing, as the Proponent was still in negotiations with the City about these changes. Meetings specific to the changes were not held until after the filing of this NPC/SFEIR.

Environmental Justice

According to the NPC/SFEIR, since the filing of the EENF the Proponent has conducted a door-to-door outreach program reaching 1,390 homes, provided fact sheets and comment cards with pre-paid postage to residents, made over 21,000 phone calls to residents, held approximately 30 meetings with stakeholders and the public, including open houses, public meetings and virtual meetings. MEPA review documents have been distributed to over 1,400 commenters and 38 community-based organizations. Additional meetings in connection with the filing of the NPC/SFEIR were held on August 3 and 18, 2022. Notice of the meetings was published in local newspapers, including the Portuguese Times, advertised on the radio, and listed on the Proponent's web site. The August 18 virtual meeting was interpreted live in Spanish and Portuguese and the meeting was recorded and is available on the Proponent's web site. The Proponent has prepared a project fact sheet, which provides a summary of the project, reviews the baseline health assessment of communities near the site, and addresses the project's air impacts, in English, Portuguese and Spanish. The fact sheet was distributed to over 400 residents and community-based organizations. The Proponent has scheduled additional public meetings have been scheduled on September 21, October 12, November 2, and December 15 of this year, and on January 11, 2023.

Many commenters asserted that the Proponent failed to conduct timely and well-publicized outreach prior to the filing of the NPC/SFEIR, in particular, to ensure opportunities to have input on recent project changes. Commenters criticized how some of the meetings were conducted, including the level of language interpretation services made available. Many commenters requested an extension of the 30-day comment period in order to fully review the nearly 1,000-page NPC/SFEIR. The MEPA regulations do not permit an extension of the comment period on an SFEIR; in addition, the Proponent declined to withdraw and refile the NPC/SFEIR as permitted by 301 CMR 11.08(5) to provide sufficient time for the public to review and comment on the document. According to the NPC/SFEIR, the Proponent anticipates that MassDEP will require additional outreach as part of the Public Involvement Plan (PIP) that will be developed by MassDEP during the Site Suitability permitting process. MassDEP has identified the following public outreach efforts that will be required of the Proponent; as noted, the Proponent is directed to fully comply with these requirements:

- Development of draft project fact sheets to be shared with the community prior to being finalized;
- Working with residents and community groups to identify hard-to-reach populations and encouraging their full participation in the review of the project; and,
- Scheduling public meetings at times and locations convenient for the community and providing notice of meetings in traditional and non-English media outlets.

While the biosolids processing has been removed, public comments received on the NPC/SFEIR continue to raise concerns with environmental and public health impacts of the project. Comments note that the surrounding EJ populations are subject to existing environmental burdens and related public health consequences, including elevated asthma rates, and that truck traffic will coincide with school bus pickup times at a nearby elementary school located about one mile from the project site. I note that the new MEPA EJ protocols effective January 1, 2022 identify diesel-generated truck traffic of 150 adt or higher as presumptively indicating that a project will "impact air quality" such that outreach and analysis of EJ impacts must extend over a 5-mile radius. See 301 CMR 11.02 (definition of "Designated Geographic Area"). The project is not directly subject to these new protocols, but will result in more than 150 New adt (418 daily truck trips) diesel truck trips.

As previously provided in the DEIR, the modeling of the project's air emissions (including both stationary and mobile sources (truck traffic)) described a worse-case scenario based on maximum site processing rates, including the previously-proposed biosolids facility. The analysis documented that maximum concentrations of air contaminants emitted by the facility will be below MassDEP's air permitting thresholds and MassDEP has not identified the need for an air permit for the project. As stated in the DEIR, the national ambient air quality standards (NAAQS) are intended to address the cumulative effect of the project's emissions and the project's emissions of criteria pollutants are evaluated against the standards after adding background pollutant concentration for other sources. The air quality analysis in the DEIR indicated that the addition of criteria pollutants from the project would not cause an exceedance of the NAAQS. The air dispersion model was prepared using methods prescribed by the EPA and incorporated weather conditions reflected in five years of hourly weather data; according to the Proponent, dispersion of pollutants is affected by colder temperatures rather than the prolonged period of high temperature projected under future climate conditions. The NPC/SFEIR included a draft of a log sheet that will be used by the Proponent to document complaints received from the public regarding noise, odor and/or dust generated by the facility. Upon receipt of a complaint, staff of the facility will note weather conditions, attempt to confirm the odor, noise and/or dust impact reported by the complainant, implement mitigation measures to eliminate or minimize the impact, evaluate the cause of the complaint and determine whether new practices or procedures are necessary to avoid a repetition of the impact, and respond to the complainant. The Proponent has committed to monitoring the facility's emissions of Volatile Organic Compounds (VOCs) and Particulate Matter (PM_{10}) by tracking monthly mass rates of air emissions and applying an air emissions factor based on the corresponding tonnage of processed glass and MSW.

Solid Waste

The Scope included in the NPC/SFEIR certificate required the NPC/SFEIR to include a review of the cumulative impacts of the project and nearby existing solid waste facilities. The NPC/SFEIR provided a qualitative assessment of the traffic, noise and air quality impacts of the following facilities, all of which are located in New Bedford except the Crapo Hill Landfill:

- The City's transfer station, located approximately 3.6 miles south of the project site at 1103 Shawmut Avenue. The facility is a recycling drop-off facility for residents only and is permitted to accept 274 tpd.
- New Bedford Waste Services, located approximately 3.4 miles south of the project site at 1245 Shawmut Avenue. The facility is privately owned and permitted to accept up to 1,500 tpd of C&D and MSW.
- Crapo Hill Landfill, located approximately 1.5 miles northwest of the project site at 300 Samuel Barnet Boulevard in Dartmouth. The facility is operated by the Greater New Bedford Regional Refuse Management District and is permitted to accept 425 tpd, half of which is residential MSW from Dartmouth and New Bedford and the other half is commercial waste. The landfill currently covers an area of 39 acres (including 22 acres which are capped) and is expected to expand to70 acres total before the landfill reaches capacity in 2027. The site includes a 100,000-gallon anaerobic digester that converts food waste delivered to the site into a biogas which, in combination with landfill gas from the site, is used to generate 3.3 megawatts (MW) of electricity, which is distributed to the electrical grid.
- New Bedford landfill, located adjacent to the City's transfer station. This facility accepted 500 tpd of MSW when it stopped accepting waste in 2000. The landfill is now closed and capped.

According to the NPC/SFEIR, only traffic associated with the Crapo Hill Landfill uses the same local roadways that will be used by project-generated traffic, including Exit 7 off Route 140 and intersections along Braley Road; traffic associated with the other sites will use a different exit off Route 140 located several miles to the south. Route 140 runs through or adjacent to EJ populations to the north and south of the project site. The traffic analysis included in the NPC/SFEIR takes into account existing levels of traffic generated by the Crapo Hill Landfill traffic under all existing and future scenarios. As detailed below, the traffic analysis documented that the project will increase delays and congestion at intersections along Braley Road but not change the level-of-service (LOS) compared to No Build conditions. In addition, the Proponent will signalize the intersection of Braley Road/Theodore Rice Boulevard at Phillips Road, which will generally improve overall traffic operations along Braley Road. Because the Crapo Hill Landfill is anticipated to close in 2027, traffic associated with that site will overlap with project-generated traffic for approximately four years.

According to the NPC/SFEIR, the facilities are unlikely to have negative cumulative impacts with respect to noise, odor or dust due to the distance between the sites and mitigation measures in place at each facility to minimize impacts. The noise analysis included in the

NPC/SFEIR concluded that the project will increase daytime noise levels at the residences nearest the project site (approximately 525 to 800 feet away) by only 1 to 3 decibels (dBA) above existing noise levels. According to the NPC/SFEIR, based on the minimal noise impact of the project at residences 800 feet away, noise from the other solid waste facilities, which are located 1.5 to 3.6 miles away, will not be detectable at the locations studied in the noise analysis. In addition, the Crapo Hill Landfill does not operate at night, which is when project-generated noise causes larger increases of 3 to 7 dBA compared to ambient levels and any cumulative impacts would be greatest. As noted, air quality analysis in the DEIR was performed on stationary and mobile source emissions from the project, which were compared against the NAAQS; this measure takes into account background sources of emissions.

Dust and odor will be controlled during construction and operation of the project using mitigation measures, including paving surfaces at the site that could be a source of dust; use of a misting system with odor controls in the tipping building; handling waste inside the building when the doors are closed; street sweeping; and covering rail cars and trucks. According to the NPC/SFEIR, the Crapo Hill Landfill and New Bedford Waste Services facility employ odor and dust control measures to ensure that any off-site impacts are localized to the area adjacent to the landfill and are unlikely to contribute to dust or odors in the vicinity of the project site. The City's transfer station accepts only recyclables, which are not a significant source of odors. According to the NPC/SFEIR, the New Bedford Landfill could cause odors due to the release of landfill gas through vents; however, the odors will dissipate and dilute before impacting the area near the project site, which is over three miles away. The electric generating facility at the Crapo Hill Landfill helps uses landfill gas and biogas that otherwise could cause odors.

Traffic

The NPC/SFEIR included a revised traffic analysis with updated traffic data and additional analyses to address the Scope and issues identified in comment letters. The analysis compared traffic volumes and roadway and intersection operations during peak periods under 2021 Base, 2021 Existing, 2028 No Build and 2028 Build conditions. In addition to evaluating traffic operations during the AM and PM peak periods, the NPC/SFEIR analyzed a "school peak period" corresponding to the dismissal time of the Casimir Pulaski Elementary School, which is located off Braley Road less than 1,000 feet east of the Route 140 NB ramps. Traffic conditions prior to the addition of truck and vehicle traffic generated by Phase 1 of the project are reflected in the 2021 Base scenario, which was established by deducting 240 vehicle trips (including 90 truck trips) associated with existing glass recycling operations from the 2021 Existing condition. Consistent with MassDOT guidance, the 2021 Existing condition was developed by collecting traffic counts in April 2021 and adjusting the counts by adding five percent to account for lower traffic volumes due to the COVID-19 pandemic.[1] The Proponent used observations of driver behavior and queue lengths at unsignalized intersections to calibrate the traffic model to more accurately reflect traffic operations at intersections along Braley Road and the Route 140 ramps. The No Build 2028 condition was modeled by increasing traffic volumes in the 2021 Existing scenario by one percent per year over the seven-year study horizon. The 2028 Build condition was developed by adding the truck and automobile trips generated by the full buildout of the

[1] According to the Proponent, traffic volumes used in the FEIR analysis were prepared prior to MassDOT developing COVID-related guidance and overestimated traffic volumes under existing and future conditions compared to the volumes in the SFEIR developed using MassDOT guidance.

project to the 2028 No Build scenario. In general, the results of the traffic analysis presented in the NPC/SFEIR are consistent with those provided in the FEIR and DEIR. However, according to the Proponent, the analysis in the NPC/SFEIR more accurately reflects existing and future traffic operations along Braley Road because of the model calibration and adjustment of traffic volumes using guidance provided by MassDOT. The analysis reviewed traffic operations at the seven intersections that were previously studied in the DEIR and FEIR:

- Route 140 Northbound (NB) Ramps at Braley Road;
- Route 140 Southbound (SB) Ramps at Braley Road;
- Braley Road/Theodore Rice Boulevard at Phillips Road;
- Theodore Rice Boulevard at Duchaine Boulevard;
- Duchaine Boulevard at Samuel Barnet Boulevard;
- Phillips Road at Samuel Barnet Boulevard; and,
- Duchaine Boulevard at Site Driveway.

All truck trips and 90 percent of employee trips associated with the project are expected to travel to the site along a route from Route 140 to Braley Road/Theodore Rice Boulevard and onto Duchaine Boulevard, and to follow the same route in reverse when leaving the site; 10 percent of employee trips will use Phillips Road to access the site from the south. The NPC/SFEIR included a commitment to prohibit trucks associated with the facility from using Phillips Road (which extends directly adjacent to the closest residences to the project which are located outside mapped EJ populations), and the Proponent has agreed to provide the City with funding to conduct a planning study for the purpose of establishing a truck ban on Phillips Road.

To provide conservative estimates, the NPC/SFEIR did not include revised trip generation estimates for the project to account for removal of the biosolids processing component; 48 truck trips associated with the previously-proposed biosolids facility continue to be included in the analysis, as they were in the DEIR and FEIR. The project's trip generation for each phase is shown in Table 1. According to the NPC/SFEIR, the trip generation estimate is conservative because it assumes that all material will be brought to and transported from the site by truck and that there will be no "backhauls" (off-site transport of waste by empty delivery trucks); there will be up to 112 fewer truck trips if outbound material is transported by rail. However, if the Proponent intends to seek approval for all 418 trips, the analysis cannot be considered to be conservative and therefore the impacts to traffic operations are likely to be similar to those identified in the traffic study.

Table 1. Trip generation estimate (# trips).

Project Component	Trucks	Other vehicles	Total
Existing (Phase 1) glass recycling operation	90	150	240
Additional Phase 1 trips	18	-	18
Phase 2	310	150	460
Total	418	300	718

The results of the revised analysis of traffic operations at study area intersections provided in the NPC/SFEIR are consistent with the analyses previously provided in the DEIR and FEIR. Under the 2021 Base, 2021 Existing and 2028 No Build scenarios, intersections along Braley Road operate at LOS E or F during some peak periods, including the school peak period, and will continue to do so under 2028 Build conditions; however, project-generated trips will generally increase delays and congestion compared to 2028 No Build conditions. The Proponent has proposed to mitigate conditions along Braley Road by installing a traffic signal at the Braley Road/Theodore Rice Boulevard at Phillips Road intersection. According to the NPC/SFEIR, a traffic signal would improve the overall LOS at this intersection from LOS E or F under 2028 Build Conditions to an overall LOS of C or D. The NPC/SFEIR included a Traffic Signal Warrant Analysis that supported the installation of a signal at this intersection.

The NPC/SFEIR also provided additional analysis of queue lengths on the Route 140 NB and SB off-ramps and along Braley Road. The traffic study provided previously in the FEIR documented that project-generated truck traffic would increase queue lengths on the Route 140 NB by up to 277 feet in the AM peak period and 228 feet in the PM peak period, and by up to 437 feet on the eastbound Theodore Rice Boulevard approach to the Braley Road/Theodore Rice Boulevard at Phillips Road intersection. However, based on the updated vehicle volumes and calibrated model used in the NPC/SFEIR, project-generated trucks would have significantly less impact on queue lengths than described in the FEIR. The project will increase queue lengths on the Route 140 NB ramp by up to 72 feet (during the school peak period), by up to 72 feet on eastbound Theodore Rice Boulevard during the school peak period and by up to 80 feet on westbound Theodore Rice Boulevard during the AM peak period. According to the NPC/SFEIR, these extended queues correspond approximately to the length of two packer trucks or one transfer trailer; furthermore, the project will not cause traffic to back up onto Route 140, as was shown in the FEIR to be the case at the Route 140 NB ramp. The NPC/SFEIR did not identify any mitigation measures to address the project's impacts on queue length, nor did it address any measures to minimize potential impacts to school children who may experience idling of school buses adjacent to the trucks associated with the project. As recommended by MassDOT, the Proponent should minimize its traffic impacts, including added congestion and delays during the school peak period, by scheduling deliveries to the facility during off-peak and off-school-peak hours. I expect that this issue will continue to be addressed during subsequent permitting.

In addition to installing a traffic signal at the Braley Road/Theodore Rice Boulevard at Phillips Road intersection, the Proponent has proposed to mitigate the project's traffic impacts by providing the City of New Bedford with $5,000 for a traffic analysis in support of the establishment of a truck ban on Phillips Road and by implementing TDM measures described below. According to MassDEP, the Proponent may be required to conduct post-construction monitoring of traffic operations to confirm the conclusions of the traffic analysis. I note that the Proponent has identified the use of railcars to haul waste off-site as a mitigation measure to minimize truck traffic and associated impacts, including GHG emissions. However, the traffic analysis modeled the truck trips associated with off-site transport of waste and the Proponent may seek approval to generate up to 418 truck trips, which would appear to be 112 truck trips more than is necessary to deliver 1,500 tpd of waste. The traffic analysis documented that even though the LOS at intersections will not change between No Build 2028 and Build 2028 conditions, the project will cause increased delay, queues and congestion (volume/capacity ratio). During the permitting process, I encourage MassDEP to determine a minimum level of truck trips necessary for waste transport to minimize the project's traffic and air quality impacts.

Noise

The NPC/SFEIR included a revised noise analysis based on the current project design without the biosolids building and without a previously-proposed sound wall east and south of the biosolids building. It identified sources of noise, reviewed potential mitigation measures and provided the results of modelling of noise impacts on nearby residential properties. Noise sources previously identified in connection with the biosolids facility, including rooftop exhaust fans, cooling towers, a biofilter fan, and a biofilter stack, are no longer proposed.

Noise sources and potential mitigation measures evaluated by the Proponent include:

- Seven rooftop exhaust fans, including four on the MSW tipping building and three on the MSW processing building: Proposed mitigation measures, such as the use of quieter fans, rooftop barriers or fan silencers will achieve a reduction of 5 dBA at the source; further reductions in noise from this source are not possible without affecting the ability of the fans to achieve the necessary air exchange.
- Three open loading door bays on the west side of the MSW building: Noise from this source is generated by dumping and moving MSW with a front end loader inside the building with the doors open. Mitigation measures include siting of the building on the west side of the site, away from residences along Phillips Road and orienting the doors to open to the west. In addition, the doors will be closed whenever possible; the Proponent anticipates that the doors will be closed for a substantial portion of the time, but cannot commit to keeping the doors closed at all times because they must be open to allow MSW and equipment into and out of the building.
- One ventilation opening on the west side of the glass building: The use of an acoustic louvered intake will reduce noise levels at the source by 15 dBA while still providing for the needed airflow through the vent.
- Two ventilation fans exhausting into one stack on the roof of the glass building: The use of a stack silencer will reduce noise levels by 2 dBA. According to the NPC/SFEIR, the noise model determined that the use of a larger stack silencer would not result in reduced noise levels at off-site noise receptors.
- Idling locomotives: Mass Coastal Railroad locomotives will pick up rail cars loaded with MSW and deliver empty rail cars once per day, 6 days a week. To minimize noise generated by locomotive engines, locomotive activity will take place at the western side of the site and will be restricted to the hours between 5:00 AM and 9:00 PM. In addition, movement of rail cars within the site will be done using an electric railcar mover rather than locomotives, which do not generate engine noise and can move rail cars slowly to minimize coupling noise impacts. According to the NPC/SFEIR, the Proponent will not own the locomotives to be used to service the site; therefore, installation of noise controls on the locomotives is not feasible. In the FEIR, the Proponent had proposed to construct a 25-ft high noise wall adjacent to the biosolids building to minimize noise impacts to nearby residences. The noise wall is no longer proposed because additional modelling has determined that the wall would have to be 30-ft high rather than 25-ft high in order to significantly reduce impacts at nearby residences, which is not justified based on the short duration of locomotive activity expected at the site. According to the NPC/SFEIR, the wall could have the

effect of directing truck noise from the industrial park toward residences, which would minimize any benefit of the wall.

- Backup alarms on trucks unloading MSW: The impact of this noise will be minimized by siting MSW operations at the west side of the site. Trucks associated with the glass recycling facility, which is closer to residences, will not have to back up and will therefore have no alarms; due to site and operational constraints, it is not possible for MSW trucks to avoid having to back up. The trucks delivering MSW will not be owned by the Proponent and the Proponent cannot commit to the use of noise reduction systems to minimize the volume of backup alarms; however, white noise technology will be used on Proponent-owned equipment such as the railcar mover.
- Railcar mover: The use of an electric railcar mover will eliminate engine noise associated with a diesel rail car mover.
- Railcar coupling: Noise associated with the mechanical connection of two railcars will be reduced by 10dBA at the source by using an electric railcar mover, which can push one railcar into another at a slower speed. The Proponent will not own the railcars and cannot commit to engineer or use a quieter railcar coupling system.
- On-site truck traffic: Noise from on-site truck traffic will be minimized by requiring trucks to travel at slow speeds, by concentrating truck activity in the western part of the site, reducing the number of trucks by using rail cars to haul waste away from the facility.
- Other noise sources, such as heating, ventilation and cooling of conditioned interior space, employee vehicles, and indoor material handling: These sources of noise will produce noise that is at least 10 dBA less than other sources described above, and therefore will not contribute to overall sound levels produced by the facility.

According to MassDEP, the Proponent will be required to implement all noise mitigation measures that are technologically and economically feasible, including the potential use of a noise wall to minimize noise generated by rail activity at the site.

As described above, the project will increase noise levels at nearby residences by up to 7 dBA over nighttime ambient sound levels and by up to 3 dBA over daytime ambient sound levels, which represents a decrease of 2 to 3 dBA compared to the analysis provided in the FEIR. This analysis did not include noise sources from trucks and rail cars that the Proponent believes are regulated only at the federal level. In response to MassDEP's comments on the FEIR, the Proponent evaluated the project's noise impacts by combining continuous sound sources at the facility and intermittent noise caused by railcar coupling, locomotive idling and backup beepers; however, the analysis did not include noise generated by truck traffic, which the Proponent asserts cannot be modeled in combination with other sources of noise. According to the NPC/SFEIR, the mitigation measures identified above will reduce noise levels by up to 10 dBA compared to noise levels that would be generated without the use of any mitigation measures. With respect to truck noise, the NPC/SFEIR indicated that the project will not cause sound levels to exceed the Federal Highway Administration's (FHWA) standard of 66 dBA. According to MassDEP, the Proponent's permit application should include a complete noise analysis, including a justification for the data used to establish background sound levels and isopleth maps depicting No Build and Build sound levels. In addition, the Proponent will be required to evaluate the project's cumulative noise impacts, including an assessment of on-site truck traffic in combination with other noise sources.

Greenhouse Gas Emissions

The NPC/SFEIR provided additional information on the project's energy use and GHG emissions. The Glass Processing Building and the Glass Processing Bunker Building are the only two buildings with conditioned space. Construction of the Glass Processing Building was completed in 2020 and the Glass Processing Bunker Building is currently under construction. The NPC/SFEIR included new commitments to use air-source heat pumps (ASHP) for space heating and a high efficiency envelope consisting of R-30 metal panels with no windows in the Glass Processing Bunker Building, and to retrofit the Glass Processing Building with an R-11 insulated roof liner, which was required by the Building Code in effect when the building received a building permit but not constructed. Solar PV systems at the site will have a combined generating capacity of approximately 4.7 MW, which will produce enough electricity to offset 745 tpy of GHG emissions.

As described in the NPC/SFEIR, the proposed buildings will emit 982 tons per year (tpy) of carbon dioxide (CO_2), a reduction of 67 tpy (6.4 percent) compared to the emissions that would be produced if the buildings were designed to meet Building Code baseline energy requirements (1,049 tpy). The project will generate 1,721 tpy of GHG from mobile sources such as trucks, employee vehicles and on-site waste moving equipment such as front-end loaders. According to the Proponent, the use of trains to haul waste to out-of-state landfills will significantly reduce GHG emissions compared to the use of trucks for this purpose; as previously documented in the DEIR and FEIR, out-of-state transport by rail will generate 12,901 tpy of CO_2 compared to GHG emissions of approximately 31,702 tpy if trucks were used (a reduction of approximately 60 percent). It is unclear if this estimate was premised on utilizing approximately 112 less trips than the 418 adt modeled through the traffic study. During the permitting process, the Proponent should work with MassDEP to determine a minimum level of truck trips necessary for waste transport to minimize the project's traffic and air quality impacts. To the extent the use of additional trucks up to the 418 adt number decrease mobile source emissions reductions to less than 60 percent, the Proponent should commit to equivalent measures to maintain that same level of reduction.

Mitigation and Section 61 Findings

The FEIR includes a separate chapter summarizing proposed mitigation measures and includes draft Section 61 Findings for each Permit to be issued by Agencies. It contains commitments to implement these mitigation measures, identifies the parties responsible for implementation, and includes a schedule for implementation. The Proponent will provide a GHG self-certification to the MEPA Office that is signed by an appropriate professional (e.g., engineer, architect, transportation planner, general contractor) indicating that all of the GHG mitigation measures or equivalent measures that are designed to collectively achieve identified reductions in GHG emissions from stationary and mobile sources and land alteration have been incorporated into the project. To the extent the project will take equivalent measures to achieve the identified reductions, I encourage the Proponent to commit to achieving the same level of GHG emissions identified in the mitigated (design) case expressed in volumetric terms (e.g., tpy). To the extent the use of additional trucks up to the 418 adt number decrease mobile source emissions reductions to less than 60 percent, the Proponent should commit to equivalent measures to maintain that same level of reduction. The Proponent has committed to implement the following measures to avoid, minimize and mitigate Damage to the Environment:

Environmental Justice

- Require waste delivery trucks to use Duchaine Boulevard, Theodore Rice Boulevard and the section of Braley Road between Phillips Road and Route 140 in order to avoid travel on residential streets;
- Support a truck ban on Phillips Road by the City;
- Implement mitigation measures described below to minimize noise, odors and emissions of air pollutants;
- Monitor the facility's emissions of Volatile Organic Compounds (VOCs) and Particulate Matter (PM_{10}) by tracking monthly mass rates of air emissions and post the data on the Proponent's web site;
- Provide an easy and confidential system for the public to submit noise, odor or dust complaints and implement a complaint log system for tracking and responding to complaints;
- Conduct public informational meetings on September 21, October 12, November 2, December 15 (2022) and January 11 (2023), with notice of the meetings to be published in local newspapers, including the Portuguese Times, advertised on the radio, and listed on the Proponent's web site;
- Provide Spanish and Portuguese interpreters at public meetings; and,
- Implement Public Involvement Plan developed by MassDEP, which is expected to include, at a minimum, development of draft project fact sheets to be shared with the community prior to being finalized, working with residents and community groups to identify hard-to-reach populations and encouraging their full participation in the review of the project, and scheduling public meetings at times and locations convenient for the community and providing notice of meetings in traditional and non-English media outlets.

Solid Waste

- The Proponent will provide a financial assurance mechanism (FAM) to MassDEP that will include sufficient funds to clean up the site and remove any stored solid waste on the site in the event of an unplanned closure of the facility;
- The Proponent will be required to demonstrate to MassDEP and the New Bedford Board of Health that the project meets all siting and operating requirements and incorporates, at a minimum, the mitigation measures described herein.

Transportation

- Install a traffic signal at the Braley Rd at Phillips Rd/Theodore Rice Blvd intersection;
- Provide the City with $5,000 for a study to exclude trucks from Phillips Road;
- Encourage employees to participate in transit subsidy or reimbursement programs;
- Coordination with the Southeastern Regional Transit Authority (SRTA) to request revising existing transit service to better service the project site
- Inform employees of alternative commuting options, including nearby transit stops and bicycle and pedestrian amenities;
- Encourage bicycle ridership to the site by providing bike racks and other storage

facilities onsite;
- Implement an employee carpool/vanpool program, including preferential parking;
- Provide preferential parking for carpools and vanpools;
- Offer paperless, direct deposit offered to employees;
- Work with the City to provide striped bicycle lanes along Duchaine Boulevard and shared bicycle markings along Theodore Rice Boulevard to provide connectivity to the existing bicycle amenities along Braley Road; and,
- Continue to work with MassDEP and the City on additional transportation mitigation, including ways to minimize impacts during school peak hours.

Wetlands, Waterways and Stormwater

- Comply with Order of Conditions issued by the New Bedford Conservation Commission;
- Mitigate impacts to 4,095 sf of BVW by providing a wetlands replication area of 6,700 sf (1:1.6 replication ratio);
- Process MSW on impervious concrete floors within proposed buildings with trench drains at all truck door entrances to prevent contact water on the handling floors from leaving the buildings;
- Conduct regular sweeping of outdoor paved surfaces to minimize potential sediment migration during storm events;
- Utilize stormwater controls and BMPs throughout operation of the site;
- Development and implement a Stormwater Pollution Prevention Plan (SWPPP);
- Install a bridge for the rail crossing over an existing drainage swale to minimize any impact on the drainage swale; and,
- Modify the existing stormwater management system on-site as required to maintain compliance with the Massachusetts Stormwater Management Policy.

Air Quality and Noise

- Conduct all waste processing and handling operations indoors;
- Construct buildings with openings facing west, away from residential areas, to minimize potential noise, dust, or odor nuisance conditions;
- Enclose the rail tracks adjacent to the glass building where railcars are to be loaded;
- Minimize the size of openings of the solid waste handling facility to reduce wind tunnel effects and potential for release of and odors;
- Incorporate ventilation systems to exhaust through elevated stacks to promote dispersion of exhaust air;
- Use of an electric railcar mover to minimize noise impacts;
- Construct the rail track without at-grade crossings to eliminate the need for the use of bells, horns, or whistles on locomotives;
- Use of low-noise air handling units and fans fitted with silencers or placed within rooftop barriers for sound attenuation;
- Use of acoustic louvered air intakes to provide baffling for noise attenuation;
- Reduce backup alarm noise by arranging a forward traffic flow for glass unloading;
- Require trucks to drive through the site at slow speeds and locate truck scales away

from residences;
- Control dust and odor by using an atomized water mist and water spray;
- Minimize dust by paving and regularly sweeping exterior and interior surfaces;
- Cover all trailers and containers after bulk loading and before leaving the building;
- Require all waste delivery vehicles to be covered; and,
- Conduct daily inspections as part of the Operations & Maintenance Program.

Greenhouse Gas Emissions

- Use of an electric ASHP to provide space heating in the Glass Processing Bunker Building;
- Construction of a high efficiency envelope consisting of R-30 metal panels with no windows in the Glass Processing Bunker Building;
- Installation of an R-11 roof liner in the Glass Processing and Glass Processing Bunker Buildings;
- Reduced lighting power density (LPD) exceeding Building Code requirements;
- Use of high-efficiency mechanical equipment with variable frequency drives;
- Transport processed waste by rail to reduce GHG emissions by 60 percent compared transportation by truck (a reduction that shall be documented in GHG self-certification in addition to other measures);
- Use of an electrically powered rail car mover to eliminate emissions; and,
- Install rooftop and canopy-mounted solar PV systems with a combined generating capacity of approximately 4.7 MW, which will offset 745 tpy of GHG emissions.

Construction Period

- Implement a SWPP, including sedimentation and erosion controls;
- Designate a truck route for construction vehicles that avoids residential streets;
- Use dust control measures, such as wetting agents, to minimize the spread of dust;
- Minimize noise impacts by minimizing idling by equipment and trucks, limiting construction to daylight hours, and using mufflers on equipment;
- Minimize air emissions from construction vehicles by using emissions controls such as diesel oxidation catalysts and/or particulate filters and Ultra Low Sulfur Diesel (ULSD) to meet MassDEP's Air Pollution Control regulations at 310 CMR 7.00 and the U.S. EPA's Tier 4 Emissions Standards (40 CFR part 1039); and,
- Maximize recycling of construction materials and disposing of wastes in compliance with MassDEP's Solid Waste regulations.

Conclusion

Based on a review of the NPC/SFEIR, and in consultation with Agencies, I find that the NPC/SFEIR adequately and properly complies with MEPA and its implementing regulations. In addition, the changed components of the project do not significantly increase environmental consequences such that further review is warranted. The project may proceed to permitting.

August 29, 2022
Date

Bethany A. Card

Comments received:

08/06/2022	Moroney Family
08/07/2022	Matt Murphy
08/08/2022	Susan and Bruce Sylvia
08/10/2022	Charles Kennedy
08/12/2022	Carol Strupczewski
08/12/2022	Mary Duchane
08/12/2022	Thomas and Susan Southworth
08/14/2022	Deborah L. Viera
08/14/2022	Susan Swisher
08/14/2022	William Moroney
08/15/2022	Carole Sherman
08/15/2022	Richard Hinkley
08/15/2022	Thomas C. Grota
08/15/2022	Gale Orlowski
08/15/2022	Carol Strupczewski
08/15/2022	Christina Melo
08/15/2022	Cindy Costa
08/15/2022	Donna Poyant
08/15/2022	Ken Costa
08/15/2022	Mary Myers (2)
08/15/2022	Matt O’Donnell
08/15/2022	Paul Gaudette (2)
08/15/2022	Peter Swible
08/15/2022	R Carleen Cordwell
08/15/2022	Leroy Vargas
08/15/2022	Mary Jo Grota
08/15/2022	Gale Orlowski
08/15/2022	Linda D. Vargas
08/15/2022	Carole Sherman
08/15/2022	Robert Melancon
08/15/2022	thwynne@verizon.net
08/15/2022	Vincent Carolan
08/16/2022	Andrea Honore
08/16/2022	Bethany Enzian
08/16/2022	Chenelle Saulnier
08/16/2022	Colin Dacosta
08/16/2022	Deborah Moser

ATTACHMENT 3

UPDATED TRAFFIC STUDY

MEMORANDUM

TO: Tim Cusson

FROM: Phil Viveiros, P.E., PTOE, RSP2I

DATE: February 6, 2023

RE: South Coast Renewables proposed facility expansion
100 Duchaine Boulevard, New Bedford, MA
SFEIR comments

McMahon Associates has prepared the following supplemental traffic impact assessment for the proposed facility expansion at 100 Duchaine Boulevard in New Bedford, MA. The supplemental analyses are intended to address comments received from the Massachusetts Department of Transportation (MassDOT) and Massachusetts Department of Environmental Protection (MassDEP) relative to the Supplemental Final Environmental Impact Report (SFEIR) for the proposed facility expansion. In addition, the supplemental analyses reflect the removal of biosolids processing from the proposed facility expansion.

Weekday Daily Trip Generation

As noted in the SFEIR, the proposed facility expansion includes the constructing of a solid waste handling and processing facility that will accept municipal solid waste (MSW) and construction and demolition (C&D) materials for handling at a proposed maximum of 1,500 tons per day (tpd). An additional 400 tpd of biosolids processing proposed to be included in the facility expansion in the DEIR and FEIR has been removed from the project. There would be no change in the projected number of employee trips with the removal of biosolids from the project.

In addition, as noted in the SFEIR, the facility will be served by rail, and the majority of outbound materials are proposed to be transported from the site by rail. However, to present a conservative analysis, the trip generation and level-of-service analysis presented in the SFEIR assumes all outbound materials would be transported from the site by truck. Table 1 below presents the revised estimated trip generation for the proposed facility expansion with the removal of biosolids, both with and without rail service. With the rail in operation, it is estimated that 100 percent of outbound C&D and 75 percent of outbound MSW would be transported by rail. As in the SFEIR, the revised trip generation estimates do not include the use of backhauls, a standard industry practice where a truck delivering inbound materials would be reloaded with material from the site rather than departing empty.

As shown in Table 1, the proposed facility expansion is projected to generate a total of 196 new daily one-way truck trips with the rail in operation, a reduction of 82 truck trips compared with the 328 new daily truck trips projected in the SFEIR. Assuming no rail service, the proposed facility expansion is projected to generate an additional 278 new daily one-way truck trips assuming no rail service, or 50 trips fewer than projected in the SFEIR.

Table 1: Project Trip Generation

Description	Weekday Daily Trips (SFEIR) In	Out	Total	Weekday Daily Trips (with rail, no biosolids) In	Out	Total	Weekday Daily Trips (without rail, no biosolids) In	Out	Total
Inbound MSW/C&D Trips									
Packer	33	33	66	33	33	66	33	33	66
Transfer Trailer	43	43	86	43	43	86	43	43	86
Inbound Biosolid Trips	23	23	46	0	0	0	0	0	0
Outbound MSW/C&D/Biosolids	56	56	112	13	13	26	54	54	108
Truck Trip Total (MSW, C&D, and Biosolids)	***155***	***155***	***310***	***89***	***89***	***178***	***130***	***130***	***260***
Expanded Glass Trips (Approved under Phase 1)	9	9	18	9	9	18	9	9	18
Truck Trip Total	***164***	***164***	***328***	***98***	***98***	***196***	***139***	***139***	***278***
Facility Employees	75	75	150	75	75	150	75	75	150
Total	**239**	**239**	**478**	**173**	**173**	**346**	**214**	**214**	**428**

As indicated in the SFEIR, the existing facility generates up to 90 truck trips per day. As shown in Table 1 above, Phase 2 is projected to add up to 18 one-way daily truck trips related to the expansion of Phase 1 glass operations and up to 278 one-way daily truck trips related to MSW and C&D processing under Phase 2. the facility is estimated to generate a maximum of up to 386 one-way daily truck trips. Per MassDEP, the maximum daily truck trip generation of the facility will not exceed 386 one-way trips. The total number of maximum daily one-way truck trips is summarized in Table 2 below.

Table 2: Maximum Daily One-Way Truck Trips

	Existing Operations	Phase 1 Glass Processing	Phase 2 Expansion	Total One-Way Truck Trips
One-Way Truck Trips	90	18	278	**386**

Weekday Peak Hour Trip Generation
As noted in the SFEIR, the proposed facility expansion includes the constructing of a solid waste handling and processing facility that will accept municipal solid waste (MSW) and construction and demolition (C&D) materials for handling at a proposed maximum of 1,500 tons per day (tpd). An additional 400 tpd of biosolids processing proposed to be included in the facility expansion in the DEIR and FEIR has been removed from the project. There would be no change in the projected number of employee trips with the removal of biosolids from the project.

Per MassDOT's review letter dated August 22, 2022, MassDOT requested that truck deliveries and departures to be scheduled to occur during off-hours to avoid periods of maximum congestion. As inbound material is transported to the site by independent contractors, South Coast Renewables is not able to control the schedule of inbound material. In the event South Coast Renewables refused to accept inbound material during peak hours, the likely result would be trucks idling or circling the area until the time at which deliveries would be accepted. South Coast Renewables does have the ability to restrict the departure of trucks transporting outbound material and would agree to do so during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours identified in the SFEIR (6:30 to 7:30 a.m. and 3:15 to 5:00 p.m.). To estimate the hourly distribution of truck traffic, it was assumed that trips transporting outbound material previously assumed to depart the site during peak hours would instead depart the site during the following hour. Outbound material transported from the site via backhaul would not be held, as the material would be transported by an inbound truck which would otherwise be departing the site empty. Concurrence from MassDOT that the proposed restricted hours for departing truck trips is provided as an attachment.

Table 3 on the following page summarizes the revised hourly distribution of truck trips both with and without rail service compared with the number of hourly truck trips estimated in the SFEIR. As shown in Table 3, with the removal of biosolids processing and with rail in operation, the number of truck trips projected to be generated by the proposed facility expansion is reduced during each hour compared with the SFEIR. On days without rail in operation and the site operating at full capacity, the projected number of truck trips each hour would be reduced or remain the same compared with the SFEIR, with the exception of the 5:00 p.m. to 6:00 p.m. hour due to trucks transporting outbound material being held until after the weekday afternoon school dismissal and commuter peak hours.

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Table 3: Hourly Distribution of Truck Trips

Time	Total One-Way Truck Trips (SFEIR)	Hourly distribution of truck trips (%) - Inbound Material	Total One-Way Truck Trips - Inbound Material	Hourly distribution of truck trips (%) - Outbound Material	Total One-Way Truck Trips - Outbound Material (with rail)	Revised Total One-Way Truck Trips (with rail)	Total One-Way Truck Trips - Outbound Material (without rail)	Revised Total One-Way Truck Trips (without rail)
6-7 AM	**32**	10%	16	5%[1]	2	**18**	6	**22**
7-8 AM	**24**	8%	12	9%[2]	2	**14**	10	**22**
8-9 AM	**24**	8%	12	12%	4	**16**	14	**26**
9-10 AM	**28**	9%	14	9%	2	**16**	10	**24**
10-11 AM	**32**	10%	16	10%	2	**18**	10	**26**
11-12 AM	**32**	10%	16	10%	2	**18**	10	**26**
12-1 PM	**32**	11%	16	11%	2	**18**	12	**28**
1-2 PM	**32**	10%	16	10%	2	**18**	10	**26**
2-3 PM	**32**	10%	16	10%	2	**18**	10	**26**
3-4 PM	**22**	7%	10	2%[3]	2	**12**	2	**12**
4-5 PM	**8**	3%	4	0%	0	**4**	0	**4**
5-6 PM	**6**	2%	2	10%	2	**4**	12	**14**
6-7 PM	**6**	2%	2	2%	2	**4**	2	**4**
	310	100%	152	100%	26	**178**	108	**260**

[1] 6:00 a.m. to 6:30 a.m. only
[2] 7:30 a.m. to 8:00 a.m. only
[3] 3:00 p.m. to 3:15 p.m. only

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2028 Future Build Peak Hour Traffic Volumes
To present a conservative analysis and to account for hourly fluctuation in deliveries throughout a given day, it was assumed that the peak hour of site generated truck traffic, 11%, which is projected to typically occur between 12:00 p.m. and 1:00 p.m., would occur during each of the three surrounding roadway network peak hours consistent with the methodology used in the SFEIR. However, as transportation of outbound materials would be restricted during these peak hours, only the 16 one-way truck trips generated by trucks transporting inbound materials (8 trips inbound loaded, 8 trips outbound empty) were assumed to occur during the peak hours. Consistent with the assumptions in the SFEIR, the expanded glass operations previously approved under Phase 1 are estimated to generate 2 one-way truck trips (1 entering, 1 exiting) during each peak hour, and an estimated 25 outbound passenger-car trips are estimated to be generated during the weekday morning and weekday afternoon school dismissal peak hours due to employees leaving the facility following 6:30 a.m. and 2:30 p.m. shift changes.

Table 4 below summarizes the truck and employee trips which were previously estimated to be generated by the proposed facility expansion during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours in the SFEIR, while Table 5 on the following page summarizes the revised estimated peak hour truck and employee trip generation with the removal of biosolids and restriction of outbound material transportation by truck during the weekday peak hours.

Table 4: Peak Hour Project Trip Generation – SFEIR

	Weekday Morning Peak Hour Trips			Weekday Afternoon School Dismissal Peak Hour Trips			Weekday Afternoon Commuter Peak Hour Trips		
Description	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Inbound MSW/C&D Trips									
Packer	4	4	8	4	4	8	4	4	8
Transfer Trailer	4	4	8	4	4	8	4	4	8
Inbound Biosolid Trips	2	2	4	2	2	4	2	2	4
Outbound MSW/C&D/Biosolids	6	6	12	6	6	12	6	6	12
Truck Trip Total (MSW, C&D, and Biosolids)	***16***	***16***	***32***	***16***	***16***	***32***	***16***	***16***	***32***
Expanded Glass Trips (Approved under Phase 1)	1	1	2	1	1	2	1	1	2
Truck Trip Total	***17***	***17***	***34***	***17***	***17***	***34***	***17***	***17***	***34***
Facility Employees	0	25	25	0	25	25	0	0	0
Total Vehicle Trips	**17**	**42**	**59**	**17**	**42**	**59**	**17**	**17**	**34**

Table 5: Peak Hour Project Trip Generation – Revised

Description	Weekday Morning Peak Hour Trips In	Out	Total	Weekday Afternoon School Dismissal Peak Hour Trips In	Out	Total	Weekday Afternoon Commuter Peak Hour Trips In	Out	Total
Inbound MSW/C&D Trips									
Packer	4	4	8	4	4	8	4	4	8
Transfer Trailer	4	4	8	4	4	8	4	4	8
Inbound Biosolid Trips	0	0	0	0	0	0	0	0	0
Outbound MSW and C&D	0	0	0	0	0	0	0	0	0
Truck Trip Total (MSW and C&D)	***8***	***8***	***16***	***8***	***8***	***16***	***8***	***8***	***16***
Expanded Glass Trips (Approved under Phase 1)	1	1	2	1	1	2	1	1	2
Truck Trip Total	***9***	***9***	***18***	***9***	***9***	***18***	***9***	***9***	***18***
Change from SFEIR	***-8***	***-8***	***-16***	***-8***	***-8***	***-16***	***-8***	***-8***	***-16***
Facility Employees	0	25	25	0	25	25	0	0	0
Total Vehicle Trips	**9**	**34**	**43**	**9**	**34**	**43**	**9**	**9**	**18**

As shown in Table 5, the revised estimated peak hour trip generation represents a reduction of 16 truck trips (8 entering, 8 exiting) during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours. Note that rail operations would have no effect on peak hour truck trip generation, as rail would only be used to transport outbound material, and transportation of outbound material by truck would be restricted during the roadway network peak hours.

The peak hour project generated trips shown in Table 5 were added to the 2028 No-Build peak hour traffic volumes to develop the revised 2028 Build peak hour traffic volume networks. The revised distribution of project generated peak hour trips on the study area roadway network during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours are shown in Figures 1, 2, and 3, respectively, while the resulting 2028 Build weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hour volumes are presented in Figures 4, 5, and 6, respectively.

Traffic Operations Analysis

Traffic operations at the study area intersections with the revised 2028 Build traffic were analyzed using Synchro capacity analysis software. The revised analysis assumes that the mitigation proposed in the SFEIR, which would signalize the intersection of Braley Road with Phillips Road and Theodore Rice Boulevard, would be in place. Table 6 summarizes the Synchro capacity analysis results under 2028 No-Build conditions, 2028 Build conditions as reported in the SFEIR, and revised 2028 Build conditions.

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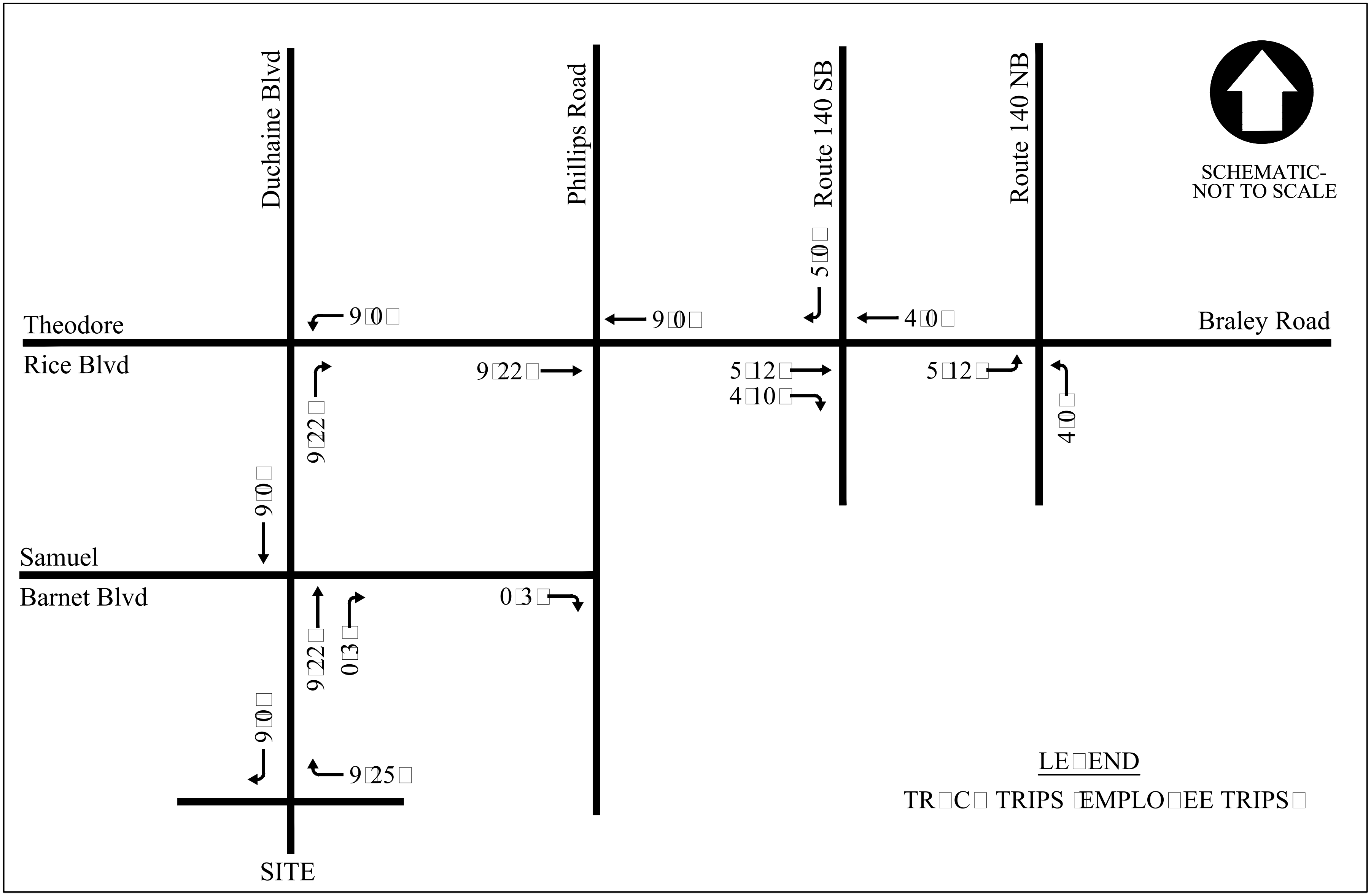

Figure 1
Weekday Morning Peak Hour
Project Generated Trips
South Coast Renewables
New Bedford, Massachusetts

MCMAHON
a Bowman company

\\bosfs\dept\Analysis\Green Seal Environmental\New Bedford\Report\Graphics\New Bedford_TIS Schematic 2021-09-22.dwg 01/12/22

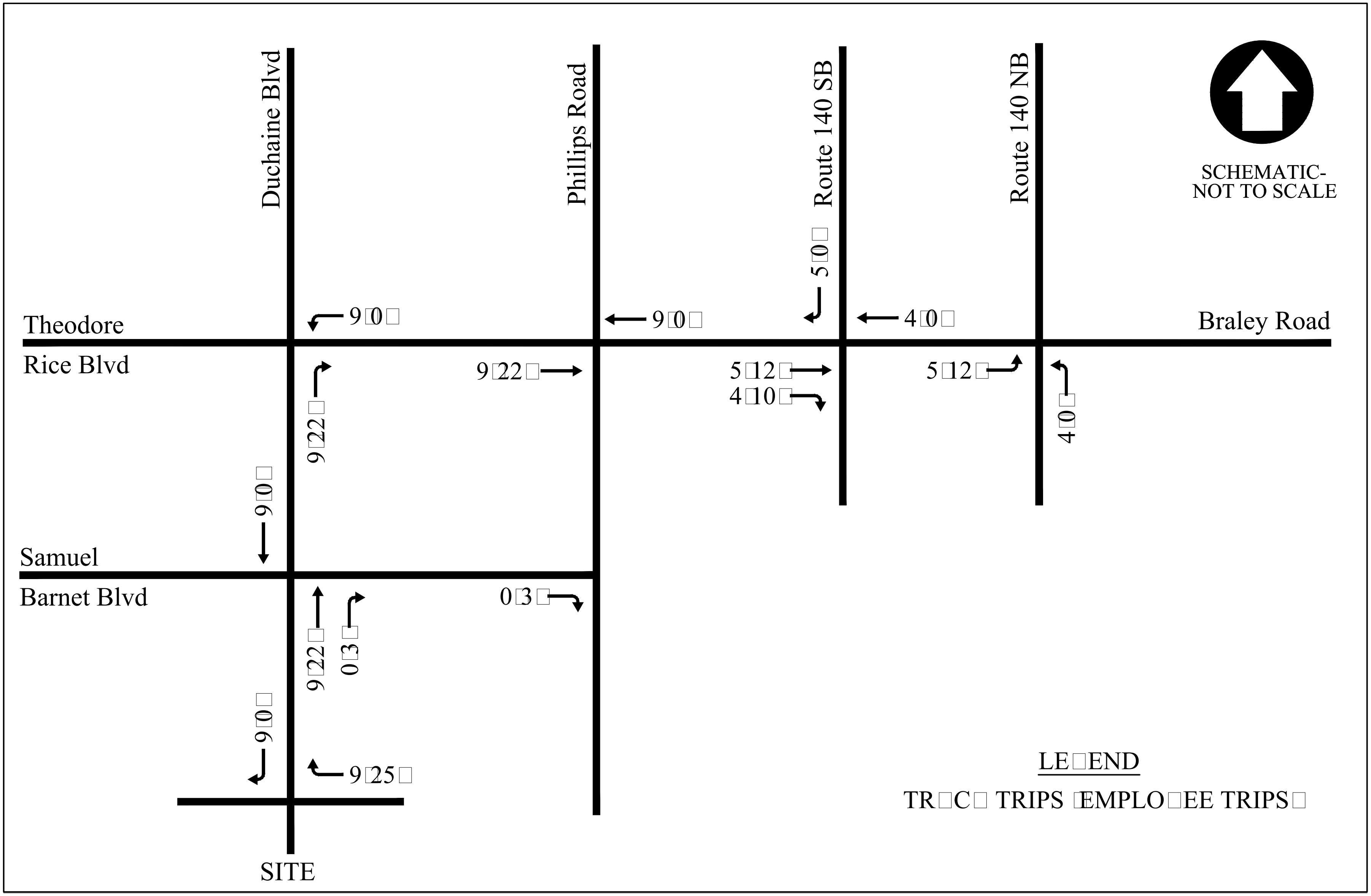

Figure 2
Weekday Afternoon School Dismissal Peak Hour
Project Generated Trips
South Coast Renewables
New Bedford, Massachusetts

\\bosfs\dept\Analysis\Green Seal Environmental\New Bedford\Report\Graphics\New Bedford_TIS Schematic 2021-09-22.dwg 01/12/22

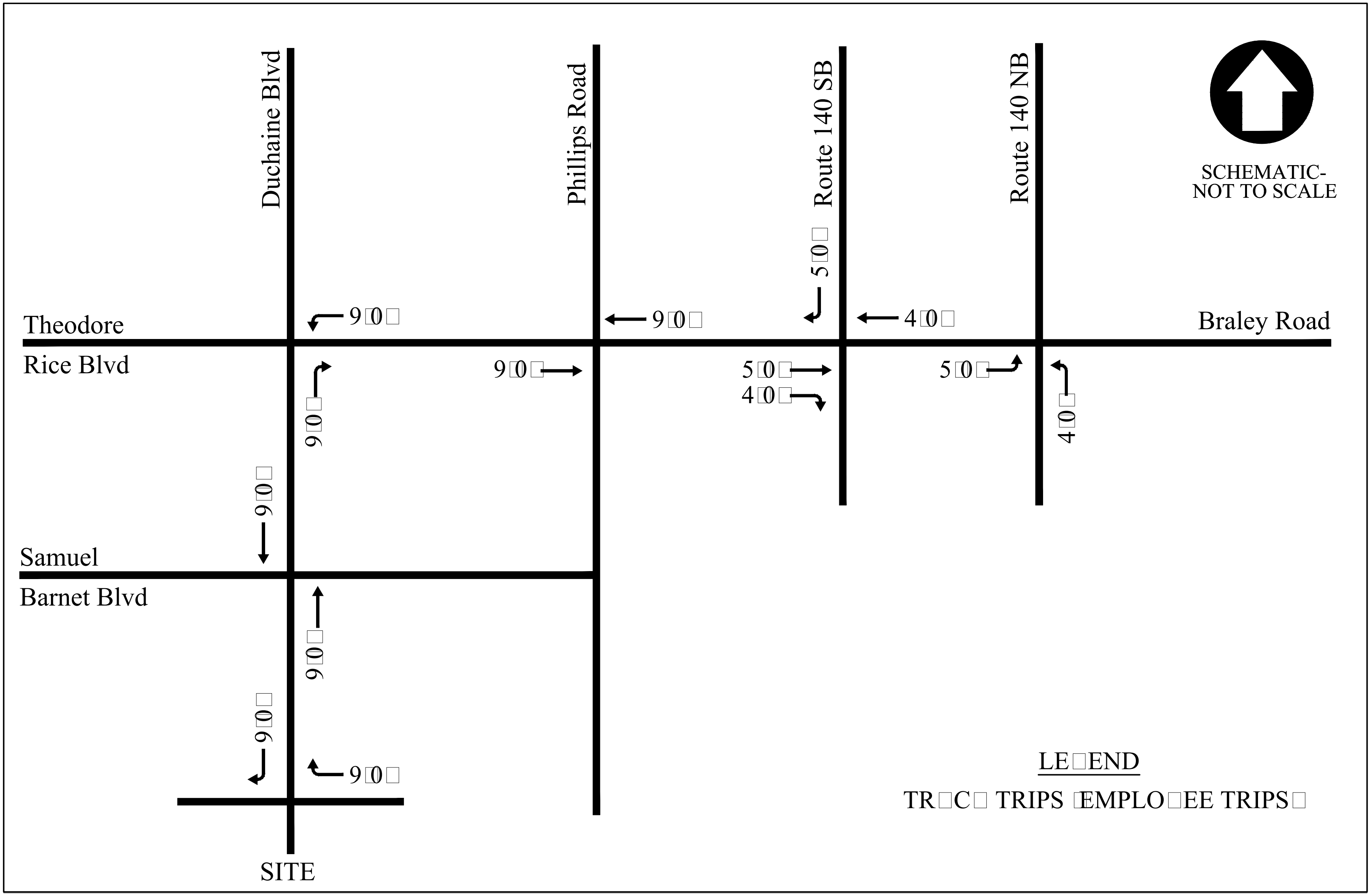

Figure 3
Weekday Afternoon Commuter Peak Hour
Project Generated Trips
South Coast Renewables
New Bedford, Massachusetts

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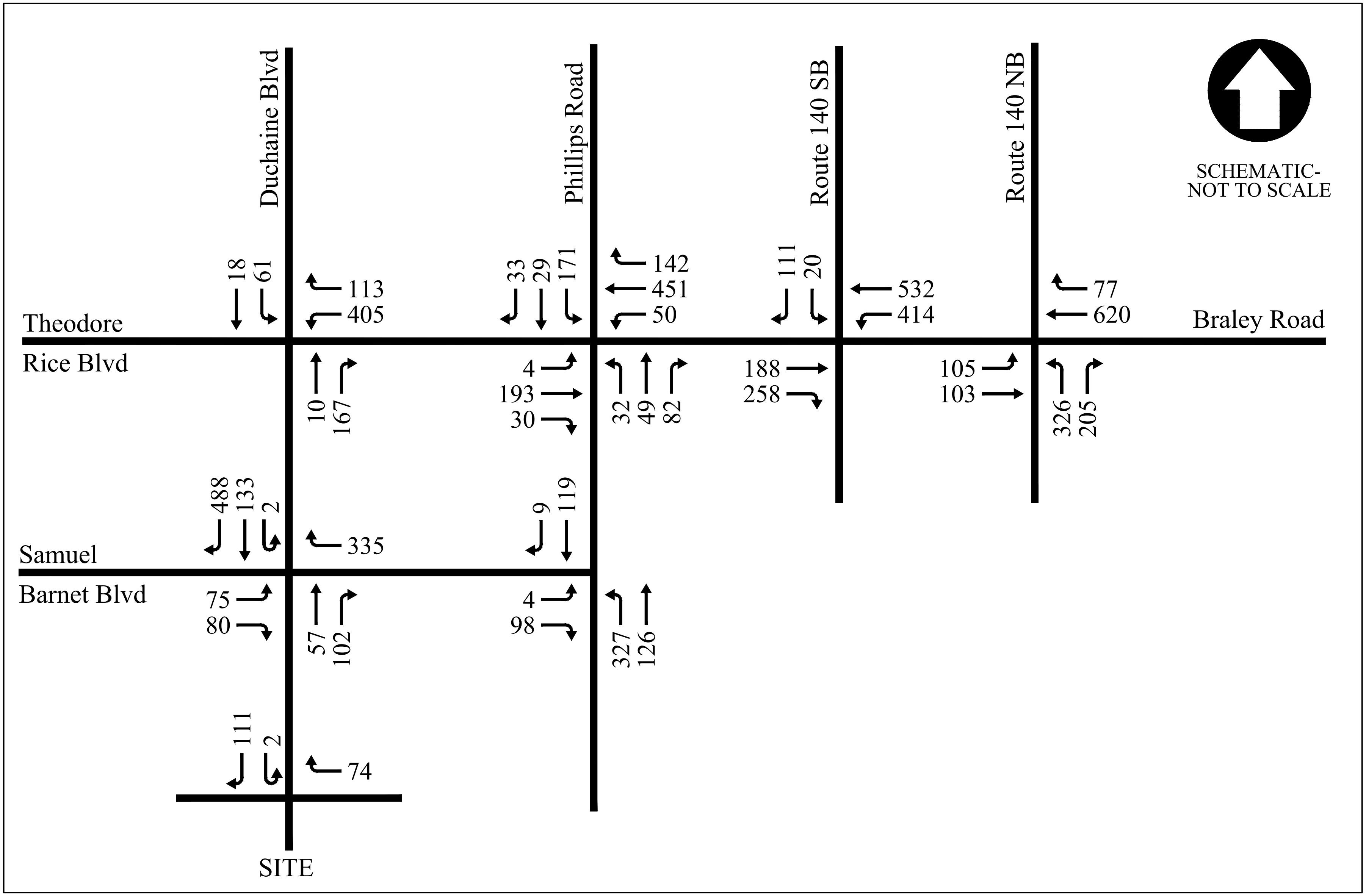

Figure 4
Weekday Morning Peak Hour
2028 Build Traffic Volumes
South Coast Renewables
New Bedford, Massachusetts

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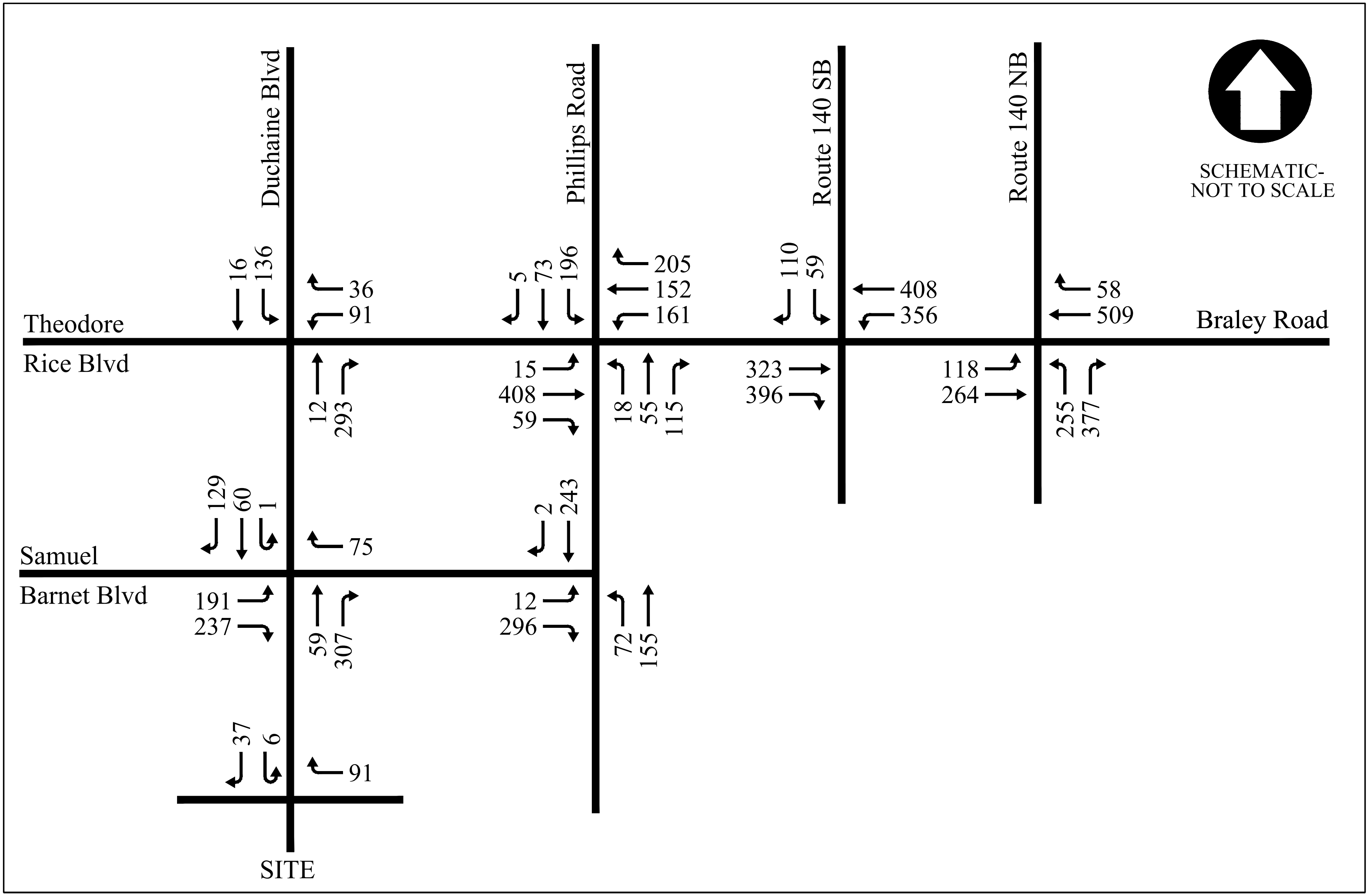

Figure 5
Weekday Afternoon School Dismissal Peak Hour
2028 Build Traffic Volumes
South Coast Renewables
New Bedford, Massachusetts

\\bosfs\dept\Analysis\Green Seal Environmental\New Bedford\Report\Graphics\New Bedford_TIS Schematic 2021-09-22.dwg 01/12/22

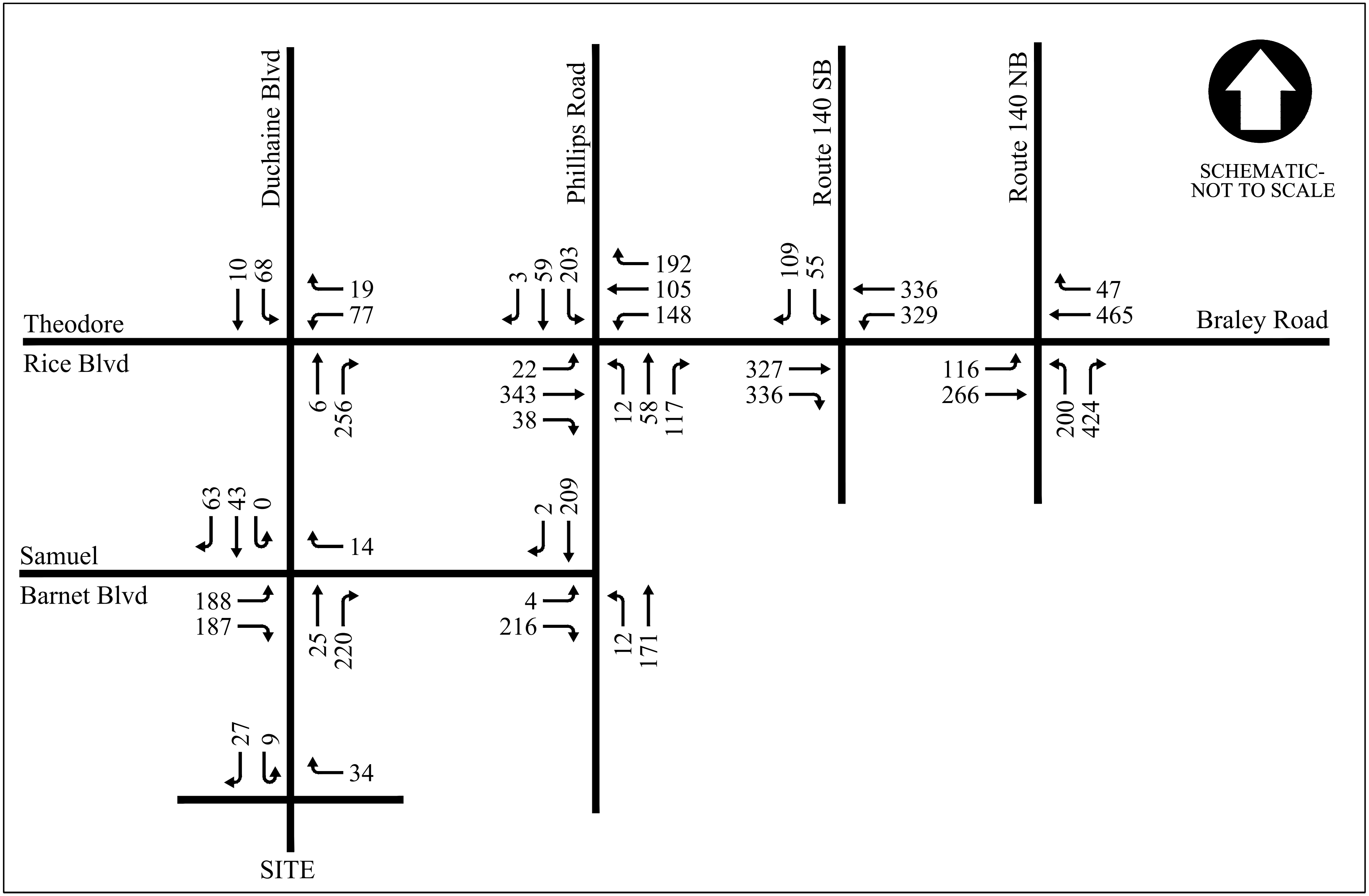

Figure 6
Weekday Afternoon Commuter Peak Hour
2028 Build Traffic Volumes
South Coast Renewables
New Bedford, Massachusetts

McMAHON
a Bowman company

Table 6: Capacity Analysis Summary

Intersection	Movement	Peak Period	2028 No Build				2028 Build with Mitigation (SFEIR)				2028 Build with Mitigation (Revised)			
			LOS[1]	Delay[2]	V/C[3]	Queue[4]	LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Route 140 Northbound	NB L	AM	F	61.3	0.92	243	F	89.0	1.02	303	F	79.7	0.99	283
Ramps at Braley Road		School	F	147.3	1.15	313	F	214.6	1.31	385	F	192.5	1.26	360
		PM	F	59.8	0.82	160	F	76.6	0.90	193	F	67.4	0.86	175
	R	AM	B	10.1	0.24	23	B	10.1	0.24	23	B	10.1	0.24	23
		School	C	15.4	0.55	85	C	15.4	0.55	85	C	15.4	0.55	85
		PM	C	17.2	0.62	108	C	17.2	0.62	108	C	17.2	0.62	108
Route 140 Southbound	SB L	AM	F	60.5	0.25	23	F	68.1	0.28	25	F	66.0	0.27	25
Ramps at Braley Road		School	F	381.0	1.34	150	F	460.8	1.49	160	F	443.3	1.46	158
		PM	F	135.3	0.77	93	F	150.3	0.81	98	F	138.8	0.78	95
	R	AM	B	14.3	0.23	23	C	15.0	0.26	25	C	14.6	0.24	23
		School	B	12.3	0.19	18	B	12.8	0.21	20	B	12.6	0.20	18
		PM	B	11.5	0.17	15	B	11.9	0.19	18	B	11.7	0.18	18
Braley Road/	EB LT	AM	C	15.2	0.39	43	A	8.2	0.27	108	A	8.2	0.26	103
Theodore Rice Boulevard		School	F	59.0	0.98	273	B	14.0	0.49	306	B	13.6	0.47	296
at Phillips Road		PM	E	40.5	0.83	210	B	13.1	0.44	258	B	12.8	0.42	249
	R	AM	A	10.0	0.06	5	A	1.1	0.04	6	A	1.2	0.04	6
		School	B	11.4	0.13	10	A	3.8	0.07	22	A	3.8	0.07	22
		PM	B	10.5	0.08	8	A	2.4	0.05	12	A	2.4	0.05	12
	WB LTR	AM	F	116.5	1.16	585	B	19.0	0.81	465	B	18.8	0.81	447
		School	F	113.9	1.14	483	E	58.0	1.00	602	D	47.1	0.96	581
		PM	F	55.5	0.94	295	C	24.1	0.78	460	C	22.2	0.74	440
	NB LTR	AM	B	14.2	0.36	38	C	22.0	0.42	176	C	21.6	0.41	176
		School	C	19.7	0.50	63	B	17.0	0.41	129	B	17.0	0.41	129
		PM	C	18.7	0.47	63	B	15.9	0.38	122	B	15.9	0.38	122
	SB LTR	AM	C	17.3	0.52	65	D	50.4	0.84	361	D	46.4	0.81	360
		School	D	28.9	0.72	125	E	78.4	0.98	375	E	78.4	0.98	375
		PM	D	25.4	0.65	115	E	78.7	0.98	368	E	78.7	0.98	368
	Overall	*AM*	*F*	*67.7*	*n/a*		*C*	*23.0*	*0.82*		*C*	*22.2*	*0.81*	
		School	*F*	*65.7*	*n/a*		*D*	*41.5*	*0.92*		*D*	*37.7*	*0.91*	
		PM	*E*	*38.4*	*n/a*		*C*	*30.2*	*0.84*		*C*	*29.6*	*0.84*	

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Table 6: Capacity Analysis Summary (Continued)

Intersection	Movement		Peak Period	2028 No Build LOS	Delay	V/C		2028 Build with Mitigation (SFEIR) LOS	Delay	V/C		2028 Build with Mitigation (Revised) LOS	Delay	V/C	
Theodore Rice Boulevard	NB	TR	AM	A	0.0	0.03	3	A	0.0	0.03	3	A	0.0	0.03	3
at Duchaine Boulevard			School	A	0.0	0.01	0	A	0.0	0.01	0	A	0.0	0.01	0
			PM	A	0.0	0.01	0	A	0.0	0.00	0	A	0.0	0.00	0
	SB	L	AM	D	31.6	0.36	40	D	34.6	0.39	43	D	33.0	0.38	40
			School	B	11.5	0.22	20	B	12.1	0.24	23	B	11.8	0.23	23
			PM	B	10.3	0.11	8	B	10.7	0.11	10	B	10.5	0.11	10
		T	AM	C	22.8	0.05	3	C	24.1	0.05	5	C	23.4	0.05	3
			School	B	11.1	0.02	0	B	11.6	0.02	0	B	11.3	0.02	0
			PM	B	10.4	0.01	0	B	10.7	0.01	0	B	10.6	0.01	0
Duchaine Boulevard at	EB	L	AM	C	20.0	0.25	25	C	23.1	0.29	30	C	22.0	0.28	28
Samuel Barnet Boulevard			School	B	11.9	0.29	30	B	13.0	0.32	35	B	12.7	0.31	33
			PM	B	10.4	0.24	23	B	10.9	0.25	25	B	10.6	0.24	25
		R	AM	B	11.3	0.13	13	B	11.4	0.13	13	B	11.3	0.13	13
			School	B	10.3	0.27	28	B	10.4	0.28	28	B	10.3	0.28	28
			PM	A	9.5	0.20	20	A	9.6	0.21	20	A	9.5	0.20	20
Phillips Road at	EB	LR	AM	B	10.2	0.14	13	B	10.2	0.14	13	B	10.2	0.14	13
Samuel Barnet Boulevard			School	B	13.5	0.44	58	B	13.6	0.45	58	B	13.6	0.45	58
			PM	B	11.3	0.30	30	B	11.3	0.30	30	B	11.3	0.30	30
Duchaine Boulevard at	WB	R	AM	A	8.8	0.08	6	A	9.3	0.16	14	A	9.1	0.14	12
Site Driveway			School	A	8.6	0.06	5	A	8.9	0.10	9	A	8.8	0.09	8
			PM	A	8.5	0.03	2	A	8.9	0.05	4	A	8.8	0.04	3

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
4 95th percentile queue length in feet
n/a Not applicable

As shown in Table 6, delays are projected to be reduced compared with the Build conditions reported in the SFEIR due to the removal of biosolids processing and the restriction of outbound material being transported from the facility by truck during weekday peak hours. In addition, the westbound approach at the intersection of Braley Road at Phillips Road and Theodore Rice Boulevard, which was projected to operate at LOS E during the weekday afternoon school dismissal peak hour in the SFEIR, is now projected to operate at LOS D.

Mitigation

Braley Road at Phillips Road and Theodore Rice Boulevard

As discussed in the SFEIR, the intersection of Braley Road at Phillips Road and Theodore Rice Boulevard, which currently operates under all-way STOP sign control, meets MUTCD traffic signal warrant based on existing traffic volumes independent of the proposed facility expansion. To mitigate existing congestion and potential increases in delay due to the proposed facility expansion, South Coast Renewables proposes to fund construction of a traffic signal at the intersection and will coordinate with the City of New Bedford Department of Public Infrastructure on design and implementation. As indicated in Table 6 above, the proposed traffic signal would improve overall operations at the intersection of Braley Road at Phillips Road at Theodore Rice Boulevard from LOS F to LOS C during the weekday morning peak hour, from LOS F to LOS D during the weekday afternoon school dismissal peak hour, and from LOS E to LOS C during the weekday afternoon commuter peak hour.

Braley Road at Route 140 Ramps

As in the SFEIR and as shown in Table 6 above, the addition of project generated trips at the intersections of Braley Road at the Route 140 Northbound and Southbound Ramps increases average vehicle delay and v/c ratios on the STOP-controlled ramp movements, which already operate at LOS F under existing conditions. Under the revised traffic analysis, 95th percentile queues on the ramps are projected to increase by a maximum of 47 feet (approximately one packer truck) on the Route 140 northbound ramp, and a maximum of 8 feet on the Route 140 southbound ramp with the addition of project generated trips.

As indicated in its SFEIR comment letter dated August 22, 2022 (attached), MassDOT concluded that "Given that anticipated Project transportation impacts have not increased since the filing of the original FEIR, that said impacts do not appear to significantly degrade conditions at surrounding roadways and intersections if truck trips are scheduled during off-peak hours, and that the Proponent has committed to congruent mitigation, MassDOT recommends that no further environmental review for transportation impacts be required." As indicated in this memorandum, South Coast Renewables has agreed, based on correspondence with MassDOT, to restrict transportation of outbound material by truck during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours to mitigate potential increases in delay at the Route 140 interchange ramps.

Conclusion

With the removal of biosolids processing from the proposed facility expansion, the projected daily trip generation for the expanded South Coast Renewables would be reduced by 50 one-way truck trips compared with the SFEIR, from 310 (155 entering, 155 exiting) to 260 (130 entering, 130 exiting). In addition, 100 percent of outbound C&D and approximately 75 percent of outbound MSW are projected to typically be transported from the site by rail, further reducing the daily truck trip generation by 82 one-way truck trips to 178 one-way truck trips (89 entering, 89 exiting) per day. On a typical day, the total number of truck trips would be further reduced through the use of backhauls, a standard industry practice where a truck delivering inbound materials would be reloaded with material from the site rather than departing empty. Combined with existing operations and proposed glass processing approved under Phase 1, the maximum daily truck trip generation of the facility will not exceed 386 one-way trips.

In response to MassDOT comments to the SFEIR, South Coast Renewables will restrict the departure of trucks transporting outbound material during the weekday morning, weekday afternoon school dismissal, and weekday afternoon commuter peak hours. This restriction would not apply to backhauls, as the material would be transported by an inbound truck which would otherwise be departing the site empty. With the removal of biosolids processing and the restriction of transportation of outbound materials by truck, the projected peak hour truck trip generation due to the proposed facility expansion would be reduced by 16 one-way trucks trips compared with the SFEIR, from 34 (17 entering, 17 exiting) to 18 (9 entering, 9 exiting).

Based on review and interpretation of the analyses presented, the proposed mitigation measures mitigate project generated impacts to the greatest extent feasible, addresses MassDOT comments received on the SFEIR, and satisfies MassDOT Traffic Impact Assessment Guidelines. It is McMahon's opinion that the traffic impacts of the proposed development of this solid waste facility located at 100 Duchaine Boulevard do not constitute a danger to the public health, safety, or the environment with consideration to traffic congestion, pedestrian and vehicular safety, roadway configuration, or alternate routes in conformance with 310 CMR 16.40(4)(b).

ATTACHMENT A

MassDOT Correspondence

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO

massDOT
Massachusetts Department of Transportation

August 22, 2022

Bethany A. Card, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: New Bedford – 100 Duchaine Boulevard – SFEIR
(EEA #15900)

ATTN: MEPA Unit
Alexander Strysky

Dear Secretary Card:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Supplemental Final Environmental Impact Report filed for the recycling and waste processing facility project formerly referred to as "Parallel Products of New England" in New Bedford as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavallee, P.E., Chief Engineer, Highway Division
Mary-Joe Perry, District 5 Highway Director
James Danila, P.E., State Traffic Engineer
Southeastern Regional Planning and Economic Development District (SRPEDD)
Planning Department, City of New Bedford

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO

massDOT
Massachusetts Department of Transportation

MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: August 22, 2022

RE: New Bedford – 100 Duchaine Boulevard – SFEIR
(EEA #15900)

The Public/Private Development Unit (PPDU) has reviewed the Supplemental Final Environmental Impact Report (SFEIR) for the recycling and waste processing facility formerly referred to as "Parallel Products of New England" in New Bedford (the "Project") submitted by Green Seal Environmental, LLC on behalf of the new ownership South Coast Renewables, LLC (collectively, the "Proponent").

This SFEIR is intended to address commentary from the FEIR Certificate issued April 2, 2021, which identified additional information required in order to find that the Project complied with the Massachusetts Environmental Protection Act (MEPA).

MassDOT originally provided commentary regarding this Project in a comment letter on the Expanded Environmental Notification Form (EENF) in March 2019. The two phases of the Project were together anticipated to generate 418 truck trips, which could be reduced by up to 110 truck trips if a proposed rail access were established for the site. MassDOT offered no objection to the Phase 1 Waiver sought by the Proponent and recommended Transportation Demand Management (TDM) measures intended to reduce single-occupancy vehicle trips by employees to and from the Project site. These recommendations have been included in the Draft Section 61 Findings included in the SFEIR, including the provision of a striped bicycle lane on Duchaine Boulevard and sharrows on Theodore Rice Boulevard, contingent upon City's approval.

The SFEIR includes an updated Transportation Impact Analysis (TIA) which includes a reduced truck trip estimation of 328 total daily truck trips under conservative projections in which all outbound material from the Project site is transported by truck rather than rail and without the use of "backhauls." The Project is anticipated to include 150 employees, representing an additional 300 vehicle trips per day.

The updated TIA reports that under normal traffic operations, Project-generated trips are not anticipated to result in substantial decreases in Level of Service (LOS) at study area intersections. Right turns from the Route 140 Southbound ramps onto Braley Road are anticipated to decline from LOS B to LOS C (0.7 seconds of additional delay) and right turns from Braley Road to Phillips Road are anticipated to decline from LOS A to LOS B (0.3 seconds of additional delay) under the 2028 Build condition as compared to the No-Build Condition. Left turns from both northbound and southbound Route 140 ramps are anticipated to operate at LOS F under both 2028 No-Build and Build conditions. Substantially longer delays (214.6 seconds and 460.8 seconds) are anticipated during peak hours, including during dismissal and arrival at the nearby Casimir Pulaski Elementary School and shift changes at the New Bedford Business Park. MassDOT requests that the Proponent schedule truck deliveries and departures to occur during off hours and avoid periods of maximum congestion.

Given that anticipated Project transportation impacts have not increased since the filing of the original FEIR, that said impacts do not appear to significantly degrade conditions at surrounding roadways and intersections if truck trips are scheduled during off-peak hours, and that the Proponent has committed to congruent mitigation, MassDOT recommends that no further environmental review for transportation impacts be required. The Proponent should continue dialogue with the City of New Bedford and appropriate MassDOT units, including District 5 and Highway Safety, in order to complete mitigation and minimize traffic impacts during construction and operation. If you have any questions, please contact *curtis.b.wiemann@dot.state.ma.us*.

Michael Pompili

From: Wiemann, Curtis B (DOT) <curtis.b.wiemann@state.ma.us>
Sent: Monday, December 5, 2022 4:03 PM
To: Michael Pompili
Cc: Lucien, Lionel (DOT); Strysky, Alexander (EEA)
Subject: RE: EEA #15990 - New Bedford 100 Duchaine Blvd SFEIR comments

Good afternoon:

Thank you for this email and I appreciate the commentary on the potential challenges of scheduling inbound truck traffic. I find the proposed limitations placed on outbound traffic both feasible and effective in limiting peak hour impacts on surrounding roadways especially given the focus on avoiding school dismissal.

Please feel free to contact me with any other questions and I otherwise wish you a very pleasant day!

Sincerely,
Curtis Wiemann

From: Pompili, Michael <mpompili@mcmahonassociates.com>
Sent: Monday, December 5, 2022 11:42 AM
To: Wiemann, Curtis B. (DOT) <Curtis.B.Wiemann@dot.state.ma.us>
Subject: EEA #15990 - New Bedford 100 Duchaine Blvd SFEIR comments

Hi Curtis,

I wanted to touch base on PPDU's comments on the SFEIR for the proposed expansion of the South Coast Renewables facility at 100 Duchaine Boulevard in New Bedford (EEA #15990). In the attached comment letter, MassDOT requested that South Coast Renewables schedule truck deliveries and departures during "off hours" to avoid periods of maximum congestion.

We are working on a revised traffic analysis to incorporate this and other SFEIR comments received. Based on discussions with the proponent it would not be possible to schedule arrivals to the site to avoid specific peak hours. Drivers are independent contractors, and if they were to refuse deliveries at certain times the result would be trucks idling or circling until they could access the site. The proponent would agree to restrict trucks transporting outbound material from the site during the weekday morning, afternoon school dismissal, and afternoon commuter peak hours identified in the SFEIR (6:30-7:30 a.m. and 3:15-5:00 p.m.). As a result, the number of new on-way truck trips in each peak hour would be reduced by 12, from 32 trips in the SFEIR to 20 trips. In addition, the biosolids component of the proposed facility expansion is being eliminated, which would result in an additional reduction of 4 one-way truck trips during each peak hour. Therefore the number of peak hour one-way trucks trips would be cut in half compared with the SFEIR, from 32 trips to 16 trips.

Please let me know if this would be acceptable to the PPDU to mitigate project-generated impacts, or if you would like to discuss further.

Thank you,

Michael Pompili | Senior Project Engineer
O: (401) 648-7200 | D: (401) 216-7803
14 Breakneck Hill Road, Suite 201
Lincoln, RI 02865
mpompili@mcmahonassociates.com

ATTACHMENT B

Traffic Projection Model

TRAFFIC PROJECTION MODEL

South Coast Renewables Proposed Facility Expansion
Weekday Morning Peak Hour
New Bedford, MA

Intersection	Dir.	Turn	Parallel Products Existing Trips	NWD Trucking Trips	2021 Base Volumes	2021 Existing Counted Volumes	COVID-19 Adjustment	Balancing Adjustment	2021 Existing Volumes[1]	Background Growth 7 yrs (at 1% per year)	2028 No-Build Volumes	New Project Trucks PERCENT ENTER	New Project Truck Trips ENTER	New Project Trucks PERCENT EXIT	New Project Truck Trips EXIT	New Project Employee PERCENT ENTER	New Project Employee Trips ENTER	New Project Employee PERCENT EXIT	New Project Employee Trips EXIT	New Project Trips TOTAL	2028 Build Volumes
Route 140 Northbound Ramps	EB	L	15	1	68	78	4		82	6	88		0	50%	5		0	50%	12	17	105
at Braley Road		T	0	0	97	92	5		97	6	103		0		0		0		0	0	103
	WB	T	0	0	580	552	28		580	40	620		0		0		0		0	0	620
		R	0	0	72	69	3		72	5	77		0		0		0		0	0	77
	NB	L	2	2	301	287	14		301	21	322	50%	4		0	40%	0		0	4	326
		R	0	0	192	183	9		192	13	205		0		0		0		0	0	205
Route 140 Southbound Ramps	EB	T	15	1	146	152	8		160	11	171		0	50%	5		0	50%	12	17	188
at Braley Road		R	12	2	219	218	11		229	15	244		0	50%	4		0	40%	10	14	258
	WB	L	0	0	387	369	18		387	27	414		0		0		0		0	0	414
		T	2	2	494	470	24		494	34	528	50%	4		0	40%	0		0	4	532
	SB	L	0	0	19	18	1		19	1	20		0		0		0		0	0	20
		R	2	1	98	94	5		99	7	106	50%	5		0	50%	0		0	5	111
Braley Road/	EB	L	0	0	4	4	0		4	0	4		0		0		0		0	0	4
Theodore Rice Boulevard at		T	27	3	128	145	7		152	10	162		0	100%	9		0	90%	22	31	193
Phillips Road		R	0	0	28	27	1		28	2	30		0		0		0		0	0	30
	WB	L	0	0	47	45	2		47	3	50		0		0		0		0	0	50
		T	4	3	412	393	20		413	29	442	100%	9		0	90%	0		0	9	451
		R	0	0	133	126	7		133	9	142		0		0		0		0	0	142
	NB	L	0	0	29	28	1		29	3	32		0		0		0		0	0	32
		T	0	0	46	44	2		46	3	49		0		0		0		0	0	49
		R	0	0	77	73	4		77	5	82		0		0		0		0	0	82
	SB	L	0	0	160	152	8		160	11	171		0		0		0		0	0	171
		T	0	0	27	26	1		27	2	29		0		0		0		0	0	29
		R	0	0	30	29	1		30	3	33		0		0		0		0	0	33
Theodore Rice Boulevard at	WB	L	4	3	370	353	18		371	25	396	100%	9		0	90%	0		0	9	405
Duchaine Boulevard		R	0	0	106	101	5		106	7	113		0		0		0		0	0	113
	NB	T	0	0	9	9	0		9	1	10		0		0		0		0	0	10
		R	27	3	104	122	6		128	8	136		0	100%	9		0	90%	22	31	167
	SB	L	0	0	57	54	3		57	4	61		0		0		0		0	0	61
		T	0	0	17	16	1		17	1	18		0		0		0		0	0	18
Duchaine Boulevard at	EB	L	0	0	70	67	3		70	5	75		0		0		0		0	0	75
Samuel Barnet Boulevard		R	0	0	75	71	4		75	5	80		0		0		0		0	0	80
	WB	R	0	0	314	299	15		314	21	335		0		0	10%	0		0	0	335
	NB	T	27	3	0	23	1		24	2	26		0	100%	9		0	90%	22	31	57
		R	2	0	91	89	4		93	6	99		0		0		0	10%	3	3	102
	SB	U	0	0	2	2	0		2	0	2		0		0		0		0	0	2
		T	4	3	115	110	6		116	8	124	100%	9		0	100%	0		0	9	133
		R	0	0	457	435	22		457	31	488		0		0		0		0	0	488
Phillips Road at	EB	L	0	0	4	4	0		4	0	4		0		0		0		0	0	4
Samuel Barnet Boulevard		R	2	0	87	85	4		89	6	95		0		0		0	10%	3	3	98
	NB	L	0	0	306	287	14	5	306	21	327		0		0	10%	0		0	0	327
		T	0	0	118	112	6		118	8	126		0		0		0		0	0	126
	SB	T	0	0	111	106	5		111	8	119		0		0		0		0	0	119
		R	0	0	8	8	0		8	1	9		0		0		0		0	0	9
Duchaine Boulevard at	WB	R	29	3	14	38	2		40	0	40		0	100%	9		0	100%	25	34	74
Site Driveway	SB	R	4	3	101	97	5		102	0	102	100%	9		0	100%	0		0	9	111
		U	0	0	1	1	0		1	1	2		0		0		0		0	0	2
			0	0	0																

Peak Hour: 6:30 AM - 7:30 AM

1 - Includes volumes associated with Phase 1

TRAFFIC PROJECTION MODEL

South Coast Renewables Proposed Facility Expansion
Weekday School Dismissal Peak Hour
New Bedford, MA

Intersection	Dir.	Turn	Parallel Products Existing Trips	NWD Trucking Trips	2021 Base Volumes	2021 Existing Counted Volumes	COVID-19 Adjustment	Balancing Adjustment	2021 Existing Volumes[1]	Background Growth 7 yrs (at 1% per year)	2028 No-Build Volumes	New Project Trucks PERCENT ENTER	New Project Truck Trips ENTER	New Project Trucks PERCENT EXIT	New Project Truck Trips EXIT	New Project Employee PERCENT ENTER	New Project Employee Trips ENTER	New Project Employee PERCENT EXIT	New Project Employee Trips EXIT	New Project Trips TOTAL	2028 Build Volumes
Route 140 Northbound Ramps	EB	L	15	1	81	90	5		95	6	101		0	50%	5		0	50%	12	17	118
at Braley Road		T	0	0	247	235	12		247	17	264		0		0		0		0	0	264
	WB	T	0	0	476	453	23		476	33	509		0		0		0		0	0	509
		R	0	0	54	51	3		54	4	58		0		0		0		0	0	58
	NB	L	2	2	235	224	11		235	16	251	50%	4		0	40%	0		0	4	255
		R	0	0	353	336	17		353	24	377		0		0		0		0	0	377
Route 140 Southbound Ramps	EB	T	15	1	273	273	14		287	19	306		0	50%	5		0	50%	12	17	323
at Braley Road		R	12	2	347	340	17		357	25	382		0	50%	4		0	40%	10	14	396
	WB	L	0	0	333	317	16		333	23	356		0		0		0		0	0	356
		T	2	2	378	360	18		378	26	404	50%	4		0	40%	0		0	4	408
	SB	L	0	0	55	52	3		55	4	59		0		0		0		0	0	59
		R	2	1	97	93	5		98	7	105	50%	5		0	50%	0		0	5	110
Braley Road/	EB	L	0	0	14	13	1		14	1	15		0		0		0		0	0	15
Theodore Rice Boulevard at		T	27	3	329	336	17		353	24	377		0	100%	9		0	90%	22	31	408
Phillips Road		R	0	0	55	52	3		55	4	59		0		0		0		0	0	59
	WB	L	0	0	151	144	7		151	10	161		0		0		0		0	0	161
		T	4	3	133	128	6		134	9	143	100%	9		0	90%	0		0	9	152
		R	0	0	191	181	9	1	191	14	205		0		0		0		0	0	205
	NB	L	0	0	17	16	1		17	1	18		0		0		0		0	0	18
		T	0	0	51	49	2		51	4	55		0		0		0		0	0	55
		R	0	0	108	103	5		108	7	115		0		0		0		0	0	115
	SB	L	0	0	183	174	9		183	13	196		0		0		0		0	0	196
		T	0	0	68	65	3		68	5	73		0		0		0		0	0	73
		R	0	0	5	5	0		5	0	5		0		0		0		0	0	5
Theodore Rice Boulevard at	WB	L	4	3	76	73	4		77	5	82	100%	9		0	90%	0		0	9	91
Duchaine Boulevard		R	0	0	34	32	2		34	2	36		0		0		0		0	0	36
	NB	T	0	0	11	10	1		11	1	12		0		0		0		0	0	12
		R	27	3	221	233	12		245	17	262		0	100%	9		0	90%	22	31	293
	SB	L	0	0	127	121	6		127	9	136		0		0		0		0	0	136
		T	0	0	15	14	1		15	1	16		0		0		0		0	0	16
Duchaine Boulevard at	EB	L	0	0	179	170	9		179	12	191		0		0		0		0	0	191
Samuel Barnet Boulevard		R	0	0	222	211	11		222	15	237		0		0		0		0	0	237
	WB	R	0	0	70	66	4		70	5	75		0		0	10%	0		0	0	75
	NB	T	27	3	2	25	1		26	2	28		0	100%	9		0	90%	22	31	59
		R	2	0	282	270	14		284	20	304		0		0		0	10%	3	3	307
	SB	U	0	0	1	1	0		1	0	1		0		0		0		0	0	1
		T	4	3	47	46	2		48	3	51	100%	9		0	100%	0		0	9	60
		R	0	0	121	115	6		121	8	129		0		0		0		0	0	129
Phillips Road at	EB	L	0	0	11	10	1		11	1	12		0		0		0		0	0	12
Samuel Barnet Boulevard		R	2	0	272	261	13		274	19	293		0		0		0	10%	3	3	296
	NB	L	0	0	68	65	3		68	4	72		0		0	10%	0		0	0	72
		T	0	0	145	138	7		145	10	155		0		0		0		0	0	155
	SB	T	0	0	227	216	11		227	16	243		0		0		0		0	0	243
		R	0	0	2	2	0		2	0	2		0		0		0		0	0	2
Duchaine Boulevard at	WB	R	29	3	31	54	3		57	0	57		0	100%	9		0	100%	25	34	91
Site Driveway	SB	R	4	3	27	27	1		28	0	28	100%	9		0	100%	0		0	9	37
		U	0	0	5	5	0		5	1	6		0		0		0		0	0	6
			0	0	0																

Peak Hour: 3:15 PM - 4:15 PM

1 - Includes volumes associated with Phase 1

TRAFFIC PROJECTION MODEL

South Coast Renewables Proposed Facility Expansion
Weekday Afternoon Commuter Peak Hour
New Bedford, MA

Intersection	Dir.	Turn	Parallel Products Existing Trips	NWD Trucking Trips	2021 Base Volumes	2021 Existing Counted Volumes	COVID-19 Adjustment	Balancing Adjustment	2021 Existing Volumes[1]	Background Growth 7 yrs (at 1% per year)	2028 No-Build Volumes	New Project Trucks PERCENT ENTER	New Project Truck Trips ENTER	New Project Trucks PERCENT EXIT	New Project Truck Trips EXIT	New Project Employee PERCENT ENTER	New Project Employee Trips ENTER	New Project Employee PERCENT EXIT	New Project Employee Trips EXIT	New Project Trips TOTAL	2028 Build Volumes
Route 140 Northbound Ramps	EB	L	2	1	103	99	5		104	7	111		0	50%	5		0	50%	0	5	116
at Braley Road		T	0	0	248	236	12		248	18	266		0		0		0		0	0	266
	WB	T	0	0	435	414	21		435	30	465		0		0		0		0	0	465
		R	0	0	44	42	2		44	3	47		0		0		0		0	0	47
	NB	L	2	2	183	174	9		183	13	196	50%	4		0	40%	0		0	4	200
		R	0	0	397	378	19		397	27	424		0		0		0		0	0	424
Route 140 Southbound Ramps	EB	T	2	1	300	286	15		301	21	322		0	50%	5		0	50%	0	5	327
at Braley Road		R	2	2	311	296	15		311	21	332		0	50%	4		0	40%	0	4	336
	WB	L	0	0	308	293	15		308	21	329		0		0		0		0	0	329
		T	2	2	310	295	15		310	22	332	50%	4		0	40%	0		0	4	336
	SB	L	0	0	51	49	2		51	4	55		0		0		0		0	0	55
		R	2	1	96	92	5		97	7	104	50%	5		0	50%	0		0	5	109
Braley Road/	EB	L	0	0	21	20	1		21	1	22		0		0		0		0	0	22
Theodore Rice Boulevard at		T	4	3	312	297	15	1	313	21	334		0	100%	9		0	90%	0	9	343
Phillips Road		R	0	0	36	34	2		36	2	38		0		0		0		0	0	38
	WB	L	0	0	138	131	7		138	10	148		0		0		0		0	0	148
		T	4	3	89	86	4		90	6	96	100%	9		0	90%	0		0	9	105
		R	0	0	179	170	9		179	13	192		0		0		0		0	0	192
	NB	L	0	0	11	10	1		11	1	12		0		0		0		0	0	12
		T	0	0	54	51	3		54	4	58		0		0		0		0	0	58
		R	0	0	109	104	5		109	8	117		0		0		0		0	0	117
	SB	L	0	0	190	181	9		190	13	203		0		0		0		0	0	203
		T	0	0	55	52	3		55	4	59		0		0		0		0	0	59
		R	0	0	3	3	0		3	0	3		0		0		0		0	0	3
Theodore Rice Boulevard at	WB	L	4	3	63	61	3		64	4	68	100%	9		0	90%	0		0	9	77
Duchaine Boulevard		R	0	0	18	17	1		18	1	19		0		0		0		0	0	19
	NB	T	0	0	6	6	0		6	0	6		0		0		0		0	0	6
		R	4	3	230	220	11		231	16	247		0	100%	9		0	90%	0	9	256
	SB	L	0	0	64	61	3		64	4	68		0		0		0		0	0	68
		T	0	0	9	9	0		9	1	10		0		0		0		0	0	10
Duchaine Boulevard at	EB	L	0	0	176	168	8		176	12	188		0		0		0		0	0	188
Samuel Barnet Boulevard		R	0	0	175	167	8		175	12	187		0		0		0		0	0	187
	WB	R	0	0	13	12	1		13	1	14		0		0	10%	0		0	0	14
	NB	T	4	3	14	14	1		15	1	16		0	100%	9		0	90%	0	9	25
		R	0	0	206	196	10		206	14	220		0		0		0	10%	0	0	220
	SB	U	0	0	0	0	0		0	0	0		0		0		0		0	0	0
		T	4	3	31	30	2		32	2	34	100%	9		0	100%	0		0	9	43
		R	0	0	59	56	3		59	4	63		0		0		0		0	0	63
Phillips Road at	EB	L	0	0	4	4	0		4	0	0		0		0		0		0	0	0
Samuel Barnet Boulevard		R	0	0	202	192	10		202	14	216		0		0		0	10%	0	0	216
	NB	L	0	0	11	10	1		11	1	12		0		0	10%	0		0	0	12
		T	0	0	160	152	8		160	11	171		0		0		0		0	0	171
	SB	T	0	0	196	187	9		196	13	209		0		0		0		0	0	209
		R	0	0	2	2	0		2	0	2		0		0		0		0	0	2
Duchaine Boulevard at	WB	R	4	3	24	24	1		25	0	25		0	100%	9		0	100%	0	9	34
Site Driveway	SB	R	4	3	17	17	1		18	0	18	100%	9		0	100%	0		0	9	27
		U	0	0	8	8	0		8	1	9		0		0		0		0	0	9
			0	0	0																

Peak Hour: 4:00 PM - 5:00 PM

1 - Includes volumes associated with Phase 1

ATTACHMENT C

2028 Build Capacity/Level-of-Service Analysis with Mitigation (SFEIR)

Intersection	
Int Delay, s/veh	22.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	103	0	0	620	77	331	0	205	0	0	0
Future Vol, veh/h	108	103	0	0	620	77	331	0	205	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	19	6	0	0	1	1	9	0	6	2	2	2
Mvmt Flow	117	112	0	0	674	84	360	0	223	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	758	0	-	-	-	0	1062	-	112
Stage 1	-	-	-	-	-	-	346	-	-
Stage 2	-	-	-	-	-	-	716	-	-
Critical Hdwy	4.29	-	-	-	-	-	4.6	-	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	5.49	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.49	-	-
Follow-up Hdwy	2.371	-	-	-	-	-	3.581	-	3.354
Pot Cap-1 Maneuver	782	-	0	0	-	-	419	0	930
Stage 1	-	-	0	0	-	-	701	0	-
Stage 2	-	-	0	0	-	-	472	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	782	-	-	-	-	-	~ 352	0	930
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 352	0	-
Stage 1	-	-	-	-	-	-	589	0	-
Stage 2	-	-	-	-	-	-	472	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.3	0	58.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	352	930	782	-	-	-
HCM Lane V/C Ratio	1.022	0.24	0.15	-	-	-
HCM Control Delay (s)	89	10.1	10.4	0	-	-
HCM Lane LOS	F	B	B	A	-	-
HCM 95th %tile Q(veh)	12.1	0.9	0.5	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	191	263	414	537	0	0	0	0	20	0	114
Future Vol, veh/h	0	191	263	414	537	0	0	0	0	20	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	11	9	2	5	0	2	2	2	32	0	17
Mvmt Flow	0	208	286	450	584	0	0	0	0	22	0	124

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	494	0	0				1835	-	584
Stage 1	-	-	-	-	-	-				1484	-	-
Stage 2	-	-	-	-	-	-				351	-	-
Critical Hdwy	-	-	-	4.12	-	-				4.6	-	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-				5.72	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.72	-	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.788	-	3.453
Pot Cap-1 Maneuver	0	-	-	1070	-	0				206	0	485
Stage 1	0	-	-	-	-	0				178	0	-
Stage 2	0	-	-	-	-	0				651	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1070	-	-				78	0	485
Mov Cap-2 Maneuver	-	-	-	-	-	-				78	0	-
Stage 1	-	-	-	-	-	-				178	0	-
Stage 2	-	-	-	-	-	-				246	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.7	22.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1070	-	78	485
HCM Lane V/C Ratio	-	-	0.421	-	0.279	0.255
HCM Control Delay (s)	-	-	10.8	0	68.1	15
HCM Lane LOS	-	-	B	A	F	C
HCM 95th %tile Q(veh)	-	-	2.1	-	1	1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	201	30	50	459	142	32	49	82	171	29	33
Future Volume (vph)	4	201	30	50	459	142	32	49	82	171	29	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		0	0		0	0		75
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1607	1568	0	1702	0	0	1697	0	0	1735	0
Flt Permitted		0.991			0.964			0.922			0.671	
Satd. Flow (perm)	0	1594	1568	0	1648	0	0	1581	0	0	1207	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			61		24			46			8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1311			261			2131			367	
Travel Time (s)		29.8			5.9			48.4			8.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	25%	18%	3%	13%	8%	6%	3%	4%	3%	2%	14%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	33	0	707	0	0	177	0	0	254	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	52.0	52.0	52.0	52.0	52.0		15.0	15.0		15.0	15.0	
Total Split (%)	57.8%	57.8%	57.8%	57.8%	57.8%		16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		26.2	26.2		26.2			12.3			12.3	
Actuated g/C Ratio		0.52	0.52		0.52			0.25			0.25	
v/c Ratio		0.27	0.04		0.81			0.42			0.84	
Control Delay		8.2	1.1		19.0			22.0			50.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		8.2	1.1		19.0			22.0			50.4	

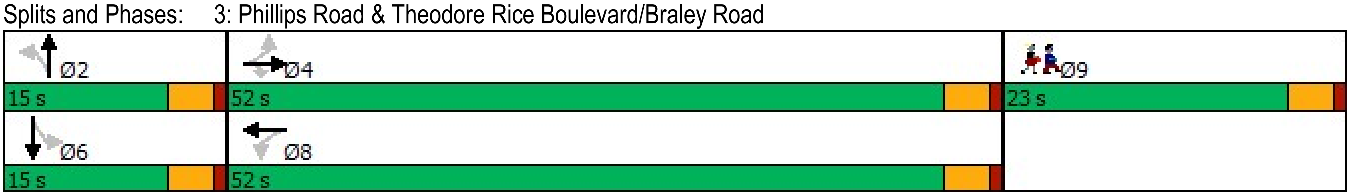
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	26%
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A	A		B			C			D	
Approach Delay		7.3			19.0			22.0			50.4	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		23	0		107			25			54	
Queue Length 95th (ft)		108	6		465			#176			#361	
Internal Link Dist (ft)		1231			181			2051			287	
Turn Bay Length (ft)			225									
Base Capacity (vph)		1445	1427		1496			424			303	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.15	0.02		0.47			0.42			0.84	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 50.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 23.0	Intersection LOS: C
Intersection Capacity Utilization 82.1%	ICU Level of Service E
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Phillips Road & Theodore Rice Boulevard/Braley Road



Intersection	
Int Delay, s/veh	11.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	413	0	113	0	10	175	61	18	0
Future Vol, veh/h	0	0	0	413	0	113	0	10	175	61	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	6	4	2	20	25	0	6	2
Mvmt Flow	0	0	0	449	0	123	0	11	190	66	20	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	899	-	905	899	-
Stage 1	-	-	-	-	-	-	-	1	-	898	898	-
Stage 2	-	-	-	-	-	-	-	898	-	7	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	6.7	-	7.1	6.56	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.7	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.7	-	6.1	5.56	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	4.18	-	3.5	4.054	-
Pot Cap-1 Maneuver	-	-	-	1622	-	0	0	260	0	260	274	0
Stage 1	-	-	-	-	-	0	0	860	0	337	353	0
Stage 2	-	-	-	-	-	0	0	335	0	1020	887	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1622	-	-	-	188	-	196	198	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	188	-	196	198	-
Stage 1	-	-	-	-	-	-	-	860	-	337	255	-
Stage 2	-	-	-	-	-	-	-	242	-	1007	887	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8.1		33.4
HCM LOS			-	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	188	-	-	-	-	1622	-	196	198
HCM Lane V/C Ratio	0.029	-	-	-	-	0.277	-	0.388	0.049
HCM Control Delay (s)	24.7	-	0	-	-	8.1	0	34.6	24.1
HCM Lane LOS	C	-	A	-	-	A	A	D	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	1.1	-	1.7	0.2

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	75	0	80	0	0	336	0	65	102	2	0	141	488
Future Vol, veh/h	75	0	80	0	0	336	0	65	102	2	0	141	488
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	Stop	-	-	Free	-	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	0	4	0	0	2	0	50	5	0	0	19	3
Mvmt Flow	82	0	87	0	0	365	0	71	111	2	0	153	530

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	493	-	342	-	-	71	-	0	-	-	71	0	0
Stage 1	422	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	71	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.555	-	6.96	-	-	6.23	-	-	-	-	4.1	-	-
Critical Hdwy Stg 1	6.755	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.355	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.6615	-	3.338	-	-	3.319	-	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	444	0	650	0	0	991	0	-	0	-	1542	-	-
Stage 1	548	0	-	0	0	-	0	-	0	-	-	-	-
Stage 2	899	0	-	0	0	-	0	-	0	-	-	-	-
Platoon blocked, %								-				-	-
Mov Cap-1 Maneuver	280	-	650	-	-	991	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	280	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	548	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	568	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	10.7	0	
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	280	650	991	-	-	-
HCM Lane V/C Ratio	-	0.291	0.134	0.369	-	-	-
HCM Control Delay (s)	-	23.1	11.4	10.7	-	-	-
HCM Lane LOS	-	C	B	B	-	-	-
HCM 95th %tile Q(veh)	-	1.2	0.5	1.7	-	-	-

Intersection						
Int Delay, s/veh	5.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	98	327	126	119	9
Future Vol, veh/h	4	98	327	126	119	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	5	1	4	10	22
Mvmt Flow	4	107	355	137	129	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	981	134	139	0	-	0
Stage 1	134	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Critical Hdwy	6.4	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	279	907	1451	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	205	907	1451	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	424	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1451	-	800	-	-
HCM Lane V/C Ratio	0.245	-	0.139	-	-
HCM Control Delay (s)	8.3	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	1	-	0.5	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	82	0	119
Future Volume (Veh/h)	0	0	0	82	0	119
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.51	0.51	0.88	0.88
Hourly flow rate (vph)	0	0	0	161	0	135
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	161	0	135	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	161	0	135	0	0	
tC, single (s)	7.1	6.5	6.5	6.5	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.6	2.2	
p0 queue free %	100	100	100	84	100	
cM capacity (veh/h)	679	900	760	1001	1636	

Direction, Lane #	WB 1	SB 1
Volume Total	161	135
Volume Left	0	0
Volume Right	161	135
cSH	1001	1700
Volume to Capacity	0.16	0.08
Queue Length 95th (ft)	14	0
Control Delay (s)	9.3	0.0
Lane LOS	A	
Approach Delay (s)	9.3	0.0
Approach LOS	A	

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	10.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	39.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	121	264	0	0	509	58	260	0	377	0	0	0
Future Vol, veh/h	121	264	0	0	509	58	260	0	377	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	9	2	0	0	4	5	14	0	3	0	0	0
Mvmt Flow	132	287	0	0	553	63	283	0	410	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	616	0	-	-	-	0	1136	-	287
Stage 1	-	-	-	-	-	-	551	-	-
Stage 2	-	-	-	-	-	-	585	-	-
Critical Hdwy	4.19	-	-	-	-	-	5.9	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.54	-	-
Follow-up Hdwy	2.281	-	-	-	-	-	3.626	-	3.327
Pot Cap-1 Maneuver	931	-	0	0	-	-	~ 259	0	750
Stage 1	-	-	0	0	-	-	554	0	-
Stage 2	-	-	0	0	-	-	534	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	931	-	-	-	-	-	~ 215	0	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 215	0	-
Stage 1	-	-	-	-	-	-	460	0	-
Stage 2	-	-	-	-	-	-	534	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3	0	96.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	215	750	931	-	-	-
HCM Lane V/C Ratio	1.314	0.546	0.141	-	-	-
HCM Control Delay (s)	214.6	15.4	9.5	0	-	-
HCM Lane LOS	F	C	A	A	-	-
HCM 95th %tile Q(veh)	15.4	3.4	0.5	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	20

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	326	401	356	413	0	0	0	0	59	0	113
Future Vol, veh/h	0	326	401	356	413	0	0	0	0	59	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	8	4	10	0	2	2	2	2	0	15
Mvmt Flow	0	354	436	387	449	0	0	0	0	64	0	123

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	790	0	0				1795	-	449
Stage 1	-	-	-	-	-	-				1223	-	-
Stage 2	-	-	-	-	-	-				572	-	-
Critical Hdwy	-	-	-	4.14	-	-				5.9	-	6.35
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	2.236	-	-				3.518	-	3.435
Pot Cap-1 Maneuver	0	-	-	821	-	0				115	0	584
Stage 1	0	-	-	-	-	0				278	0	-
Stage 2	0	-	-	-	-	0				565	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	821	-	-				~ 43	0	584
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 43	0	-
Stage 1	-	-	-	-	-	-				278	0	-
Stage 2	-	-	-	-	-	-				210	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.1	166.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	821	-	43	584
HCM Lane V/C Ratio	-	-	0.471	-	1.491	0.21
HCM Control Delay (s)	-	-	13.2	0	$ 460.8	12.8
HCM Lane LOS	-	-	B	A	F	B
HCM 95th %tile Q(veh)	-	-	2.6	-	6.4	0.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	416	59	161	160	205	18	55	115	196	73	5
Future Volume (vph)	15	416	59	161	160	205	18	55	115	196	73	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		0	0		0	0		75
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1756	1583	0	1595	0	0	1633	0	0	1763	0
Flt Permitted		0.978			0.615			0.961			0.582	
Satd. Flow (perm)	0	1721	1583	0	996	0	0	1577	0	0	1063	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			64		45			80			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1311			261			2131			367	
Travel Time (s)		29.8			5.9			48.4			8.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	8%	2%	5%	25%	5%	6%	9%	5%	4%	1%	40%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	468	64	0	572	0	0	205	0	0	297	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	43.0	43.0	43.0	43.0	43.0		24.0	24.0		24.0	24.0	
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		39.5	39.5		39.5			20.3			20.3	
Actuated g/C Ratio		0.55	0.55		0.55			0.28			0.28	
v/c Ratio		0.49	0.07		1.00			0.41			0.98	
Control Delay		14.0	3.8		58.0			17.0			78.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		14.0	3.8		58.0			17.0			78.4	

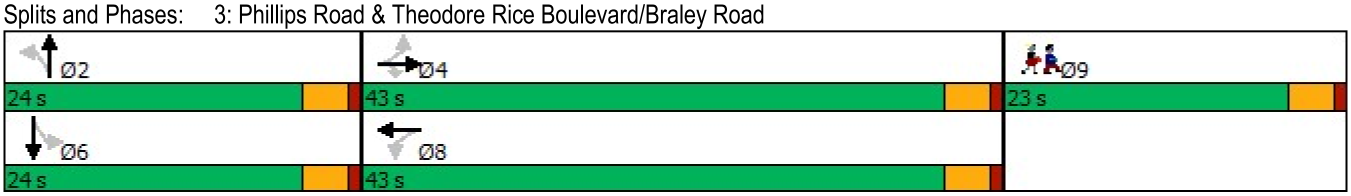
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	26%
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B	A		E			B			E	
Approach Delay		12.7			58.0			17.0			78.4	
Approach LOS		B			E			B			E	
Queue Length 50th (ft)		98	0		185			39			117	
Queue Length 95th (ft)		306	22		#602			129			#375	
Internal Link Dist (ft)		1231			181			2051			287	
Turn Bay Length (ft)			225									
Base Capacity (vph)		950	903		570			503			302	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.49	0.07		1.00			0.41			0.98	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.6
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 91.9% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Phillips Road & Theodore Rice Boulevard/Braley Road



Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	99	0	36	0	12	301	136	16	0
Future Vol, veh/h	0	0	0	99	0	36	0	12	301	136	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	37	2	21	2	55	11	6	53	2
Mvmt Flow	0	0	0	108	0	39	0	13	327	148	17	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	217	-	224	217	-
Stage 1	-	-	-	-	-	-	-	1	-	216	216	-
Stage 2	-	-	-	-	-	-	-	216	-	8	1	-
Critical Hdwy	4.12	-	-	4.47	-	-	-	7.05	-	7.16	7.03	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.05	-	6.16	6.03	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.05	-	6.16	6.03	-
Follow-up Hdwy	2.218	-	-	2.533	-	-	-	4.495	-	3.554	4.477	-
Pot Cap-1 Maneuver	-	-	-	1420	-	0	0	598	0	723	601	0
Stage 1	-	-	-	-	-	0	0	800	0	777	639	0
Stage 2	-	-	-	-	-	0	0	636	0	1003	803	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1420	-	-	-	553	-	669	555	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	553	-	669	555	-
Stage 1	-	-	-	-	-	-	-	800	-	777	590	-
Stage 2	-	-	-	-	-	-	-	588	-	987	803	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.7		12.1
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	553	-	-	-	-	1420	-	661	555
HCM Lane V/C Ratio	0.012	-	-	-	-	0.076	-	0.237	0.016
HCM Control Delay (s)	11.6	-	0	-	-	7.7	0	12.1	11.6
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	-	0.9	0

Intersection												
Int Delay, s/veh	7.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	191	0	237	0	0	75	0	67	307	1	68	129
Future Vol, veh/h	191	0	237	0	0	75	0	67	307	1	68	129
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	Stop	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	0	2	0	0	18	0	35	1	0	47	17
Mvmt Flow	208	0	258	0	0	82	0	73	334	1	74	140

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	219	-	107	-	-	73	-	0	-	73	0	0
Stage 1	146	-	-	-	-	-	-	-	-	-	-	-
Stage 2	73	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.405	-	6.93	-	-	6.47	-	-	-	4.1	-	-
Critical Hdwy Stg 1	6.605	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.205	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5665	-	3.319	-	-	3.471	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	716	0	927	0	0	942	0	-	0	1540	-	-
Stage 1	829	0	-	0	0	-	0	-	0	-	-	-
Stage 2	923	0	-	0	0	-	0	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	654	-	927	-	-	942	-	-	-	1540	-	-
Mov Cap-2 Maneuver	654	-	-	-	-	-	-	-	-	-	-	-
Stage 1	829	-	-	-	-	-	-	-	-	-	-	-
Stage 2	843	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	9.2	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	654	927	942	1540	-	-
HCM Lane V/C Ratio	-	0.317	0.278	0.087	0.001	-	-
HCM Control Delay (s)	-	13	10.4	9.2	7.3	-	-
HCM Lane LOS	-	B	B	A	A	-	-
HCM 95th %tile Q(veh)	-	1.4	1.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	296	73	155	243	2
Future Vol, veh/h	12	296	73	155	243	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	20	7	4	0
Mvmt Flow	13	322	79	168	264	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	591	265	266	0	-	0
Stage 1	265	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.3	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.38	-	-	-
Pot Cap-1 Maneuver	473	776	1201	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	438	776	1201	-	-	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	2.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1201	-	753	-	-
HCM Lane V/C Ratio	0.066	-	0.445	-	-
HCM Control Delay (s)	8.2	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	2.3	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	99	0	45
Future Volume (Veh/h)	0	0	0	99	0	45
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	108	0	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	108	0	49	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	0	49	0	0	
tC, single (s)	7.1	6.5	6.5	6.4	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.5	2.2	
p0 queue free %	100	100	100	90	100	
cM capacity (veh/h)	784	900	846	1029	1636	

Direction, Lane #	WB 1	SB 1
Volume Total	108	49
Volume Left	0	0
Volume Right	108	49
cSH	1029	1700
Volume to Capacity	0.10	0.03
Queue Length 95th (ft)	9	0
Control Delay (s)	8.9	0.0
Lane LOS	A	
Approach Delay (s)	8.9	0.0
Approach LOS	A	

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	9.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	15.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	266	0	0	465	47	205	0	424	0	0	0
Future Vol, veh/h	120	266	0	0	465	47	205	0	424	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	0	0	0	3	0	12	0	3	0	0	0
Mvmt Flow	130	289	0	0	505	51	223	0	461	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	556	0	-	-	-	0	1080	-	289
Stage 1	-	-	-	-	-	-	549	-	-
Stage 2	-	-	-	-	-	-	531	-	-
Critical Hdwy	4.2	-	-	-	-	-	5.7	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.52	-	-
Follow-up Hdwy	2.29	-	-	-	-	-	3.608	-	3.327
Pot Cap-1 Maneuver	976	-	0	0	-	-	295	0	748
Stage 1	-	-	0	0	-	-	559	0	-
Stage 2	-	-	0	0	-	-	570	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	976	-	-	-	-	-	248	0	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	248	0	-
Stage 1	-	-	-	-	-	-	470	0	-
Stage 2	-	-	-	-	-	-	570	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.9	0	36.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	248	748	976	-	-	-
HCM Lane V/C Ratio	0.898	0.616	0.134	-	-	-
HCM Control Delay (s)	76.6	17.2	9.3	0	-	-
HCM Lane LOS	F	C	A	A	-	-
HCM 95th %tile Q(veh)	7.7	4.3	0.5	-	-	-

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	331	340	329	341	0	0	0	0	55	0	112
Future Vol, veh/h	0	331	340	329	341	0	0	0	0	55	0	112
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	9	4	7	0	2	2	2	2	0	18
Mvmt Flow	0	360	370	358	371	0	0	0	0	60	0	122

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	730	0	0				1632	-	371
Stage 1	-	-	-	-	-	-				1087	-	-
Stage 2	-	-	-	-	-	-				545	-	-
Critical Hdwy	-	-	-	4.14	-	-				5.7	-	6.38
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	2.236	-	-				3.518	-	3.462
Pot Cap-1 Maneuver	0	-	-	865	-	0				155	0	641
Stage 1	0	-	-	-	-	0				323	0	-
Stage 2	0	-	-	-	-	0				581	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	865	-	-				74	0	641
Mov Cap-2 Maneuver	-	-	-	-	-	-				74	0	-
Stage 1	-	-	-	-	-	-				323	0	-
Stage 2	-	-	-	-	-	-				278	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	57.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	865	-	74	641
HCM Lane V/C Ratio	-	-	0.413	-	0.808	0.19
HCM Control Delay (s)	-	-	12.1	0	150.3	11.9
HCM Lane LOS	-	-	B	A	F	B
HCM 95th %tile Q(veh)	-	-	2	-	3.9	0.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	351	38	148	113	192	12	58	117	203	59	3
Future Volume (vph)	22	351	38	148	113	192	12	58	117	203	59	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		225	0		0	0		0	0		75
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1746	1568	0	1613	0	0	1689	0	0	1762	0
Flt Permitted		0.963			0.677			0.973			0.565	
Satd. Flow (perm)	0	1687	1568	0	1109	0	0	1649	0	0	1033	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			61		52			86			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1311			261			2131			367	
Travel Time (s)		29.8			5.9			48.4			8.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	9%	3%	1%	31%	3%	18%	5%	0%	4%	0%	67%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	406	41	0	493	0	0	203	0	0	288	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	43.0	43.0	43.0	43.0	43.0		24.0	24.0		24.0	24.0	
Total Split (%)	47.8%	47.8%	47.8%	47.8%	47.8%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		39.5	39.5		39.5			20.3			20.3	
Actuated g/C Ratio		0.55	0.55		0.55			0.28			0.28	
v/c Ratio		0.44	0.05		0.78			0.38			0.98	
Control Delay		13.1	2.4		24.1			15.9			78.7	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		13.1	2.4		24.1			15.9			78.7	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	26%
Yellow Time (s)	3.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B	A		C			B			E	
Approach Delay		12.1			24.1			15.9			78.7	
Approach LOS		B			C			B			E	
Queue Length 50th (ft)		82	0		118			36			113	
Queue Length 95th (ft)		258	12		#460			122			#368	
Internal Link Dist (ft)		1231			181			2051			287	
Turn Bay Length (ft)			225									
Base Capacity (vph)		931	893		636			528			293	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.44	0.05		0.78			0.38			0.98	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 71.6

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

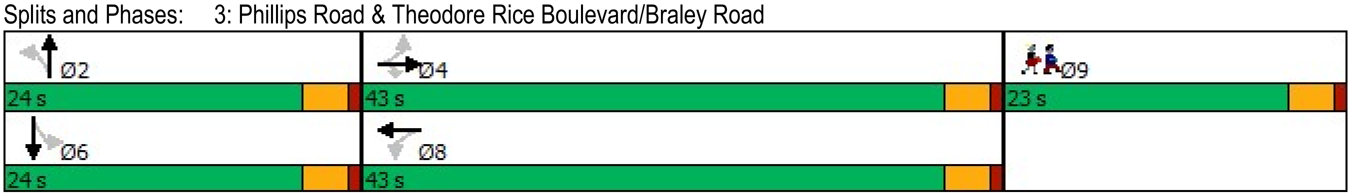
Intersection Signal Delay: 30.2 Intersection LOS: C

Intersection Capacity Utilization 84.3% ICU Level of Service E

Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Phillips Road & Theodore Rice Boulevard/Braley Road



Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	85	0	19	0	6	264	68	10	0
Future Vol, veh/h	0	0	0	85	0	19	0	6	264	68	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	40	2	56	2	33	12	8	20	2
Mvmt Flow	0	0	0	92	0	21	0	7	287	74	11	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	185	-	189	185	-
Stage 1	-	-	-	-	-	-	-	1	-	184	184	-
Stage 2	-	-	-	-	-	-	-	184	-	5	1	-
Critical Hdwy	4.12	-	-	4.5	-	-	-	6.83	-	7.18	6.7	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.83	-	6.18	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.83	-	6.18	5.7	-
Follow-up Hdwy	2.218	-	-	2.56	-	-	-	4.297	-	3.572	4.18	-
Pot Cap-1 Maneuver	-	-	-	1405	-	0	0	657	0	758	678	0
Stage 1	-	-	-	-	-	0	0	837	0	804	715	0
Stage 2	-	-	-	-	-	0	0	693	0	1002	860	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1405	-	-	-	614	-	715	634	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	614	-	715	634	-
Stage 1	-	-	-	-	-	-	-	837	-	804	669	-
Stage 2	-	-	-	-	-	-	-	648	-	994	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.7		10.7
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	614	-	-	-	-	1405	-	709	634
HCM Lane V/C Ratio	0.005	-	-	-	-	0.066	-	0.112	0.009
HCM Control Delay (s)	10.9	-	0	-	-	7.7	0	10.7	10.7
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	-	0.4	0

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	188	0	187	0	0	14	0	33	220	0	51	63
Future Vol, veh/h	188	0	187	0	0	14	0	33	220	0	51	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	Stop	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	2	1	0	0	23	0	56	1	0	49	22
Mvmt Flow	204	0	203	0	0	15	0	36	239	0	55	68

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	125	-	62	-	-	36	-	0	-	-	-	0
Stage 1	89	-	-	-	-	-	-	-	-	-	-	-
Stage 2	36	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.405	-	6.915	-	-	6.545	-	-	-	-	-	-
Critical Hdwy Stg 1	6.605	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.205	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5665	-	3.3095	-	-	3.5185	-	-	-	-	-	-
Pot Cap-1 Maneuver	830	0	993	0	0	975	0	-	0	0	-	-
Stage 1	896	0	-	0	0	-	0	-	0	0	-	-
Stage 2	966	0	-	0	0	-	0	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	817	-	993	-	-	975	-	-	-	-	-	-
Mov Cap-2 Maneuver	817	-	-	-	-	-	-	-	-	-	-	-
Stage 1	896	-	-	-	-	-	-	-	-	-	-	-
Stage 2	951	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	8.8	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	-	817	993	975	-	-
HCM Lane V/C Ratio	-	0.25	0.205	0.016	-	-
HCM Control Delay (s)	-	10.9	9.6	8.8	-	-
HCM Lane LOS	-	B	A	A	-	-
HCM 95th %tile Q(veh)	-	1	0.8	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	216	12	171	209	2
Future Vol, veh/h	4	216	12	171	209	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	25	1	27	2	2	0
Mvmt Flow	4	235	13	186	227	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	440	228	229	0	-	0
Stage 1	228	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.65	6.21	4.37	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.309	2.443	-	-	-
Pot Cap-1 Maneuver	534	814	1205	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	528	814	1205	-	-	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1205	-	806	-	-
HCM Lane V/C Ratio	0.011	-	0.297	-	-
HCM Control Delay (s)	8	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	42	0	35
Future Volume (Veh/h)	0	0	0	42	0	35
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	46	0	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46	0	38	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46	0	38	0	0	
tC, single (s)	7.1	6.5	6.5	6.7	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.7	2.2	
p0 queue free %	100	100	100	95	100	
cM capacity (veh/h)	915	900	858	962	1636	

Direction, Lane #	WB 1	SB 1
Volume Total	46	38
Volume Left	0	0
Volume Right	46	38
cSH	962	1700
Volume to Capacity	0.05	0.02
Queue Length 95th (ft)	4	0
Control Delay (s)	8.9	0.0
Lane LOS	A	
Approach Delay (s)	8.9	0.0
Approach LOS	A	

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

ATTACHMENT D

2028 Build Capacity/Level-of-Service Analysis with Mitigation (Revised)

Intersection	
Int Delay, s/veh	20.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	103	0	0	620	77	326	0	205	0	0	0
Future Vol, veh/h	105	103	0	0	620	77	326	0	205	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	15	7	0	0	1	1	8	0	6	2	2	2
Mvmt Flow	114	112	0	0	674	84	354	0	223	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	758	0	-	-	-	0	1056	-	112
Stage 1	-	-	-	-	-	-	340	-	-
Stage 2	-	-	-	-	-	-	716	-	-
Critical Hdwy	4.25	-	-	-	-	-	4.6	-	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	5.48	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.48	-	-
Follow-up Hdwy	2.335	-	-	-	-	-	3.572	-	3.354
Pot Cap-1 Maneuver	798	-	0	0	-	-	422	0	930
Stage 1	-	-	0	0	-	-	708	0	-
Stage 2	-	-	0	0	-	-	473	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	798	-	-	-	-	-	358	0	930
Mov Cap-2 Maneuver	-	-	-	-	-	-	358	0	-
Stage 1	-	-	-	-	-	-	600	0	-
Stage 2	-	-	-	-	-	-	473	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.2	0	52.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	358	930	798	-	-	-
HCM Lane V/C Ratio	0.99	0.24	0.143	-	-	-
HCM Control Delay (s)	79.7	10.1	10.3	0	-	-
HCM Lane LOS	F	B	B	A	-	-
HCM 95th %tile Q(veh)	11.3	0.9	0.5	-	-	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	188	259	414	532	0	0	0	0	20	0	111
Future Vol, veh/h	0	188	259	414	532	0	0	0	0	20	0	111
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	9	7	2	5	0	2	2	2	35	0	14
Mvmt Flow	0	204	282	450	578	0	0	0	0	22	0	121

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	486	0	0				1823	-	578
Stage 1	-	-	-	-	-	-				1478	-	-
Stage 2	-	-	-	-	-	-				345	-	-
Critical Hdwy	-	-	-	4.12	-	-				4.6	-	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-				5.75	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.75	-	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.815	-	3.426
Pot Cap-1 Maneuver	0	-	-	1077	-	0				208	0	494
Stage 1	0	-	-	-	-	0				176	0	-
Stage 2	0	-	-	-	-	0				649	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1077	-	-				80	0	494
Mov Cap-2 Maneuver	-	-	-	-	-	-				80	0	-
Stage 1	-	-	-	-	-	-				176	0	-
Stage 2	-	-	-	-	-	-				249	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.7	22.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1077	-	80	494
HCM Lane V/C Ratio	-	-	0.418	-	0.272	0.244
HCM Control Delay (s)	-	-	10.7	0	66	14.6
HCM Lane LOS	-	-	B	A	F	B
HCM 95th %tile Q(veh)	-	-	2.1	-	1	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	193	30	50	451	142	32	49	82	171	29	33
Future Volume (vph)	4	193	30	50	451	142	32	49	82	171	29	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	0		0	0		0	0		75
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1648	1568	0	1722	0	0	1697	0	0	1735	0
Flt Permitted		0.991			0.964			0.922			0.677	
Satd. Flow (perm)	0	1635	1568	0	1666	0	0	1581	0	0	1217	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			61		24			46			8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1311			261			2131			367	
Travel Time (s)		29.8			5.9			48.4			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	25%	15%	3%	14%	6%	6%	3%	4%	3%	2%	14%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	214	33	0	698	0	0	177	0	0	254	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Total Split (s)	52.0	52.0	52.0	52.0	52.0		15.0	15.0		15.0	15.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Act Effct Green (s)		25.3	25.3		25.3			12.4			12.4	
Actuated g/C Ratio		0.51	0.51		0.51			0.25			0.25	
v/c Ratio		0.26	0.04		0.81			0.41			0.81	
Control Delay		8.2	1.2		18.8			21.6			46.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		8.2	1.2		18.8			21.6			46.4	
LOS		A	A		B			C			D	
Approach Delay		7.2			18.8			21.6			46.4	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		22	0		103			24			51	
Queue Length 95th (ft)		103	6		447			#176			#360	
Internal Link Dist (ft)		1231			181			2051			287	
Turn Bay Length (ft)			225									
Base Capacity (vph)		1482	1427		1513			433			312	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.14	0.02		0.46			0.41			0.81	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 49.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Total Split (s)	23.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 81.2%	ICU Level of Service D
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Phillips Road & Theodore Rice Boulevard/Braley Road

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	405	0	113	0	10	167	61	18	0
Future Vol, veh/h	0	0	0	405	0	113	0	10	167	61	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	4	4	2	20	21	0	6	2
Mvmt Flow	0	0	0	440	0	123	0	11	182	66	20	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	881	-	887	881	-
Stage 1	-	-	-	-	-	-	-	1	-	880	880	-
Stage 2	-	-	-	-	-	-	-	880	-	7	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	6.7	-	7.1	6.56	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.7	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.7	-	6.1	5.56	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	4.18	-	3.5	4.054	-
Pot Cap-1 Maneuver	-	-	-	1622	-	0	0	267	0	267	281	0
Stage 1	-	-	-	-	-	0	0	860	0	345	360	0
Stage 2	-	-	-	-	-	0	0	341	0	1020	887	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1622	-	-	-	195	-	203	205	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	195	-	203	205	-
Stage 1	-	-	-	-	-	-	-	860	-	345	262	-
Stage 2	-	-	-	-	-	-	-	249	-	1007	887	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8		31.9
HCM LOS			-	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	195	-	-	-	-	1622	-	203	205
HCM Lane V/C Ratio	0.028	-	-	-	-	0.271	-	0.375	0.048
HCM Control Delay (s)	24	-	0	-	-	8	0	33	23.4
HCM Lane LOS	C	-	A	-	-	A	A	D	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	1.1	-	1.6	0.1

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	75	0	80	0	0	335	0	57	102	2	0	133	488
Future Vol, veh/h	75	0	80	0	0	335	0	57	102	2	0	133	488
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	Stop	-	-	Free	-	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	16	0	4	0	0	2	0	44	6	0	0	13	3
Mvmt Flow	82	0	87	0	0	364	0	62	111	2	0	145	530

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	476	-	338	-	-	62	-	0	-	-	62	0	0
Stage 1	414	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	62	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	6.96	-	-	6.23	-	-	-	-	4.1	-	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.34	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.652	-	3.338	-	-	3.319	-	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	459	0	654	0	0	1002	0	-	0	-	1554	-	-
Stage 1	556	0	-	0	0	-	0	-	0	-	-	-	-
Stage 2	912	0	-	0	0	-	0	-	0	-	-	-	-
Platoon blocked, %								-				-	-
Mov Cap-1 Maneuver	292	-	654	-	-	1002	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	292	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	556	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	581	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	10.6	0	
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	292	654	1002	-	-	-
HCM Lane V/C Ratio	-	0.279	0.133	0.363	-	-	-
HCM Control Delay (s)	-	22	11.3	10.6	-	-	-
HCM Lane LOS	-	C	B	B	-	-	-
HCM 95th %tile Q(veh)	-	1.1	0.5	1.7	-	-	-

Intersection						
Int Delay, s/veh	5.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	98	327	126	119	9
Future Vol, veh/h	4	98	327	126	119	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	5	1	4	10	22
Mvmt Flow	4	107	355	137	129	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	981	134	139	0	-	0
Stage 1	134	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Critical Hdwy	6.4	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	279	907	1451	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	205	907	1451	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	424	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1451	-	800	-	-
HCM Lane V/C Ratio	0.245	-	0.139	-	-
HCM Control Delay (s)	8.3	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	1	-	0.5	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	74	0	111
Future Volume (Veh/h)	0	0	0	74	0	111
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.51	0.51	0.88	0.88
Hourly flow rate (vph)	0	0	0	145	0	126
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	145	0	126	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145	0	126	0	0	
tC, single (s)	7.1	6.5	6.5	6.4	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.5	2.2	
p0 queue free %	100	100	100	86	100	
cM capacity (veh/h)	711	900	768	1024	1636	

Direction, Lane #	WB 1	SB 1
Volume Total	145	126
Volume Left	0	0
Volume Right	145	126
cSH	1024	1700
Volume to Capacity	0.14	0.07
Queue Length 95th (ft)	12	0
Control Delay (s)	9.1	0.0
Lane LOS	A	
Approach Delay (s)	9.1	0.0
Approach LOS	A	

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	10.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	35.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	264	0	0	509	58	255	0	377	0	0	0
Future Vol, veh/h	118	264	0	0	509	58	255	0	377	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	2	0	0	4	5	12	0	3	0	0	0
Mvmt Flow	128	287	0	0	553	63	277	0	410	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	616	0	-	-	-	0	1128	-	287
Stage 1	-	-	-	-	-	-	543	-	-
Stage 2	-	-	-	-	-	-	585	-	-
Critical Hdwy	4.15	-	-	-	-	-	5.9	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.52	-	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.608	-	3.327
Pot Cap-1 Maneuver	949	-	0	0	-	-	~ 262	0	750
Stage 1	-	-	0	0	-	-	563	0	-
Stage 2	-	-	0	0	-	-	538	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	949	-	-	-	-	-	~ 220	0	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 220	0	-
Stage 1	-	-	-	-	-	-	473	0	-
Stage 2	-	-	-	-	-	-	538	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.9	0	86.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	220	750	949	-	-	-
HCM Lane V/C Ratio	1.26	0.546	0.135	-	-	-
HCM Control Delay (s)	192.5	15.4	9.4	0	-	-
HCM Lane LOS	F	C	A	A	-	-
HCM 95th %tile Q(veh)	14.4	3.4	0.5	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	19.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	323	396	356	408	0	0	0	0	59	0	110
Future Vol, veh/h	0	323	396	356	408	0	0	0	0	59	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	7	4	9	0	2	2	2	2	0	12
Mvmt Flow	0	351	430	387	443	0	0	0	0	64	0	120

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	781	0	0				1783	-	443
Stage 1	-	-	-	-	-	-				1217	-	-
Stage 2	-	-	-	-	-	-				566	-	-
Critical Hdwy	-	-	-	4.14	-	-				5.9	-	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	2.236	-	-				3.518	-	3.408
Pot Cap-1 Maneuver	0	-	-	828	-	0				116	0	594
Stage 1	0	-	-	-	-	0				280	0	-
Stage 2	0	-	-	-	-	0				568	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	828	-	-				~ 44	0	594
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 44	0	-
Stage 1	-	-	-	-	-	-				280	0	-
Stage 2	-	-	-	-	-	-				216	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6.1	163
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	828	-	44	594
HCM Lane V/C Ratio	-	-	0.467	-	1.458	0.201
HCM Control Delay (s)	-	-	13.1	0	$ 443.3	12.6
HCM Lane LOS	-	-	B	A	F	B
HCM 95th %tile Q(veh)	-	-	2.5	-	6.3	0.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	408	59	161	152	205	18	55	115	196	73	5
Future Volume (vph)	15	408	59	161	152	205	18	55	115	196	73	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	0		0	0		0	0		75
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1788	1583	0	1626	0	0	1624	0	0	1763	0
Flt Permitted		0.978			0.621			0.961			0.582	
Satd. Flow (perm)	0	1752	1583	0	1025	0	0	1569	0	0	1063	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			64		46			80			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1311			261			2131			367	
Travel Time (s)		29.8			5.9			48.4			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	6%	2%	5%	20%	4%	6%	11%	5%	4%	1%	40%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	459	64	0	563	0	0	205	0	0	297	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Total Split (s)	43.0	43.0	43.0	43.0	43.0		24.0	24.0		24.0	24.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Act Effct Green (s)		39.5	39.5		39.5			20.3			20.3	
Actuated g/C Ratio		0.55	0.55		0.55			0.28			0.28	
v/c Ratio		0.47	0.07		0.96			0.41			0.98	
Control Delay		13.6	3.8		47.1			17.0			78.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		13.6	3.8		47.1			17.0			78.4	
LOS		B	A		D			B			E	
Approach Delay		12.4			47.1			17.0			78.4	
Approach LOS		B			D			B			E	
Queue Length 50th (ft)		95	0		171			39			117	
Queue Length 95th (ft)		296	22		#581			129			#375	
Internal Link Dist (ft)		1231			181			2051			287	
Turn Bay Length (ft)			225									
Base Capacity (vph)		967	903		586			501			302	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.47	0.07		0.96			0.41			0.98	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 71.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Total Split (s)	23.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection Signal Delay: 37.7	Intersection LOS: D
Intersection Capacity Utilization 91.0%	ICU Level of Service F
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Phillips Road & Theodore Rice Boulevard/Braley Road

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	91	0	36	0	12	293	136	16	0
Future Vol, veh/h	0	0	0	91	0	36	0	12	293	136	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	31	2	22	2	50	9	6	50	2
Mvmt Flow	0	0	0	99	0	39	0	13	318	148	17	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	199	-	206	199	-
Stage 1	-	-	-	-	-	-	-	1	-	198	198	-
Stage 2	-	-	-	-	-	-	-	198	-	8	1	-
Critical Hdwy	4.12	-	-	4.41	-	-	-	7	-	7.16	7	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6	-	6.16	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6	-	6.16	6	-
Follow-up Hdwy	2.218	-	-	2.479	-	-	-	4.45	-	3.554	4.45	-
Pot Cap-1 Maneuver	-	-	-	1451	-	0	0	620	0	743	620	0
Stage 1	-	-	-	-	-	0	0	808	0	795	656	0
Stage 2	-	-	-	-	-	0	0	656	0	1003	808	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1451	-	-	-	578	-	692	578	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	578	-	692	578	-
Stage 1	-	-	-	-	-	-	-	808	-	795	611	-
Stage 2	-	-	-	-	-	-	-	611	-	987	808	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.7		11.8
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	578	-	-	-	-	1451	-	684	578
HCM Lane V/C Ratio	0.011	-	-	-	-	0.068	-	0.229	0.015
HCM Control Delay (s)	11.3	-	0	-	-	7.7	0	11.8	11.3
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	-	0.9	0

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	191	0	237	0	0	75	0	59	307	1	60	129
Future Vol, veh/h	191	0	237	0	0	75	0	59	307	1	60	129
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	Stop	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	6	0	3	0	0	19	0	27	2	0	38	17
Mvmt Flow	208	0	258	0	0	82	0	64	334	1	65	140

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	201	-	103	-	-	64	-	0	-	64	0	0
Stage 1	137	-	-	-	-	-	-	-	-	-	-	-
Stage 2	64	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.39	-	6.945	-	-	6.485	-	-	-	4.1	-	-
Critical Hdwy Stg 1	6.59	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.557	-	3.3285	-	-	3.4805	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	739	0	930	0	0	951	0	-	0	1551	-	-
Stage 1	842	0	-	0	0	-	0	-	0	-	-	-
Stage 2	936	0	-	0	0	-	0	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	675	-	930	-	-	951	-	-	-	1551	-	-
Mov Cap-2 Maneuver	675	-	-	-	-	-	-	-	-	-	-	-
Stage 1	842	-	-	-	-	-	-	-	-	-	-	-
Stage 2	856	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	9.1	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	675	930	951	1551	-	-
HCM Lane V/C Ratio	-	0.308	0.277	0.086	0.001	-	-
HCM Control Delay (s)	-	12.7	10.3	9.1	7.3	-	-
HCM Lane LOS	-	B	B	A	A	-	-
HCM 95th %tile Q(veh)	-	1.3	1.1	0.3	0	-	-

Intersection						
Int Delay, s/veh	6.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	296	73	155	243	2
Future Vol, veh/h	12	296	73	155	243	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	19	6	4	0
Mvmt Flow	13	322	79	168	264	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	591	265	266	0	-	0
Stage 1	265	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.29	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.371	-	-	-
Pot Cap-1 Maneuver	473	776	1206	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	439	776	1206	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	2.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1206	-	753	-	-
HCM Lane V/C Ratio	0.066	-	0.445	-	-
HCM Control Delay (s)	8.2	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	2.3	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	91	0	37
Future Volume (Veh/h)	0	0	0	91	0	37
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	99	0	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	99	0	40	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	99	0	40	0	0	
tC, single (s)	7.1	6.5	6.5	6.3	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.4	2.2	
p0 queue free %	100	100	100	91	100	
cM capacity (veh/h)	804	900	856	1051	1636	

Direction, Lane #	WB 1	SB 1
Volume Total	99	40
Volume Left	0	0
Volume Right	99	40
cSH	1051	1700
Volume to Capacity	0.09	0.02
Queue Length 95th (ft)	8	0
Control Delay (s)	8.8	0.0
Lane LOS	A	
Approach Delay (s)	8.8	0.0
Approach LOS	A	

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	9.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	14.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	116	266	0	0	465	47	200	0	424	0	0	0
Future Vol, veh/h	116	266	0	0	465	47	200	0	424	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	0	3	0	10	0	3	0	0	0
Mvmt Flow	126	289	0	0	505	51	217	0	461	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	556	0	-	-	-	0	1072	-	289
Stage 1	-	-	-	-	-	-	541	-	-
Stage 2	-	-	-	-	-	-	531	-	-
Critical Hdwy	4.17	-	-	-	-	-	5.7	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.5	-	-
Follow-up Hdwy	2.263	-	-	-	-	-	3.59	-	3.327
Pot Cap-1 Maneuver	990	-	0	0	-	-	299	0	748
Stage 1	-	-	0	0	-	-	568	0	-
Stage 2	-	-	0	0	-	-	574	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	990	-	-	-	-	-	254	0	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	0	-
Stage 1	-	-	-	-	-	-	482	0	-
Stage 2	-	-	-	-	-	-	574	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.8	0	33.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	254	748	990	-	-	-
HCM Lane V/C Ratio	0.856	0.616	0.127	-	-	-
HCM Control Delay (s)	67.4	17.2	9.2	0	-	-
HCM Lane LOS	F	C	A	A	-	-
HCM 95th %tile Q(veh)	7	4.3	0.4	-	-	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	327	336	329	336	0	0	0	0	55	0	109
Future Vol, veh/h	0	327	336	329	336	0	0	0	0	55	0	109
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	7	3	6	0	2	2	2	2	0	15
Mvmt Flow	0	355	365	358	365	0	0	0	0	60	0	118

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	720	0	0				1619	-	365
Stage 1	-	-	-	-	-	-				1081	-	-
Stage 2	-	-	-	-	-	-				538	-	-
Critical Hdwy	-	-	-	4.13	-	-				5.7	-	6.35
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	-	-
Follow-up Hdwy	-	-	-	2.227	-	-				3.518	-	3.435
Pot Cap-1 Maneuver	0	-	-	877	-	0				157	0	652
Stage 1	0	-	-	-	-	0				326	0	-
Stage 2	0	-	-	-	-	0				585	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	877	-	-				77	0	652
Mov Cap-2 Maneuver	-	-	-	-	-	-				77	0	-
Stage 1	-	-	-	-	-	-				326	0	-
Stage 2	-	-	-	-	-	-				285	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	54.3
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	877	-	77	652
HCM Lane V/C Ratio	-	-	0.408	-	0.776	0.182
HCM Control Delay (s)	-	-	11.9	0	138.8	11.7
HCM Lane LOS	-	-	B	A	F	B
HCM 95th %tile Q(veh)	-	-	2	-	3.8	0.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	343	38	148	105	192	12	58	117	203	59	3
Future Volume (vph)	22	343	38	148	105	192	12	58	117	203	59	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	0		0	0		0	0		75
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1777	1568	0	1634	0	0	1691	0	0	1762	0
Flt Permitted		0.963			0.683			0.973			0.565	
Satd. Flow (perm)	0	1717	1568	0	1134	0	0	1650	0	0	1033	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			61		54			86			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1311			261			2131			367	
Travel Time (s)		29.8			5.9			48.4			8.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	7%	3%	1%	26%	3%	17%	5%	0%	4%	0%	67%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	397	41	0	484	0	0	203	0	0	288	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Total Split (s)	43.0	43.0	43.0	43.0	43.0		24.0	24.0		24.0	24.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Act Effct Green (s)		39.5	39.5		39.5			20.3			20.3	
Actuated g/C Ratio		0.55	0.55		0.55			0.28			0.28	
v/c Ratio		0.42	0.05		0.74			0.38			0.98	
Control Delay		12.8	2.4		22.2			15.9			78.7	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		12.8	2.4		22.2			15.9			78.7	
LOS		B	A		C			B			E	
Approach Delay		11.9			22.2			15.9			78.7	
Approach LOS		B			C			B			E	
Queue Length 50th (ft)		79	0		111			36			113	
Queue Length 95th (ft)		249	12		#440			122			#368	
Internal Link Dist (ft)		1231			181			2051			287	
Turn Bay Length (ft)			225									
Base Capacity (vph)		948	893		650			528			293	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.42	0.05		0.74			0.38			0.98	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Total Split (s)	23.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection Signal Delay: 29.6	Intersection LOS: C
Intersection Capacity Utilization 83.5%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Phillips Road & Theodore Rice Boulevard/Braley Road

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	77	0	19	0	6	256	68	10	0
Future Vol, veh/h	0	0	0	77	0	19	0	6	256	68	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	34	2	53	2	33	9	9	20	2
Mvmt Flow	0	0	0	84	0	21	0	7	278	74	11	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	169	-	173	169	-
Stage 1	-	-	-	-	-	-	-	1	-	168	168	-
Stage 2	-	-	-	-	-	-	-	168	-	5	1	-
Critical Hdwy	4.12	-	-	4.44	-	-	-	6.83	-	7.19	6.7	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.83	-	6.19	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.83	-	6.19	5.7	-
Follow-up Hdwy	2.218	-	-	2.506	-	-	-	4.297	-	3.581	4.18	-
Pot Cap-1 Maneuver	-	-	-	1435	-	0	0	671	0	775	693	0
Stage 1	-	-	-	-	-	0	0	837	0	818	727	0
Stage 2	-	-	-	-	-	0	0	704	0	999	860	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1435	-	-	-	631	-	734	652	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	631	-	734	652	-
Stage 1	-	-	-	-	-	-	-	837	-	818	684	-
Stage 2	-	-	-	-	-	-	-	662	-	991	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.7		10.5
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	631	-	-	-	-	1435	-	728	652
HCM Lane V/C Ratio	0.005	-	-	-	-	0.058	-	0.109	0.008
HCM Control Delay (s)	10.7	-	0	-	-	7.7	0	10.5	10.6
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	-	0.4	0

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	188	0	187	0	0	14	0	25	220	0	43	63
Future Vol, veh/h	188	0	187	0	0	14	0	25	220	0	43	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	Stop	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	6	2	1	0	0	29	0	40	1	0	40	22
Mvmt Flow	204	0	203	0	0	15	0	27	239	0	47	68

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	108	-	58	-	-	27	-	0	-	-	-	0
Stage 1	81	-	-	-	-	-	-	-	-	-	-	-
Stage 2	27	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.39	-	6.915	-	-	6.635	-	-	-	-	-	-
Critical Hdwy Stg 1	6.59	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.557	-	3.3095	-	-	3.5755	-	-	-	-	-	-
Pot Cap-1 Maneuver	855	0	999	0	0	971	0	-	0	0	-	-
Stage 1	908	0	-	0	0	-	0	-	0	0	-	-
Stage 2	979	0	-	0	0	-	0	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	841	-	999	-	-	971	-	-	-	-	-	-
Mov Cap-2 Maneuver	841	-	-	-	-	-	-	-	-	-	-	-
Stage 1	908	-	-	-	-	-	-	-	-	-	-	-
Stage 2	964	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	8.8	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	-	841	999	971	-	-
HCM Lane V/C Ratio	-	0.243	0.203	0.016	-	-
HCM Control Delay (s)	-	10.6	9.5	8.8	-	-
HCM Lane LOS	-	B	A	A	-	-
HCM 95th %tile Q(veh)	-	1	0.8	0	-	-

Intersection						
Int Delay, s/veh	4.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	216	12	171	209	2
Future Vol, veh/h	4	216	12	171	209	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	25	1	33	2	1	0
Mvmt Flow	4	235	13	186	227	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	440	228	229	0	-	0
Stage 1	228	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.65	6.21	4.43	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.309	2.497	-	-	-
Pot Cap-1 Maneuver	534	814	1176	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	528	814	1176	-	-	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1176	-	806	-	-
HCM Lane V/C Ratio	0.011	-	0.297	-	-
HCM Control Delay (s)	8.1	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	34	0	27
Future Volume (Veh/h)	0	0	0	34	0	27
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	37	0	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	37	0	29	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	37	0	29	0	0	
tC, single (s)	7.1	6.5	6.5	6.5	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.6	2.2	
p0 queue free %	100	100	100	96	100	
cM capacity (veh/h)	937	900	868	996	1636	

Direction, Lane #	WB 1	SB 1
Volume Total	37	29
Volume Left	0	0
Volume Right	37	29
cSH	996	1700
Volume to Capacity	0.04	0.02
Queue Length 95th (ft)	3	0
Control Delay (s)	8.8	0.0
Lane LOS	A	
Approach Delay (s)	8.8	0.0
Approach LOS	A	

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

ATTACHMENT 4

NHESP CORROSPONDENCE

From:	Holt, Emily (FWE)
To:	Whitney Hall
Subject:	100 Duchaine Blvd, New Bedford
Date:	Thursday, January 03, 2019 1:06:13 PM

Whitney,

I received your letter request and have determined that this project site does not occur within Estimated Habitat of Rare Wildlife or Priority Habitat as indicated in the *Massachusetts Natural Heritage Atlas* (14th Edition). Therefore, the project is not required to be reviewed for compliance with the rare wildlife species section of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.37, 10.59 & 10.58(4)(b)) or the MA Endangered Species Act Regulations (321 CMR 10.18).

I will return the submitted fee to Green Seal Environmental, as the site is not subject to MESA review.

Best,

Emily Holt
Endangered Species Review Assistant
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6385 | f: (508) 389-7890
mass.gov/nhesp

Green Seal Environmental, Inc.
114 State Road, Bldg. B, Sagamore Beach, MA 02562
T: 508.888.6034 **F:** 508.888.1506
www.gseenv.com

MA-SDO Certified D/WBE, D/MBE
NH-Certified DBE
SBA Certified EDWOSB
MassDOT Certified | DCAMM Certified

December 11, 2018

DIVISION OF FISHERIES AND WILDLIFE
Natural Heritage & Endangered Species Program
Regulatory Review
1 Rabbit Hill Road
Westborough, MA 01581

To Whom It May Concern,

Green Seal Environmental, Inc. (GSE) is writing you this letter to request a determination if a project proposed for 100 Duchaine Boulevard, New Bedford, MA is located within Estimated Habitat of Rare Wildlife or Priority Habitat.

Parallell Products of New England is proposing to construct a solid waste recycling and transfer facility at the 100 Duchaine Boulevard site. A locus map and a landuse map of the proposed site are attached for your review. As part of the proposed project development, the facility must file a Site Suitability (BWP SW-01) application with MassDEP. Within the permit application, it is a requirement that the applicant correspond with Natural Heritage and Endangered Species Program of the MA Division of Fisheries & Wildlife (the "Division") for information regarding state-listed rare species in the vicinity of the above referenced site.

MassGIS indicates that there are no NHESP Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species within 1500-feet of the site. GSE has not identified any rare plant or animals or exemplary natural communities that would be adversely affected by the above noted activities. Also, we have not identified any information that would indicate an impact to a wildlife management area or an area of natural heritage on and/or adjacent to the property.

If you could provide us with a letter with respect to endangered, threatened, special concern species, or areas of natural heritage that occur on the proposed site, it would be greatly appreciated. If you have any questions or comments, please call.

Sincerely,

GREEN SEAL ENVIRONMENTAL, INC.

Whitney W. Hall P.E.
Project Manager

<u>Attachments</u>
Site Locus
Land Use Plan

ATTACHMENT 5

ODOR AND AIR MODELING

Massachusetts Environmental Policy Act
Air and Odor Analysis

Parallel Products of New England
New Bedford, Massachusetts

Submitted to:
PARALLEL PRODUCTS OF NEW ENGLAND, INC.
100 Duchaine Boulevard
New Bedford, MA 02745

PARALLEL PRODUCTS

Submitted by:
EPSILON ASSOCIATES, INC.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

Epsilon ASSOCIATES INC.

September 23, 2019

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1.0 EXECUTIVE SUMMARY

Executive Summary

Parallel Products of New England (PPNE) has commissioned this study to document that the solid waste facility proposed for 100 Duchaine Boulevard in New Bedford, Massachusetts uses all feasible measures to avoid, minimize, and mitigate potential air-related impacts, and that the facility will not create conditions of unhealthy air or nuisance odors. The study documents this through a three-step process for each relevant concern:

1. Emissions estimates: The project team has assembled information on the proposed activities, and used United States Environmental Protection Agency (USEPA) emission limits, emission factors, industry data, and information for other projects to generate emission rates. The analysis generally uses expected maximum operating rates to generate conservative estimates.

2. Computer air dispersion modeling: The model generates a 3-D field using terrain data and building dimensions. Epsilon created a grid of thousands of receptor locations, with the most receptors nearest the facility. The model uses emission rates, exhaust parameters (release height, velocity, and temperature) and five years of hourly weather data to predict ambient air concentrations in all weather conditions.

3. Comparison to standards: Model results are compared to USEPA and Massachusetts Department of Environmental Protection (MassDEP) health-protective criteria. Odor impacts are subjective and individualized; for odor, model results are compared to a dilution threshold that is unlikely to cause a nuisance condition, and the results are assessed based on both the frequency and intensity of the modeled concentration.

Sources of Air Emissions

Stationary sources at the facility will be subject to regulation by MassDEP, either through the Limited Plan Approval process or by regulation of de minimis sources. This study reviews stationary sources but also heavy mobile equipment sources, and truck traffic both on-site and off-site. This more inclusive analysis allows the project to be designed holistically to minimize environmental impacts and give a more complete picture of any project related air impacts.

Broadly the emissions sources are in the following categories:

♦ Stationary combustion sources. There are boiler and dryers which will provide freeze protection and energy for the biosolids drying process. Additionally, space heaters will provide heat to the glass processing building. These combust natural gas and are below MassDEP permitting thresholds. They are generally of the size found providing heat to commercial buildings.

- Mobile diesel equipment. Parallel Products will use standard commercial equipment (trucks and front-end loaders) common to on-road and off-road traffic.

- Dust from material handling. Emissions are estimated based on material transfer operations, and road dust. A cooling tower can also be a dust source (as mist droplets evaporate, salts in the water can remain in the air); the cooling tower is an insignificant source per MassDEP standards and is similar in size to towers serving commercial buildings.

- Potential odor sources. Biosolids and municipal solid waste (MSW) can be sources of odor.

Impacts

Parallel Products proposes a facility that avoids, minimizes, and mitigates potential air-related impacts as follows:

Avoided impacts: Parallel Products has selected an industrially-zoned setting to avoid impacts to the public and is re-using significant existing infrastructure to avoid impacts associated with new construction. Material handling in enclosed areas, using best industry practices, minimizes off-site impacts of air emissions and odors. Because the proposed facility will serve existing needs for material handling at a location that is closer to the sources of the materials, the project avoids transportation-related impacts currently associated with sending the materials farther by truck.

Minimized impacts: The project team evaluated and modeled dozens of potential equipment and exhaust vent/stack configurations to identify the proposed conceptual design which minimizes off-site air and odor concentrations. The proposed design optimizes the flow of material through the site, and the reuse of existing facilities, while minimizing offsite impacts in general and residential area offsite impacts in particular. Material handling loaders will be USEPA Tier 4 certified to minimize emissions.

Mitigated impacts: Parallel Products is selecting to control odors from biosolids handling processes using biofiltration with carbon/zeolite polishing, or equal, and ionization. Specific controls for the biosolids processing operations, including the dryer exhausts, are currently conceptually designed. As project design advances, the specific odor control technology will be selected.

Comparison to Standards

The analysis shows that, under maximum expected operating conditions and using conservative assumptions, the project's impacts will comply with all applicable standards. Specifically:

- The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per USEPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.[1]"

- The Ambient Air Quality Standards for the Commonwealth of Massachusetts (MAAQS) will not be exceeded. Per 310 CMR 6.00, the MAAQS are currently identical to the NAAQS. In this report, the term "NAAQS" will refer to both sets of standards.

- MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air.2" In some cases, MassDEP had not developed an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System (IRIS) was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations.

In Massachusetts, odor is regulated under 310 CMR 7.09 such that operations that emit odors shall not permit their emissions to "cause a condition of air pollution". To determine that the project is not a nuisance source of odors, the study evaluated for maximum 5-minute-averaged odor concentrations and determined that, for all locations on-site and off-site and given evaluated weather conditions, the odor concentration to be at or below 5 dilution-to-threshold (D/T). Thus, the project meets the criterion published in the MassDEP draft policy for odor from composting facilities.

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1 https://www.epa.gov/criteria-air-pollutants/naaqs-table

2 https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines

2.0 INTRODUCTION

This report documents air and odor emissions estimates and related ambient impacts for the proposed Parallel Products of New England (PPNE) solid waste facility to be located at 100 Duchaine Boulevard in New Bedford, Massachusetts.

2.1 Site Description

The site is an industrially zoned, approximately 71-acre parcel, located within the New Bedford Business Park. The site location and property boundaries are shown in **Figure 1** using an aerial view. The site was previously developed by Polaroid and already includes access roads, parking areas, and various buildings. Much of the existing infrastructure will be used in developing the proposed project. New buildings will be constructed for glass processing, municipal solid waste (MSW) and construction and demolition (C&D) waste tipping, and biosolids drying. The conceptual layout of the future and existing buildings is shown in **Figure 2** which presents a plan view.

The site is bounded on the west by undevelopable wetlands, to the north by several commercial or industrial operations unrelated to PPNE's project, to the east by residential neighborhoods, and to the south by a utility operations and maintenance facility. The properties to the west, north, and south are industrially zoned.

2.2 Project Description

PPNE plans to operate several solid waste and recycling related processes at the site:

(1) Phase 1 – Processing of redemption and recovered glass to cullet for rail haul to out-of-state recycling facilities [250 tons per day (TPD) glass handling capacity, 75,000 tons per year (TPY) throughput];

(2) Phase 2 – Processing of MSW to recover approximately 20 percent recyclables and to bale and rail haul the post-reclamation MSW, with C&D waste, to out-of-state waste disposal facilities (1,500 TPD MSW and C&D waste handling capacity, 450,000 TPY throughput);

(3) Phase 3 – Receipt of biosolids liquid sludge for dewatering to cake and receipt of biosolids cake, with drying of the cake to 93 percent solids for rail haul to out-of-state disposal facilities [50 dry TPD (DTPD) biosolids capacity, 15,000 dry TPY (DTPY) throughput].

While the goal is to rail haul most of the products and residuals off-site, the air emissions estimates, and related ambient impacts have been based on use of trucks to haul materials on and off-site. This will overstate the air impacts when compared to future, predominate use of rail haul.

2.3 Outline of Report

This report describes the sources of air emissions included in the ambient air and odor impacts analysis (Section 3), the methodologies and bases for derivation of air emission estimates (Section 4), and the air regulatory applicability framework for the project (Section 5). Section 6.1 contains a description of the methodologies and bases for preparation of the ambient air impacts analyses. The criteria used in analyses and results of the analyses are presented in Section 6.2 (Criteria Pollutants), Section 6.3 (Air Toxics), and Section 6.4 (Odor).

3.0 SOURCE DESCRIPTIONS

This section describes the types of air and odor emitting sources included in the ambient air and odor impacts analysis.

3.1 Combustion Sources

The analysis presented in this report encompasses a broader range of air emission sources than would be included in an air plan application in that certain mobile combustion sources are included in addition to all stationary combustion sources located at the site.

3.1.1 Stationary Sources

The MSW tipping and processing building will be an unconditioned space, and thus no combustion sources will be used to heat this structure. The biosolids building and glass processing buildings will be heated to 50 degrees Fahrenheit in the wintertime. For this analysis, each building is assumed to use a nominal 3 million British thermal units per hour (MMBtu/hr) heating source (a small boiler for the biosolids building and small space heaters for the glass processing buildings), stated on a higher heating value (HHV) basis. In addition to the boiler, the biosolids building will also house four nominal 5 MMBtu/hr (HHV) heat input dryers, each fitted with its own burner.

3.1.2 Mobile Sources

Both on-site and off-site mobile sources are included in the analysis.

On-site mobile sources include two glass handling front-end loaders, two MSW handling front-end loaders, and all truck traffic on site. The glass handling front-end loaders will operate for up to 3 hours per day each, and the nominal engine size of each is 155-horsepower. Two MSW handling front-end loaders will operate at a time during the 16-hour day shift, and only one will operate during the 8-hour night shift (for a total of 40 hours per day operation), and the nominal engine size of each is 267-horsepower. The glass handling loaders and the MSW handling loaders will be USEPA Tier 4 certified. On-site truck traffic volume and frequency were deduced from the Updated Traffic Impact Study (TIS) included in the Draft Environmental Impact Report (DEIR), and all on-site trucks were assumed to be heavy duty diesel powered.

Off-site mobile sources include recycled glass, MSW, C&D, and biosolids truck traffic. The off-site traffic characteristics were also deduced from the TIS.

3.2 Non-Combustion Particulate Matter Sources

Sources of particulate matter emissions at the site, which are not combustion-related, include:

(1) Dust from MSW and C&D waste tipping and MSW processing and associated rail car loading

(2) Dust from glass processing and associated rail car loading

(3) Dust from vehicle travel on on-site paved roads

(4) Particulate matter in water drift from the cooling towers that serve the biosolids dryers

3.3 Odor Sources

MSW and biosolids are sources of different types of odors. MSW odors will be managed at the site in enclosed buildings or in bales, and good air dispersion of the odors will be used to result in de minimis impact. Biosolids odors will be managed using the following add-on odor control devices:

(1) A biofilter with carbon/zeolite polishing, or equal, for the air emanating from the dryers and other process sources within the building; and

(2) Ionization for oxidation of the air constituents emanating from the dewatering operations.

Biosolids building stacks serving the above noted odor control devices have also been designed to further disperse the odor to result in de minimis impact.

3.4 Stack Parameters

Stack parameters include the stack height, diameter, location; and the exhaust temperature, flow rate, and velocity. These conceptual design parameters are tabulated and corresponded to their respective sources in **Attachment A**. Stack locations are also shown on a diagram as **Figure A-1**.

4.0 EMISSIONS ESTIMATES

Emission units at the proposed facility are categorized as stationary and mobile sources. The stationary source air emission estimates largely relied upon emission factors and methodologies from the USEPA publication AP-42. The mobile source air emission estimates relied upon the USEPA Motor Vehicle Emissions Simulator (MOVES) software/database for mobile source emission factors, USEPA Tier certification emission limits, and an engine specification sheet from Caterpillar and in some cases on the USEPA "SPECIATE" database.

Criteria pollutants, or criteria pollutant precursors, for which emission estimates were prepared are nitrogen oxides (NO_x), particulate matter of size 10 microns or less (PM_{10}), particulate matter of size 2.5 microns or less ($PM_{2.5}$), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb). The emissions for these pollutants were estimated for the following purposes:

(1) Air dispersion modeling for nitrogen dioxide (NO_2), CO, SO_2, PM_{10} and $PM_{2.5}$;

(2) Analysis of lead as an air toxic compound.

Volatile organic compounds are not included in this analysis for the following reasons:

(1) Specific organic compounds which are subsets of the volatile organic compound (VOC) class of compounds are estimated for the analysis of air toxics impacts;

(2) There is no NAAQS for VOC so air dispersion modeling for this pollutant is not required; and

(3) VOC emissions from the MSW tipping and processing and from the biosolids processing operations are expected to be de minimis relative to air plan application thresholds.

The odor concentration associated with the MSW tipping and processing has been quantified using a published source based on measurements from New York City transfer stations, in conjunction with professional experience. The odor and air toxics concentrations associated with the biosolids processing have primarily been estimated by Hazen & Sawyer during conceptual design of that operation.

Air toxic compounds were selected for emissions estimation based on the MassDEP Ambient Air Toxics Guidelines and based on air toxics measurements at an existing biosolids drying operation. In general, chemicals for which MassDEP has published AALs and TELs, and for which specific emission factors were available, are included in the analysis.

Detailed methods used for the air and odor emission estimation are discussed below and supporting calculations can be found in **Attachment B** to this report.

4.1 Biosolids Dryers and Biosolids and Glass Building Heat Sources

The stationary combustion sources at the site are the four biosolids dryers (5 MMBtu/hr each) and space heating sources. The space heating sources were assumed to consist of one biosolids building heat boiler (3 MMBtu/hr), and a number of glass processing building space heaters (3 MMBtu/hr in aggregate). The design capacities are estimated based on expected fuel use provided in a conceptual design by Hazen & Sawyer. Emissions from these stationary combustion sources are estimated using emission factors and the estimated maximum heat input ratings. The fuel source for all five of these sources will be pipeline quality natural gas which is a clean fuel.

The dryer emission factor for NO_x, 159 pounds per million standard cubic feet (lb/MMscf) of natural gas fueled, was derived from a Pennsylvania Department of Environmental Protection (PADEP) air permit for a dryer of similar make as is planned for the New Bedford project. The boiler and space heaters emission factor for NO_x, 100 lb/MMscf (small, uncontrolled boilers), was sourced from USEPA publication AP-42 "Compilation of Emission Factors" Table 1.4-1 (external combustion sources using natural gas).

The emission factor for PM_{10}/$PM_{2.5}$, 7.6 lb/MMscf of natural gas, was sourced from AP-42 Table 1.4-2 and was applied to both the dryers and the boilers. The emission factor for lead, 0.0005 lb/MMscf of natural gas, was sourced from the same table and applied to all five combustion sources.

The emission factor for SO_2, 0.60 lb/MMSCF of natural gas, was sourced from AP-42 Table 1.4-2 and was applied to both the dryers and the boilers.

The emission factors for organic air toxics were sourced from AP-42 Table 1.4-3 and those for metals air toxics were sourced from AP-42 Table 1.4-4. All the air toxics emission factors from AP-42 are stated in units of lb/MMscf.

AP-42 Chapter 1 Section 4 (external combustion sources using natural gas) emission factors are all based on a higher heating value (HHV) of natural gas of 1,020 Btu/scf, which was used for converting the emission factors from lb/MMscf to lb/MMBtu.

Short term emission rates in pounds per hour (lb/hr) and grams per second (g/s) were calculated for the combustion source pollutants. For air dispersion modeling purposes, the four dryers were assumed to operate year-round (8,760 hours per year) at full estimated design capacity. For actual operations, only one to four dryers will be operating at full or part load at any given time. The building heat sources were assumed to only operate during the winter season (December to March) at their max hourly short-term emission rates.

4.2 Biosolids Process Sources

The biosolids building also contains non-combustion (process) sources of air and odor emissions. Those sources are controlled before air is exhausted from the building to the atmosphere. The Hazen & Sawyer conceptual design has the biosolids general building ventilation controlled by two (2) ionization units. These units oxidize reduced sulfur compounds to abate the odor strength by a nominal 90% control. Each ionization unit exhausts to its own stack. The Hazen & Sawyer conceptual design for the biosolids drying and processing operations recommended a biofilter for a nominal 90% control of odor from these sources. However, at this stage of design, and upon further consultation with Hazen & Sawyer, it was considered advisable to increase the odor control efficiency to 99% by use of a biofilter with carbon/zeolite polishing, or equal. The air pollution control for the drying and processing operations will exhaust to its own stack.

Odor emission rates from the ionization and scrubber stacks were calculated using the design value for exhaust flow for each of the three stacks, and the associated dilution to threshold (D/T) odor concentration values post-control. The D/T values from the Hazen & Sawyer conceptual design were presented pre-control as well as post-control. For the ionization exhausts the post-control odor concentration was provided. For the dryer and process exhaust, Epsilon used the pre-control odor concentration and applied a 99% control efficiency. Each D/T concentration value was then multiplied by the associated exhaust flow rate (converted to cubic meters per second) to obtain the overall odor units per second (OU/s) emission rate.

The emissions of several air toxics pollutants (hydrogen sulfide, carbonyl sulfide, and ammonia) from the biosolids process stacks were provided by Hazen & Sawyer in concentration units of either parts per million (ppm) or parts per billion (ppb). Pre- and post-control concentrations of these pollutants were provided. Epsilon used the post-control concentrations which assumed ionization control and biofilter control. Epsilon did not take credit for additional control that may be provided by the addition of carbon/zeolite polishing relative to a biofilter, for these three pollutants. Hazen & Sawyer also provided design exhaust flow rates for the biosolids process sources. The concentrations and the exhaust flow rates allow for the calculation of mass emission rates in lb/hr and g/s using the ideal gas law.

Additional air toxics from sludge drying and processing were identified by Hazen & Sawyer, based on dryer exhaust concentrations in parts per billion (ppb) measured at an existing facility. Mass emission rates for these air toxics were scaled up to the Parallel Products design throughput of 50 DTPD and to account for other process emissions aside from the drying operations. Nominal control efficiencies were applied, on a pollutant specific basis, to account for use of a biofilter with carbon (and/or zeolite) polishing, to arrive at the controlled air emission rates in lb/hr and g/s.

For the air and odor dispersion modeling analyses, the biosolids process sources are assumed to operate 8,760 hours per year at full estimated design capacity.

4.3 Biosolids Cooling Towers

Cooling towers are a source of $PM_{10}/PM_{2.5}$ air emissions. The current design envisions four (4) small cooling towers that each operate with 900 gallons per minute (gpm) of circulating water. With the drift eliminators specified in the current design, the towers will have a maximum 0.002% drift rate. This drift rate is used to calculate how much water escapes the cooling tower in droplet form.

The cooling tower drift was then multiplied by the density of water to estimate the mass of water escaping the cooling tower cells in droplet form. Each of these droplets has some small amount of particulate dissolved in it which is based on the total dissolved solids (TDS) concentration of the circulating water. In this case, the circulating water was assumed to contain a maximum concentration of 1,800 parts per million by weight (ppmw) of TDS. The total particulate emissions from the cooling tower are estimated by taking this concentration and multiplying it by the mass of water escaping the cooling tower in droplet form.

The total PM emissions are assumed to be entirely made up of PM_{10} such that $PM_{10} = PM$. $PM_{2.5}$ is assumed to make up less than 12% of total particulate matter emissions and as such are equal to the total PM/PM_{10} emissions multiplied by 0.12. These pound per hour PM_{10} and $PM_{2.5}$ emission rates were multiplied by 8,760 hours per year and the total number of cells (4) to obtain the total PM_{10} and $PM_{2.5}$ emissions in tons per year from the cooling towers. The air dispersion modeling analysis is also based on the assumption that the cooling towers all operate every hour year-round. The number of cooling towers actually operating will match the number of dryers operating at any given time.

4.4 MSW Tipping and Processing

Operations generating indoor dust emissions from the MSW process can be broken into two subcategories. The first subcategory is material drops and loading operations. Material drop and loading emissions are based on the facility receiving waste 10 hours per day, 7 days per week, on 362 days of the year which equates to approximately 3,620 hours per year of waste receiving. When waste is received, it is dumped or loaded twice. Emissions from loading or dumping were calculated using a methodology set forth in USEPA AP-42 Chapter 13, Section 2.3 pertaining to aggregate handling. Since there were no factors for MSW, all waste is conservatively assumed as the dustier C&D residuals. Based on the volume of the building and assumptions on nominal air changes per hour, a total volumetric flow through the building was determined. Using the known vent exit diameter and the volumetric flow through the building, the air velocity over the MSW was determined, since this value was below the low end of the valid range for the methodology, the low end of the range was used to be conservative. The high end of the valid moisture range for the equation was used since MSW tends to contain significant moisture (>20%). The air velocity, moisture content, and particle size factor (found in AP-42 Chapter 13.2.3) were used to generate an emission factor for PM_{10} and $PM_{2.5}$ in units of pounds of emissions per ton of material processed (lb/ton). This lb/ton emission factor was then multiplied by the average hourly throughput and the number of drops to obtain a lb/hr and g/s emission rate.

The second subcategory is dust emissions from pushing the material around into piles or into a hopper. These emissions were calculated using the equation in USEPA AP-42 Section 13.2.3 for pushing of material. This equation uses the silt content which is the percentage of particles that are less than 75 microns in diameter. The silt content was conservatively assumed to be at the low end of the valid range. The silt content and moisture content are used in the USEPA emission rate equation in conjunction with the appropriate factor from AP-42. AP-42 Table 13.2.3-1 recommends using factors from AP-42 Section 11.9 Table 11.9-1. The resulting lb/hr emissions from the AP-42 equation was then multiplied by the hours per day of operation and then divided by 24 hours per day to get a 24-hr average lb/hr emission value. This process was then repeated for $PM_{2.5}$.

Dust emissions from the first and second subcategories of operations occur inside and were thus grouped together. The total lb/hr emissions of PM_{10} from the indoor activities (drop/dumping actions and pushing of material) were added together. The resulting lb/hr emission rate was multiplied by the hours of operation and converted to tons to obtain a ton per year (tpy) emission rate for the process. This same process was repeated to obtain tpy of $PM_{2.5}$ from the indoor activities.

The odor emissions from the MSW process are generated from the transfer station, during transfer and processing after initial bag break, and the processing building, from organic fines as they move through the process. Initial bag break occurs when an intact plastic bag containing MSW is broken open by the processing equipment. The 50 D/T odor concentration was based on a study of New York City transfer stations as well as other work performed by Epsilon. The total volume through the transfer building was calculated and multiplied by the D/T concentration to get an OU/s emission rate. The OU/s emission rate was then split evenly between the four (4) stacks on the transfer building. The calculations assumed 90% capture for the stacks with 10% of the emissions exiting through the doors on the transfer building. The same general process was used for calculating the OU/s emission rate for the processing building but with a different air flow that is specific to the processing building. The processing building OU/s emission rate was divided evenly amongst the building's three (3) stacks.

The dust and odor emissions from the MSW tipping and handling processes are assumed to occur 8,760 hours per year, for the purposes of air dispersion modeling.

4.5 Glass Processing

Glass processing will generate dust. This process has two stationary source subsets associated with it. The first subset is the side bunker area. This includes operations that similarly occur in the north bunker building. The side bunker area consists of inside operations such as using a front loader to load the sorted glass onto the process line conveyor.

The second subset is the north bunker area. The north bunker area consists of indoor emissions from the processing and north bunker building activities and outdoor emissions from the conveyor loading the railcars. The indoor processing includes loading of glass onto conveyors, crushing the glass, dropping the glass into refined sorted piles, and using a front loader to load the sorted glass into a conveyor hopper for train loading... As mentioned above, there is an outdoor source for loading the railcars with glass from the conveyor.

Air emission estimates were calculated for each step using the processing rate of the glass and factors from Table 11.19.2-2 from USEPA AP-42 Chapter 11 Section 19. Emissions from inside buildings were assumed to be controlled by the building at a level of 90%. It was assumed that all emissions generated outdoors are emitted to the atmosphere.

Epsilon notes that the current glass processing emission estimates are conservatively overestimated, based on subsequent process design changes made by Parallel Products. These process design changes include addition of indoor dust collection using a baghouse and multiple pickup points, which will further minimize emissions from this processing operation.

The glass processing is considered to be conducted 8,760 hours per year, for the purposes of air dispersion modeling, except the front-end loader operates 3 hours per day.

4.6 Paved Roads

The outdoor emissions related to trucks driving on paved roads have been estimated for the glass, MSW, and biosolids truck traffic on-site. To estimate emissions from the trucks driving on paved roads, equation 1 from USEPA AP-42 Section 13.2.1 was used. This formula uses the road surface silt loading, average weight of vehicles traveling on the road, and a particle size multiplier to determine the emissions associated with the paved roads. The road surface silt loading that was used is from Table 13.2.1-2 for low volume roads (roads with less than 500 average daily trips). The average weight of the trucks was determined by evaluating the weight of each type of truck that enters and leaves the facility and then generating a weighted average based on the number of truck trips per day of each type of truck compared to the total truck trips per day. Using these values, the AP-42 equation generates an emission factor for the roads in grams per vehicle mile traveled.

An estimate of how much distance trucks travel on average when on site was generated based on travel by each truck around a full loop of the facility using the main road that surrounds the facility. Multiplying the emission factor times this vehicle miles traveled value resulted in a pounds per day emission rate of dust from the roads. This pound per day emission rate was then multiplied by 362 days per year and converted to tons to get a tons per year emission rate of dust from the roads. This calculation methodology was performed for both PM_{10} and $PM_{2.5}$ which vary based on the published particle size multiplier. The particle size multipliers are 1.0 for PM_{10} and 0.25 for $PM_{2.5}$.

4.7 Mobile Sources

Mobile sources of emissions include on-road truck traffic to and from the site, as well as a small number of off-road heavy construction equipment used in the waste processing.

Process operations are assumed to be continuous, 24 hours per day, seven days per week, for 365 days annually. Therefore, the onsite heavy equipment reflects continuous usage. According to the TIS, truck deliveries are estimated to occur between 5am and 9pm daily.

4.7.1 On-site

Off-road, diesel powered heavy equipment will consist of wheeled front-end loaders used for the glass processing and MSW tipping and processing operations.

The glass processing operation will use two 155-horsepower front end loaders, with each operating for a total of 3 hours per day. This equipment is assumed to be USEPA Tier 4 certified for emissions estimation purposes.

The MSW tipping and processing operation includes two 267-horsepower loaders. These are assumed to operate together for 16 hours per day (while MSW receiving is occurring), and one will operate alone for 8 hours per day (during the night shift to continuously feed the processing equipment), for a total of 40 hours of operating time per day. These are expected to be new units, equipped with USPEA Tier 4 certified engines with emissions controls as necessary to meet the certification standards.

Emission factors for the front-end loaders were obtained from the NONROAD model included within USEPA's MOVES software or regulatory Tier certification emission limits. USEPA's SPECIATE database was used to estimate the breakdown of individual hazardous air pollutants from the total organic gases where available. Formaldehyde emissions were based on a USEPA's MOVES emission factor and on a Caterpillar engine emissions specification sheet for a similarly sized Tier 4 engine, and the emissions were scaled to the project size.

Within the facility property, on-road mobile sources include the truck traffic moving along the ring roadway, as well as trucks idling at the inbound and outbound scales and at two stopping points along the road. It is assumed that the trucks idle for a total of 2 minutes at each of the stopping points.

It was assumed all trucks were heavy duty diesel, and that the speeds along the ring roadway were limited to 15 miles per hour. A speed of 5 miles per hour was assumed for trucks making their way from the inbound scale to the tipping area and then back to the outbound scale.

Emission factors were obtained using the MOVES software using a presumed build-out year of 2025.

4.7.2 Off-site

Outside of the property, emissions from truck traffic were analyzed out to the intersections of local roads with Massachusetts State Route 140 ramps, with a number of stopping points, representing idling at local intersections.

Based on the TIS, 19 peak truck trips per hour were assumed. The revised study assumes 100% of the truck traffic comes from the north, towards Rice Boulevard/Braley Road and Route 140. Truck speeds of 25 mph were assumed for these local roads, and 15 mph on the on- and off-ramps to Route 140.

It was assumed that trucks would idle at local intersections due to regular traffic patterns. The intersections included were:

- Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road
- Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road
- Phillips Road & Theodore Rice Boulevard/Braley Road
- Duchaine Boulevard & Theodore Rice Boulevard
- Duchaine Boulevard & Samuel Barnet Boulevard

Idle times at each of these intersections were determined from traffic modeling using the SYNCHRO program. This program incorporates vehicle volumes, control (signal or "stop" sign), lane configuration, and other variables to estimate intersection Level of Service (LOS), and average vehicle delay times. These delay times were used to estimate the amount of time trucks idle at each intersection. Idle emissions were then calculated from this idle time, and emission factors from the MOVES model for heavy duty diesel trucks at a speed of 0 mph.

5.0 REGULATORY APPLICABILITY

This section describes the regulatory standards and their applicability to the proposed Project. For each air regulatory program listed in **Table 5-1** below, there is a section briefly explaining why the standard does or does not apply.

Table 5-1 Summary of Applicable Requirements

Regulatory Program	Applicability
Ambient Air Quality Standards and Policies	Apply and are satisfied as described in Section 5.1 and Section 6.0
Prevention of Significant Deterioration (PSD) Review	Not Applicable, See Section 5.2
Non-Attainment New Source Review (NSR)	Not Applicable, See Section 5.3
New Source Performance Standards (NSPS)	Not Applicable, See Section 5.4
National Emission Standards for Hazardous Air Pollutants (NESHAPs)	Not Applicable, See Section 5.5
Emissions Trading Programs	Not Applicable, See Section 5.6
Visible Emissions	Applies and is satisfied as described in Section 5.7
Noise Control Regulation and Policy	Applies and is satisfied as described in Section 5.8
Industry Performance Standards	Not Applicable, See Section 5.9
Air Plan Approval	May apply and is satisfied as described in Section 5.10
Best Available Control Technology (BACT)	Applies and is satisfied as described in Section 5.11
Operating Permit and Compliance Assurance Monitoring (CAM)	Not Applicable, See Section 5.12
Massachusetts Environmental Policy Act (MEPA)	Applies and is satisfied as described in Section 5.13
Massachusetts Air Toxics Guidelines	Apply and are satisfied as described in Section 5.14

5.1 Ambient Air Quality Standards and Policies

One of the most basic goals set forth in the federal and state air regulations is to ensure that ambient air quality, including the impact of background, existing sources, and new sources, complies with ambient air quality standards. As such, all areas of the country are labeled with one of three classifications for each particular contaminant. These three classifications are "attainment," "nonattainment," and "unclassified."

In areas designated as attainment, the air quality with respect to the pollutant is equal to or better than the NAAQS. These areas are under a mandate to maintain, i.e., prevent significant deterioration of, such air quality. In areas designated as unclassifiable, there is limited air quality data, and those areas are treated as attainment areas for regulatory purposes. In areas designated as nonattainment, the air quality with respect to the pollutant is worse than the NAAQS. These areas must take actions to improve air quality and attain the NAAQS within a certain period of time.

Part of documenting compliance with Massachusetts air regulations is to document that new emission sources associated with the project do not cause or contribute to an exceedance of the air quality standards set forth by the State and Federal regulations. The USEPA has developed a set of NAAQS for six air contaminants that are collectively known as criteria pollutants. These NAAQS are intended to protect public health and welfare. The six criteria pollutants are sulfur dioxide (SO_2); particulate matter (which is broken up into two categories: PM_{10} which is particulate having an aerodynamic diameter of 10 micrometers or less, and $PM_{2.5}$ which is particulate matter having an aerodynamic diameter of 2.5 micrometers or less); nitrogen dioxide (NO_2); carbon monoxide (CO); ozone (O_3); and lead (Pb). Coinciding with the NAAQS, the Commonwealth of Massachusetts has set forth its own state air quality standards called the Massachusetts Ambient Air Quality Standards (MAAQS) which are codified in 310 CMR 6.00. These MAAQS have recently been updated to reflect the more recent USEPA updates to the NAAQS. This update has removed the Annual PM_{10} standard and the 24-hour and Annual SO_2 standards which were revoked in the NAAQS in 2006 and 2010, respectively, from the MAAQS. In this report, the term "NAAQS" will refer to both sets of standards.

The NAAQS have been developed for various durations of exposure. The short-term standards typically refer to pollutant levels that are not to be exceeded except for a limited number of times per year. The long-term standards typically refer to pollutant levels that are not to be exceeded on an annual average basis. These standards can be further broken down into primary and secondary standards. Primary standards are intended to protect human health, including the health of "sensitive" populations such as asthmatics, children and the elderly. The secondary standards are intended to provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The NAAQS for criteria pollutants are shown in Table **5-2** below.

Table 5-2 National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$)	
		Primary	Secondary
CO	1-Hour	40,000[1]	Same
	8-Hour	10,000[1]	Same
Pb	Rolling 3-month avg.	0.15[2]	Same
NO_2	1-Hour	188[3]	None
	Annual	100[4]	Same
O_3	8-Hour	137.4[5]	Same
$PM_{2.5}$	24-Hour	35[6]	Same
	Annual	12[7]	15[7]
PM_{10}[9]	24-Hour	150[1]	Same
SO_2[10]	1-Hour	195.0[8]	None
	3-Hour	None	1,310[1]

1 Not to be exceeded more than once per year
2 Not to be exceeded
3 98th percentile of 1-hour daily maximum concentrations averaged over 3 years
4 Annual mean
5 Annual fourth-highest daily maximum ozone concentration, averaged over 3 years
6 98th percentile, averaged over 3 years
7 Annual mean, averaged over 3 years
8 99th percentile of 1-hour daily maximum concentrations averaged over 3 years
9 The Annual PM_{10} standard was revoked in 2006.
10 The 24-hour and Annual SO_2 standards were revoked in 2010.

An air quality impact analysis was performed for the new sources associated with this project to document compliance with the ambient air quality standards as well as the air toxics guidance (discussed in detail in Section 5.15). This air quality impact analysis is further discussed in Section 6.0 of this document.

5.2 Prevention of Significant Deterioration (PSD) Review

The PSD new source review program is a federally-mandated program review of new major stationary sources of criteria pollutants designed to maintain the NAAQS and prevent degradation of air quality in attainment/unclassifiable areas. The PSD program, which is implemented by the Massachusetts Department of Environmental Protection (MassDEP) in Massachusetts[3], applies to new major stationary sources and major modifications of existing major sources of air pollution in attainment/unclassifiable areas. The Facility is not an existing major source under PSD regulations and the new potential emissions from the stationary sources at the project do not exceed the applicable PSD major source emissions threshold of 250 tpy.

3 MassDEP administers the federal PSD program in accordance with the provisions of the April 11, 2011 PSD Delegation Agreement between MassDEP and EPA which states that MassDEP agrees to implement and enforce the federal PSD regulations as found in 40 CFR 52.21.

5.3 Non-Attainment New Source Review

If a major source of pollution is proposed in an area designated as nonattainment for a particular pollutant, the source is subject to Nonattainment New Source Review (NSR) for that pollutant. The federal Clean Air Act defines levels of nonattainment classifications for ozone ("O_3"). The entire Commonwealth of Massachusetts was previously classified as moderate nonattainment for 8-hour ozone. MassDEP has not taken any action to revise its Nonattainment NSR provisions as a result of the recent reclassification of most of the state to "unclassifiable/attainment" for 8-hr ozone. Therefore, the Nonattainment NSR provisions of MassDEP regulations at 310 CMR 7.00 Appendix A ("Appendix A") are still currently applicable state-wide to major sources of NO_x and VOC, as precursors to ozone.

The major source threshold for NO_x and VOC is currently 50 tpy in Massachusetts. The Non-Attainment NSR regulations do not apply to this project because the aggregate potential emissions from the proposed stationary sources at the facility are below the 50 tpy threshold for NO_x and the 50 tpy threshold for VOC.

5.4 New Source Performance Standards

The USEPA has implemented New Source Performance Standards (NSPS) at 40 CFR 60. These NSPS are intended to regulate air contaminants that may be emitted by various categories of newly constructed industrial or commercial equipment. None of the emission sources at the proposed facility fall into the categories and definitions of applicability in any of the established NSPS requirements. As such, the Facility is not subject to the requirements of any NSPS.

5.5 National Emission Standards for Hazardous Air Pollutants

Realizing that there were many pollutants that did not meet the specific requirements for developing a NAAQS, Congress included a section (Section 112) in the 1990 Amendments to the Clean Air Act that established a vehicle for the USEPA to develop air quality standards for potentially hazardous pollutants. Updates to regulations set forth in 40 CFR 61 and new regulations published in 40 CFR 63 were developed to implement Section 112 of the 1990 Amendments to the Clean Air Act. The regulations at 40 CFR 61 apply to specific pollutants and source categories that do not include the proposed facility. 40 CFR 63 established numerous National Emission Standards for Hazardous Air Pollutants (NESHAPs) to regulate Hazardous Air Pollutants (HAPs). HAPs refers to specified pollutants regulated under the Clean Air Act, including organic compounds and trace metals for which the USEPA has not established ambient air quality standards. HAPs are defined in detail within 42 U.S.C. 7412, and accompanying regulations in 40 CFR Part 63, Subpart C. There are no NESHAP requirements that are applicable to the facility as proposed.

5.6 Emissions Trading Programs

The Acid Rain Program (40 CFR 72), the Regional Greenhouse Gas Initiative (RGGI), and the Massachusetts NO_x Budget program apply to fossil fuel-fired combustion devices serving a generator with a nameplate capacity of greater than 25 MWe. This proposed facility does not include any fossil fuel-fired combustion devices serving a generator larger than 25 MWe, thus these three programs do not apply.

5.7 Visible Emissions

Massachusetts regulation (310 CMR 7.06) limits smoke to No. 1 on the Ringlemann Chart (except for six minutes in an hour up to No. 2 on the Chart) and limits opacity to 20% (except for two minutes in an hour up to 40%). These limits apply to stationary sources. The proposed facility is not expected to have any visible emissions impact from stationary sources and is expected to operate well below the visible emissions limits set forth in 310 CMR 7.06.

5.8 Noise Control Regulation and Policy

MassDEP regulations, set forth in 310 CMR 7.10 and as interpreted in the MassDEP Noise Policy 90-001, limit noise increases to 10 dBA over the existing L_{90} ambient level at the closest residence and at property lines. Conforms to the Noise Control Regulations and Policy are discussed in the DEIR.

5.9 Industry Performance Standards

Commercial, industrial, and institutional boilers have a compliance certification option, in lieu of air permitting, under the Massachusetts Environmental Results Program (ERP). This certification is required for boilers rated between 10 and 40 MMBtu/hr, if a project will not obtain a site-specific air plan approval for the source instead. The four (4) dryers and the boiler in the biosolids building and the space heaters in the glass processing buildings are exempt from this certification as they are below the threshold for inclusion in the program at 5 MMBtu/hr each and 3 MMBtu/hr respectively.

5.10 Air Plan Approval

The proposed Facility may be subject to MassDEP air plan approval (air permitting) requirements under 310 CMR 7.02. Key standards for approval are listed in 310 CMR 7.02 (4) for Limited Plan Approvals and 310 CMR 7.02 (5) for Comprehensive Plan Approvals. These standards typically include ensuring that these new stationary sources will be in compliance with all applicable federal and MassDEP air regulatory requirements, ensuring that the new sources will meet ambient air quality criteria, and requiring a certification that any facilities in Massachusetts owned or operated the applicant are in compliance with MassDEP air requirements (or are on an approved schedule to come into compliance). The proposed facility is may be subject to the MassDEP air plan approval requirements for a

Limited Plan Application (LPA) and, if applicable, will comply by filing the necessary documents and forms with MassDEP through the MassDEP/EEA ePLACE Portal. The LPA applicability threshold is one (1) tpy of any regulated pollutant, whereas the non-major Comprehensive Plan Application (nmCPA) applicability threshold is ten (10) tpy of any regulated pollutant.

The four (4) dryers and the boiler in the biosolids building are exempt from the air plan approval process as they are each rated below the 10 MMBtu/hr threshold for inclusion in the program. The cooling towers will comply with the listed exemption in 310 CMR 7.02(2)(b)6. The exemption applies to cooling towers with a maximum recirculation rate of 20,000 gpm (the current project design is 900 gpm) and requires the use of a drift eliminator, a non-chromium inhibitor, and enough of a bleed stream to limit the total dissolved solids (TDS) concentration in the recirculating water to 1,800 milligrams per liter (mg/L).

The entire project may, instead of being subject to the plan approval process, be deemed by MassDEP to be a de minimis source. This is because the emissions of each individual air pollutant from the stationary, non-combustion processes and sources, after addition of controls, will likely be below the plan approval threshold of one (1) ton per year. In this case the facility will be required by MassDEP to document de minimis status in writing and track actual emissions on a rolling 12-month basis to demonstrate ongoing de minimis status.

In addition to the federal and state limits and standards described above which are implemented through the MassDEP Air Plan Approval review, Massachusetts regulations require the application of Best Available Control Technology (BACT) for each regulated pollutant as discussed in Section 5.11 of this document. Application of BACT is reviewed by MassDEP during the air plan approval review process for stationary sources subject to that process.

5.11 Best Available Control Technology

Massachusetts BACT is based on the maximum degree of reduction of any regulated air contaminant that the MassDEP determines, on a case-by-case basis, is achievable taking into account energy, environmental, and economic impacts. A BACT determination can never result in a less stringent emission limitation than an applicable emission standard. Depending on the circumstances, BACT may parallel with the emission standard or may be more stringent than the emission standard. BACT itself is a standard that balances emission control benefits with technical feasibility, other environmental impacts, and costs. BACT for stationary sources subject to the MassDEP air plan approval process is addressed by the applicant in an air plan application.

5.12 Operating Permit and Compliance Assurance Monitoring

The proposed facility will not be subject to the requirements to obtain an operating permit as it is not a major source of emissions and no Federal regulations apply that require obtaining an operating permit (i.e., certain NSPS and NESHAP).

The Compliance Assurance Monitoring (CAM) requirements at 40 CFR 64 apply when an emission unit uses a control device to comply with certain emission limits, the potential emissions before control are above major source thresholds, and an operating permit does not specify a continuous compliance determination method, such as CEMS. No such sources exist at this facility and the proposed facility will not be required to obtain an operating permit; therefore, CAM does not apply.

5.13 Massachusetts Environmental Policy Act

The Massachusetts air plan approval regulations at 310 CMR 7.02 state that Massachusetts Environmental Policy Act (MEPA) requirements must be complied with before obtaining a plan approval. Per the MEPA Office website, MEPA requires that state agencies study the environmental consequences of their actions, including permitting and financial assistance. It also requires them to take all feasible measures to avoid, minimize, and mitigate damage to the environment.

MEPA further requires that state agencies "use all practicable means and measures to minimize damage to the environment," by studying alternatives to the proposed facility, and developing enforceable mitigation commitments, which will become conditions for the project if and when they are permitted. The project EENF, DEIR, and Final Environmental Impact Report (FEIR) have served, and will serve, as the MEPA compliance filings for the proposed facility.

5.14 Massachusetts Air Toxics Guidelines

Similar to the NAAQS discussed in Section 5.1, there are concentration thresholds for air toxics that are in place to protect air quality and human health. MassDEP has set forth guideline values known as the AALs and TELs to allow evaluation of the potential for human health risks associated with exposure from certain chemicals in the air.

MassDEP determines the AALs and TELS through an analysis of health effects. The first step in developing an AAL and TEL is to look at the carcinogenic and non-carcinogenic health effects of the chemicals.

Known or suspected carcinogenic health effects make up the basis of the Non-Threshold Effects Exposure Limits (NTELs) which are associated with a one in a million excess cancer risk over a lifetime of continuous exposure to the chemical.

The TEL addresses the non-cancer health effects and is intended to protect the general population from adverse health effects over a lifetime of exposure to the chemical. The TEL includes impacts on sensitive populations such as children and takes into account other pathways for exposure to the chemical than just ambient air. These other pathways that are evaluated in the TEL determination include indoor air, food, soil, and water.

MassDEP then compares the NTEL and TEL and assigns whichever concentration is lower as the AAL to make sure both cancer and non-cancer health impacts are mitigated to the fullest extent possible. Most AALs are based on the NTELs since the NTEL tends to be lower than the TEL for most compounds. For non-carcinogenic compounds, the AAL will be based on the TEL which results in the published AAL and TEL values being the same. It is important to note that exposure above an AAL or TEL does not necessarily mean there will be adverse health impacts, but rather that the risk of these adverse effects increases with the frequency of exposure above these levels.

In some cases, MassDEP did not have an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System (IRIS) was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations.

To address the air toxics guidelines, air toxic mass emission rates were estimated for both stationary and mobile sources at the proposed facility, ambient concentrations from all sources were modeled, and the maximum modeled concentrations were compared to the AAL (on an annual average basis) and TEL (on a short-term basis), or the RFC, to ensure there are no exceedances in the residential neighborhoods. In some cases, AALs and TELs were not available for pollutants of concern, and in those cases the RFC was used for comparison. The results of the air toxics analysis that contains the comparison to these AALs and TELs (and RFCs as appropriate) is found in Section 6.3 and Attachment D of this report.

6.0 AIR QUALITY IMPACTS ANALYSES & RESULTS

6.1 General Approach

As part of the environmental impact analysis for the proposed project, an air quality analysis has been completed to estimate the impacts of air pollutants on the nearby residential areas.

6.1.1 Modeling Methodology

To predict potential project-generated air quality impacts at nearby locations, USEPA has developed computer software to emulate or "model" dispersion of chemicals in the atmosphere. These models incorporate pollutant source characteristics, local meteorological data, digital location and terrain data, and a variety of control options to estimate pollutant concentrations at a given location. This technique is often required for sources of air pollution and the acceptable and appropriate methods are specified in detail in both USEPA regulations[4] and state modeling guidelines.[5]

The models and air quality modeling techniques are developed with a relatively highly conservative margin of error, such that results are generally shown to be higher or worse than actual atmospheric dispersion. This provides reasonable confidence that by showing compliance with applicable standards, that protection of public health and welfare is assured.

6.1.2 Air Quality Model Selection and Options

The USEPA's AERMOD model (Version 18081) was selected to predict concentrations from the stationary source related to the proposed project. AERMOD is the USEPA's preferred model for regulatory applications. The use of AERMOD provides the benefits of using the most current algorithms available for steady state dispersion modeling.

The AERMOD View graphical user interface (GUI) Version 9.7.0, created by Lakes Environmental, was used to facilitate model setup and post-processing of data. The AERMOD model was selected for this analysis because it:

- is the required USEPA model for all refined regulatory analyses for receptors within 50 km of a source;
- is a refined model for facilities with multiple sources, source types, and building-induced downwash;

4 40 CFR Part 51, Appendix W. Guideline on Air Quality Models

5 MassDEP, 2011: Modeling Guidance For Significant Stationary Sources Of Air Pollution, Massachusetts Department of Environmental Protection, Boston, MA 02108

- uses actual representative hourly meteorological data;
- incorporates direction-specific building parameters which can be used to predict impacts within the wake region of nearby structures;
- allows the modeling of multiple sources together to predict cumulative downwind impacts, if needed;
- provides for variable emission rates (though not applicable for this evaluation);
- provides options to select multiple averaging periods between one-hour and one year (scaling factors can be applied to adjust the one-hour impact to a peak impact less than one-hour); and,
- allows the use of large Cartesian and polar receptor grids, as well as discrete receptor locations.

Modeling was performed with all regulatory options set. Regulatory default options adopted for the model include:

- Use stack-tip downwash (except for building downwash). Stack-tip downwash is an adjustment of the actual stack release height for conditions when the gas exit velocity is less than 1.5 times the wind speed. For these conditions, the effective release height is reduced a bit, based on the diameter of the stack and the wind and gas exit velocity. This option applies to point sources only, such as stacks and vents.

- Use the missing data and calms processing routines. The model treats missing meteorological data in the same way as the calms processing routine, i.e., it sets the concentration values to zero for that hour and calculates the short-term averages according to USEPA's calms policy, as set forth in the Guideline on Air Quality Models (Appendix W to 40 CFR 51).

A complete description of the AERMOD dispersion model may be found in the AERMOD User's guide[6] and the AERMOD model implementation guide.[7]

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[6] USEPA, 2016: User's Guide for the AMS/EPA Regulatory Model – AERMOD. EPA-454/B-16-011. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

[7] USEPA, 2016: AERMOD Implementation Guide. EPA-454/B-16-013. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

6.1.3 Urban / Rural Analysis

The AERMOD model can assign sources to a rural or urban category to allow specified urban sources to use the effects of increased surface heating under stable atmospheric conditions. The **rural** dispersion classification was selected based on a visual inspection of the area within a three-kilometer radius of the proposed project site. The area within 3 km of the site is shown in **Figure 3**.

6.1.4 Background Air Quality Data

Ambient background concentrations (also known as "design values") are added to the source impacts to obtain total concentrations, which, in turn, are compared to the NAAQS and MAAQS.

The Clean Air Act and USEPA's authority to promulgate the NAAQS determine the statistical forms of the standards. These dictate exactly how the ambient monitored concentrations reflect an area's compliance with the NAAQS, as well as how a conducted air quality impact analysis complies with the NAAQS.

To attain the 24-hour $PM_{2.5}$ standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. For annual $PM_{2.5}$ averages, the three-year average of the highest annual observations must not exceed 12 $\mu g/m^3$. To attain the one-hour NO_2 standard, the three-year average of the 98th percentile of the maximum daily one-hour concentrations must not exceed 188 $\mu g/m^3$. The Annual NO_2 NAAQS of 100 $\mu g/m^3$ is never to be exceeded.

Background concentrations were determined from the closest and most representative available monitoring stations to the project. The closest monitor is at 659 Globe Street in Fall River, and this location samples SO_2 and $PM_{2.5}$. The next closest monitor is at Francis School in East Providence, RI, and this location samples for CO and NO_2. Finally, the closest monitor of PM_{10} is at the Urban League Building in Providence, RI. Monitor values were obtained from MassDEP Annual Air Quality Reports (2015-2017) and USEPA tabulated annual summary data of monitor concentrations available on their AIRDATA website (https://aqs.epa.gov/aqsweb/airdata/download_files.html#Annual). Although USEPA "design values" are published, they were found to be slightly lower than the calculated background values. Therefore, the calculated background values are conservatively used. The values are presented in **Table 6-1.**

Table 6-1 Background Concentrations

Pollutant	Avg. Time	Form	2015	2016	2017	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 (1)(5)	1-Hr (4)	99th %	25.9	18.3	29.3	24.5	196.0	13%
	3-Hr	H2H	21.7	13.1	23.3	23.3	1300.0	2%
PM_{10}	24-Hr	H2H	33	21	26	33.0	150.0	22%
$PM_{2.5}$	24-Hr (4)	98th %	21.7	14.3	16.5	17.5	35.0	50%
	Ann. (4)	H	7.1	5.3	6.8	6.4	12.0	53%
NO_2 (3)	1-Hr (4)	98th %	79.5	67.3	74.1	73.6	188.0	39%
	Ann.	H	14.4	12.5	12.3	14.4	100.0	14%
CO (2)	1-Hr	H2H	2005.5	1547.1	1501.3	2005.5	40000.0	5%
	8-Hr	H2H	1260.6	1031.4	1031.4	1260.6	10000.0	13%

Notes:

From MassDEP Air Quality Reports and EPA's Airdata Website

(1) SO_2 reported ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 2.62 $\mu g/m^3$.

(2) CO reported in ppm. Converted to $\mu g/m^3$ using factor of 1 ppm = 1146 $\mu g/m^3$.

(3) NO_2 reported in ppb. Converted to $\mu g/m^3$ using factor of 1 ppm = 1.88 $\mu g/m^3$.

(4) Background level is the average concentration of the three years.

(5) The 24-hour and Annual standards were revoked by U.S. EPA on June 22, 2010, Federal Register 75-119, p. 35520.

In 2010 the USEPA finalized and promulgated new 1-hour NAAQS for NO_2. There have been several clarification memos released by USEPA regarding application of Appendix W modeling guidance for the new 1-hour standards. On March 1, 2011, USEPA released a memo recommending for NO_2, to use the latest three (3) year average background values that were calculated based on season and hour day.[8]

The ambient monitored NO_2 data were obtained from the USEPA[9] for the Francis School, Rockefeller Library and Hayes Road monitors. The data were obtained and processed I accordance with MassDEP and USEPA procedures. The seasonal-hourly background concentrations used in the NO_2 modeling are presented in **Table 6-2**.

8 USEPA, 2011; Memorandum - Additional Clarification Regarding Application of Appendix W Modeling Guidance for the NO_2 National Ambient Air Quality Standard. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. March 1, 2011.

9 https://aqs.epa.gov/aqsweb/airdata/download_files.html#Raw

Table 6-2 NO_2 Background Concentrations by Season and Hour

Hour	Value (ppb)	Hour	Value (ppb)	Hour	Value (ppb)	Hour	Value (ppb)	Hour	Value (ppb)	Hour	Value (ppb)
WINTER											
1	30.90	2	31.30	3	32.00	4	31.70	5	33.70	6	33.80
7	35.70	8	34.60	9	33.00	10	30.60	11	23.90	12	20.30
13	19.40	14	19.30	15	19.30	16	20.70	17	20.00	18	26.10
19	29.20	20	29.40	21	31.90	22	34.00	23	32.90	24	32.60
SPRING											
1	27.20	2	27.60	3	27.70	4	29.80	5	31.20	6	33.50
7	33.40	8	28.70	9	19.60	10	16.70	11	16.70	12	16.70
13	16.70	14	16.70	15	16.70	16	16.70	17	16.70	18	16.70
19	16.70	20	17.80	21	18.30	22	20.20	23	22.90	24	23.20
SUMMER											
1	16.70	2	16.70	3	16.70	4	16.70	5	16.70	6	16.70
7	16.70	8	16.70	9	16.70	10	16.70	11	16.70	12	16.70
13	16.70	14	16.70	15	16.70	16	16.70	17	16.70	18	16.70
19	16.70	20	16.70	21	16.70	22	16.70	23	16.70	24	16.70
FALL											
1	22.90	2	22.70	3	21.20	4	20.10	5	20.10	6	21.40
7	21.90	8	24.50	9	24.00	10	20.10	11	16.70	12	16.70
13	16.70	14	16.70	15	16.70	16	16.70	17	16.70	18	17.80
19	21.50	20	23.10	21	25.00	22	24.50	23	23.30	24	23.30

6.1.5 Meteorological Data for Modeling

Five years (2013-2017) of meteorological data were used in the analysis. Surface data from New Bedford Regional Airport which is the closest and most representative meteorological station (located approximately 2.7 miles south of the proposed project) and upper air sounding data from Chatham, MA have been processed into AERMOD-ready input files using version 18081 of AERMET. Based on direction from MassDEP, the U-star adjustment was used.[10] Raw 1-minute data were included using version 15272 of the AERMINUTE preprocessor to reduce the incidence of "calm" winds. A 0.5 m/s calm wind threshold was input.

AERSURFACE (version 13016) processes digital land cover data to determine the surface characteristics for use in AERMET. These parameters include surface roughness, albedo, and Bowen ratio. Based on the climatological record for New Bedford from 1996 to 2017

[10] Personal communication, Epsilon Associates, Inc. (Joseph Sabato) and MassDEP (Glenn Pacheco), November 10, 2017.

annual precipitation data, 2015, 2016, and 2017 are considered dry, while 2013 is average and 2014 is wet. If the total precipitation was between the 30th and 70th percentile it was considered “average”, if it was less than 30th percentile "dry" and if it was greater than 70th percentile, “wet”. Other options include the use of the Modify Option for the Upper Air Soundings and inputs of a base elevation of 24 meters and an anemometer height of 7.92 meters.

Continuous snow cover was determined from data downloaded from the National Operational Hydrologic Remote Sensing Center Interactive Snow Information Website (http://www.nohrsc.noaa.gov/interactive/html/graph.html). These annual datasets contain both observed and modeled snow depths for every hour of a year at a prescribed location. For New Bedford Regional Airport, only modeled data are available. The number of hours of modeled snow depth greater than zero was calculated for each month. The following rules were applied:

- Any month having greater than 1 inch of snow cover for greater than 60% of the hours was considered having “Continuous Snow Cover”
- April and May are always considered “Transitional Spring”
- June/July/August are always considered “Midsummer”
- September and October are always considered “Autumn”
- November through March without snow cover is considered “Late Autumn/Winter Without Continuous Snow Cover”

The results of the precipitation analysis and snow cover analysis are presented in **Attachment C** to this report.

Testing of the processed meteorological data found that the five-year period of 43,824 total hours, 514 calm hours were identified, and 387 (0.88%) missing hours were identified. Thus, these data should be deemed complete and representative for air quality modeling of the proposed project site. Winds are generally out of the west-northwest and southwest.

A wind rose showing the distribution of wind speed and direction is presented in **Figure 4**.

6.1.6 Receptors

A total of 6,499 receptors were modeled. Of this total, 6,496 are in an 11 km by 11 km nested grid encompassing 121 square kilometers and extending roughly 5.5 kilometers in cardinal directions from the facility. The grid consists of a 1 km by 1 km bounding box with 20-meter spacing to encompass the neighborhood to the east of project site. The remaining receptors are defined by the following receptor distance and density:

Distance from Bounding Box (m)	Receptor Spacing (m)
200	20
500	50
1000	100
2000	200
5000	500

It is expected that with low release temperatures low exit velocities, and downwash influences, maximum impacts would be relatively close to the facility. The 20-meter receptor spacing locates a receptor at practically every house in the neighborhood to the east.

Receptors within the facility property were removed. USEPA recently issued draft guidance redefining "ambient air". A physical barrier (fence) is no longer required and USEPA is proposing that non-physical "measures" (signage, surveillance, natural obstructions) may be adequate to prevent the general public from accessing "ambient air" on private property. It is assumed that the facility will take appropriate measures to limit access to the property.

Four "sensitive" receptor locations were also included. A discrete receptor was placed at each of the following locations: the Casimir Pulaski Elementary School on Braley Road, the Elwyn G Campbell Elementary School on Essex Street, and the Creative Playschool on Acushnet Avenue. A grid receptor located adjacent to the Northstar Learning Center on Samuel Barnet Boulevard was used to represent that location.

Receptor locations are shown in **Figure 5**.

Receptor terrain elevations were included in the refined analysis, as is required for regulatory refined modeling. One-third arc-second terrain data were obtained from the U.S.G.S National Map Seamless Server according to guidance set forth by USEPA.[11] Source, building, and receptor elevations are processed using the AERMAP (version 18081) processor by way of the Lakes AERMOD View interface.

6.1.7 Good Engineering Practice Stack Height Determination

AERMOD requires direction specific building parameters to adequately incorporate the aerodynamic effects of buildings on plume dispersion. The most recent version (04274) of the Building Profile Input Program with the Prime downwash algorithms (BPIP-Prime) is

11 USEPA, 2009: AERMOD Implementation Guide. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

used to calculate these parameters. BPIP-Prime uses the stack information, as well as the height information of nearby buildings to calculate the required heights, widths, and setbacks required to account for building downwash.

The property will consist of a number of buildings and structures. Given the locations of the stacks, they are probable to be subject to aerodynamic influences that would affect the dispersion of the stack exhaust. Thus, the proposed MSW tipping and existing MSW processing buildings, the proposed biosolids building, the proposed glass processing building, the proposed solar canopies, and the industrial building to the south of the property were input into the BPIP Prime program to create direction-specific dimension inputs for the AERMOD model. Most building tier heights were provided. Other heights were conservatively estimated. Other nearby buildings (i.e., residences) were determined to be at a distance where they would not affect dispersion. Building tiers are shown in **Figure 6**.

6.1.8 Selection of Sources to Include in Analyses

On-site stationary and heavy mobile equipment sources, and truck traffic both on-site and off-site, were included in the analysis. This represents a broader inclusion of sources than is typically considered in a MassDEP air plan application air dispersion modeling analysis. For air permitting purposes, only air emissions from stationary sources, such as the biosolids process and combustion sources, the MSW tipping and processing sources, on-site paved roads, and the glass processing sources, are included. This more inclusive analysis allows the project to be designed holistically to minimize environmental impacts and give a more complete picture of all significant project related air impacts.

6.1.9 Selection of Pollutants to Include in Analyses and Criteria

Air pollutants included in this analysis are the five main criteria pollutants (SO_2, NO_2, $PM_{2.5}$, PM_{10}, and CO), and MassDEP air toxics (including lead). Odor impacts are also quantified. The selection of pollutants to include in the ambient air and odor impacts analysis is discussed in Section 4.0.

The NAAQS for the criteria pollutants are the health protective criteria for those pollutants. The MassDEP AALs and TELs, and RFCs, are the health protective criteria for air toxics. The AALs and TELs, and RFCs as appropriate, are listed with the air toxics analysis results in **Attachment D**. The odor criterion used for this analysis is 5 D/T, on a 5-minute average. The selected odor criterion is discussed further in Section 6.4 below.

6.2 Criteria Pollutants

Air quality impacts and results for criteria pollutants, as determined using air dispersion modeling, are presented in this section. Criteria pollutants evaluated are NO_2, $PM_{2.5}$, PM_{10}, CO, and SO_2. The selection of criteria pollutants for evaluation is discussed in the introductory portion of Section 4.0. The NAAQS are the standards used for evaluating criteria pollutant impacts, and these standards are discussed in Section 5.1.

Project mobile and stationary combustion sources and dust emitting sources generate criteria pollutants, and as such are included in the analysis. These sources are described in Section 3.0 and the derivation of emission rates from these sources are discussed in detail in Section 4.1 (stationary heating sources), Section 4.3 (cooling towers), Section 4.4 (MSW tipping and processing), 4.5 (glass processing), 4.6 (paved roads), and Section 4.7 (on- and off-site mobile sources).

6.2.1 Nitrogen Dioxide (NO_2)

Oxides of nitrogen (NO_x) are emitted from combustion exhaust. For this facility, sources of NO_x are the biosolids boiler and dryers, the glass processing building's space heaters, and mobile sources. USEPA has promulgated NAAQS to protect public health and property from impacts associated with NO_x emissions.

NO_x to NO_2 Conversion

Though the NAAQS are based on NO_2 concentrations, the majority of NO_x emissions are in the form of nitric oxide (NO) rather than NO_2. Oxides of nitrogen undergo chemical conversion with atmospheric ozone to form NO_2. The AERMOD model incorporates a number of different routines to model this conversion:

- Full Conversion of NO_x to NO_2
- The use of the Ambient Ratio Method (ARM2)
- The use of more sophisticated methods incorporating ambient ozone levels which factor into the chemical conversion process: the Ozone Limiting Method (OLM) and the Plume Volume Molar Ratio Method (PVMRM)

For this analysis, the OLM routine for NO_x to NO_2 conversion was used with default ratios of 0.5 and 0.9 for minimum and maximum, respectively and concurrent (2013-2017) monitored ozone concentrations from hourly concentrations from the Fall River monitor were used. If data were unavailable from Fall River, data were substituted from the Fairhaven, Francis School in Providence or the Harrison Avenue in Boston ozone monitors. If data were unavailable from all four monitors, data was substituted from a previous hour from the Harrison Avenue monitor.

Results

To attain the one-hour NO_2 standard, the three-year average of the 98th percentile of the maximum daily one-hour concentrations must not exceed 188 $\mu g/m^3$. This metric is represented in the modeling analysis as the maximum of the eighth-highest (H8H) 1-hour concentrations averaged over five years (as recommended by USEPA).[12] The Annual NO_2 NAAQS of 100 $\mu g/m^3$ is never to be exceeded and is confirmed by showing that the annual average for any individual year is below the 100 $\mu g/m^3$ value.

The air quality analysis shows a five-year average of the 1-hour H8H NO_2 impact of 177.0 $\mu g/m^3$, which includes background. This value is less than the applicable 1-hour NO_2 NAAQS of 188 $\mu g/m^3$.

A maximum predicted annual concentration of 46.6 $\mu g/m^3$, also which includes background. This value is far less than the applicable annual average NO_2 NAAQS of 100 $\mu g/m^3$.

Based on these results, it can be concluded that the project meets the applicable standards for NO_2.

6.2.2 Particulate Matter less than 2.5 μm in Diameter ($PM_{2.5}$)

Particulate matter is emitted from both material handling as well as from combustion exhaust. For this facility, sources of $PM_{2.5}$ are the biosolids boiler and dryers, the glass processing building's space heaters, the MSW tipping and processing areas, the glass processing areas, paved roads, the cooling towers, and mobile sources. USEPA has also promulgated NAAQS to protect public health and property from impacts associated with $PM_{2.5}$ emissions.

Results

To attain the 24-hour $PM_{2.5}$ standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 $\mu g/m^3$. This metric is represented in the modeling analysis as the maximum of the eighth-highest (H8H) 24-hour concentrations averaged over five years (as recommended by USEPA).[13] For annual $PM_{2.5}$ averages, the three-year average of the highest annual observations must not exceed 12 $\mu g/m^3$. When modeling with

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[12] USEPA, 2010: Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. June 28, 2010.

[13] USEPA, 2010: Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. March 23, 2010.

National Weather Service meteorological data, rather than onsite measured data, USEPA recommends the maximum modeled value averaged over five years for determining compliance with this annual standard.

The air quality analysis shows a five-year average of the 24-hour H8H $PM_{2.5}$ impact of 7.43 $\mu g/m^3$. With the addition of the 17.5 $\mu g/m^3$ design value, a total $PM_{2.5}$ impact of 24.9 $\mu g/m^3$ is predicted, well below the NAAQS of 35 $\mu g/m^3$.

The five-year average of the annual concentrations shows a modeled impact of 2.82 $\mu g/m^3$ at the same location as above. Combined with a design value of 6.4 $\mu g/m^3$, a total annual $PM_{2.5}$ impact of 9.2 $\mu g/m^3$ is predicted, again well below the NAAQS of 12 $\mu g/m^3$.

Based on these results, it can be concluded that the project meets the applicable standards for $PM_{2.5}$.

6.2.3 Particulate Matter less than 10 μm in Diameter (PM_{10})

Particulate matter is emitted from both material handling as well as from combustion exhaust. For this facility, sources of PM_{10} are identical to the sources of $PM_{2.5}$. USEPA has also promulgated NAAQS to protect public health and property from impacts associated with PM_{10} emissions.

Results

To attain the 24-hour PM_{10} standard, the monitored concentrations must not exceed 150 $\mu g/m^3$ more than once per year on average over 3 years. This metric is represented in the modeling analysis as the maximum of the sixth-highest (H6H) 24-hour concentration over a modeled five year period.

The air quality analysis shows a H6H 24-hour PM_{10} impact of 38.0 $\mu g/m^3$. With the addition of the 33.0 $\mu g/m^3$ design value, a total PM_{10} impact of 71.0 $\mu g/m^3$ is predicted, well below the NAAQS of 150 $\mu g/m^3$.

Based on these results, it can be concluded that the project meets the applicable standard for PM_{10}.

6.2.4 Carbon Monoxide (CO)

Carbon monoxide emissions (CO) are emitted from combustion exhaust. For this facility, sources of CO are the biosolids boiler and dryers, the glass processing building's space heaters, and mobile sources. Although carbon monoxide is quite harmful in higher concentrations in confined spaces, it is rare to see outdoor ambient concentrations near the NAAQS level.

Results

To attain the 1-hour and 8-hour CO standards, the monitored concentrations must not be exceeded than once per year. This metric is represented in the modeling analysis as the maximum of the second-highest (H2H) 1-hour or 8-hour concentrations over a modeled five year period.

The air quality analysis shows a H2H 1-hour CO impact of 156.40 $\mu g/m^3$. With the addition of the 2005.5 $\mu g/m^3$ design value, a total 1-hour CO impact of 2161.9 $\mu g/m^3$ is predicted, well below the NAAQS of 40,000 $\mu g/m^3$.

For the 8-hour CO standard, a H2H impact of 96.6 $\mu g/m^3$. With the addition of the 1260.6 $\mu g/m^3$ design value, a total 8-hour CO impact of 1357.2 $\mu g/m^3$ is predicted, well below the NAAQS of 10,000 $\mu g/m^3$.

Based on these results, it can be concluded that the project meets the applicable standards for CO.

6.2.5 Sulfur Dioxide (SO_2)

Sulfur dioxide is a product of combustion of fuels containing sulfur. Historically coal, diesel fuel, and heavy fuel oil has been the primary cause of SO_2 emissions but the trend towards low-sulfur fuels has significantly reduced SO_2 emissions in this region. Natural gas also contains trace amounts of sulfur, far less than the liquid petroleum fuels. For this project, all the stationary combustion sources are natural gas-fired. The mobile sources (loaders and onroad trucks) are required to use ultra-low sulfur diesel fuel to reduce SO_2 emissions.

Results

To attain the one-hour SO_2 standard, the three-year average of the 99th percentile of the maximum daily one-hour concentrations must not exceed 195 $\mu g/m^3$. This metric is represented in the modeling analysis as the maximum of the fourth-highest (H4H) 1-hour concentrations averaged over five years (as recommended by USEPA). To attain the 3-hour SO_2 standard, the monitored concentrations must not be exceeded than once per year. This metric is represented in the modeling analysis as the maximum of the second-highest (H2H) 3-hour concentration over a modeled five year period.

The air quality analysis shows a five-year average of the 1-hour H4H SO_2 impact of 0.67 $\mu g/m^3$, which includes background. With the addition of the 24.5 $\mu g/m^3$ design value, a total 1-hour SO_2 impact of 25.2 $\mu g/m^3$ is predicted. This value is less than the applicable 1-hour SO_2 NAAQS of 195 $\mu g/m^3$.

The air quality analysis shows a H2H 3-hour SO_2 impact of 0.44 $\mu g/m^3$. With the addition of the 23.3 $\mu g/m^3$ design value, a total 3-hour SO_2 impact of 23.8 $\mu g/m^3$ is predicted, well below the NAAQS of 1300 $\mu g/m^3$.

Based on these results, it can be concluded that the project meets the applicable standards for SO_2.

6.2.6 Sensitive Locations (Receptors)

For the four sensitive locations described in Section 6.1.6, all predicted criteria pollutant concentrations are well below applicable standards. The highest concentrations, as a percentage of NAAQS, are for 24-hour PM2.5. All modeled 24-hour PM2.5 concentrations at the sensitive receptors are well below 1 $\mu g/m^3$. With background of 17.5 $\mu g/m^3$ added, concentrations are approximately 50% of the 24-hour PM2.5 standard of 35 $\mu g/m^3$. Predicted concentrations for all other criteria pollutants at each of the four sensitive receptors are all below 45% of their applicable standards.

6.2.7 Additional Details

As detailed above, all criteria pollutants which are emitted from the Project and which were evaluated comply with the NAAQS. Further information on the modeled concentrations of criteria pollutants relative to the NAAQS is presented in tabular format in **Attachment C**.

6.3 Air Toxics

Air quality impacts and results for air toxics, as determined using air dispersion modeling, are presented in this section. A large number of air toxics were evaluated. The selection of criteria pollutants for evaluation is discussed in the introductory portion of Section 4.0. The TELs, AALs, and RFCs are the standards used for evaluating air toxics impacts, and these standards are discussed in Section 5.14.

Project mobile and stationary combustion sources and biosolids process sources generate air toxics pollutants, and as such are included in the analysis. These sources are described in Section 3.0 and the derivation of emission rates from these sources are discussed in detail in Section 4.1 (stationary heating sources), Section 4.2 (biosolids process sources), and Section 4.7 (on- and off-site mobile sources).

The results of the air toxics analysis, using AERMOD air dispersion modeling and comparison of the maximum concentration impacts to the AALs and TELs (or RFCs, as appropriate), are included in tabular form in **Attachment D** to this report. No air toxic exceeds the AALs or TELs (or RFCs, as appropriate). Based on these results, it can be concluded that the project satisfies criteria for air toxics and, in addition, conforms to USEPA health protective criteria where Massachusetts guidelines are not published.

6.4 Odor

In Massachusetts, odor is regulated under 310 CMR 7.09 in that operations that emit odors shall not permit their emissions to "cause a condition of air pollution." A Draft Odor Policy for Composting Facilities was published by MassDEP in January 1996. This draft guidance document recommended a minimum design standard benchmark of 5 D/T, presumably on a 5-minute average basis. The odor impacts from this project are compared to this criterion.

D/T is a dimensionless ratio defined as the volume of dilution air divided by the volume of odorous air, or commonly described as the number of equivalent volumes of clean air which must be added to an odorous volume such that the odor is undetectable to the average person. Thus, a higher D/T value indicates that a sample must be diluted many times to become undetectable, indicating a stronger sample. Conversely, a weak sample would require only a few volumes to be introduced to make the odor sample undetectable.

An "odor unit per second" (OU/s) is equivalent to a mass emission rate for odor and is calculated by multiplying the odor source concentration (D/T, a dimensionless number) by the associated exhaust flow rate (cubic meters per second).

Odor is highly subjective and highly individualized. One person can find a smell tolerable or indifferent, while another finds the same smell highly offensive. Some individuals are capable of detecting odors that others cannot. Additionally, the criteria of what defines a "nuisance" are also subjective. Recurring impacts are likely far more offensive than rare or single occurrences. Therefore, the maximum predicted impact may not necessarily describe the total "nuisance" of the emitted odor.

Since dispersion modeling calculates hourly concentrations, the 1/5th (0.20 exponent) power law is typically used to convert from 1-hour to shorter minute averages.[14] The formula is often expressed as:

$$C_{new} = C_{old}\left(\frac{T_{old}}{T_{new}}\right)^{q}$$

Where "C_{new}" and "C_{old}" are the concentrations at two averaging times, "T_{new}" and "T_{old}" are the corresponding averaging times, and "q" is a value between 0.17 and 0.20.

Since the air dispersion modeling results are stated on a 1-hour average basis (60-minute average), a scaling factor is required to assess the resulting concentrations on a 5-minute average basis. The following power law and resulting scaling factor of 1.64 were used in this analysis.

---

14 Wark, K. and C. Warner, 1981. Air Pollution: Its Origin and Control, 2nd Edition, Harper Collins Publishers.

$$\left(\frac{60\ minutes}{5\ minute}\right)^{0.2} = 1.64$$

As an example, a D/T of 3.04 on a 1-hour average would be equivalent to a D/T of 5 on a 5-minute average (3.04 x 1.64 = 5).

For the stack and odor control design criteria, the following power law and resulting scaling factor of 2.27 were used in this analysis.

$$\left(\frac{60\ minutes}{1\ minute}\right)^{0.2} = 2.27$$

As an example, a D/T of 0.441 on a 1-hour average would be equivalent to a D/T of 1 on a 1-minute average (0.441 x 2.27 = 1).

The above two examples illustrate, on an hourly basis, a 1 D/T, 1-minute average criterion is almost an order of magnitude more stringent than a 5 D/T, 5-minute average criterion.

6.4.1 Methodology

The criterion used in this analysis to determine that the project is not a nuisance source of odors, is for maximum 5-minute odor concentrations to be at or below 5 D/T. Odor concentrations predicted to exceed this threshold do not necessarily constitute an unfavorable odor impact. Nor do concentrations below this threshold imply that one will never sense the nuisance odor. Atmospheric dispersion is far more complicated than the models can mathematically simulate. Predicted results near the threshold indicate a reasonable effort to control odor migration offsite.

An odor concentration threshold of 1 D/T, on a 1-minute average basis, is the criterion used in this analysis for *design* of stacks and odor controls to avoid nuisance odor impacts in the nearby residential neighborhoods. This stringent criterion has been used as a design benchmark and is more conservative than the MassDEP Draft Policy.

Modeling analyzed odor emission rates (OU/s) from the two distinct odor-producing processes onsite: MSW tipping and processing, and biosolids processing. Since these two types of sources each produce separately distinguishable odors, they were analyzed individually. That is, odors associated with MSW tipping and processing have different recognizable properties compared to those associated with biosolids processing.

6.4.2 Results

The results of the predicted odor impacts are tabulated below in Table 6-3.

Table 6-3 Summary of Predicted Odor Impacts

Source	Criterion (Note 1)	Receptor	Number of Predicted Events over 5 years of modeled weather data (Note 2)
Biosolids process	Concentration over 5 D/T, 5-minute average	Anywhere offsite	0
Biosolids process	Concentration over 1 D/T, 1-minute average	Any residential neighborhood	0
MSW process	Concentration over 5 D/T, 5-minute average	Anywhere offsite	0
MSW process	Concentration over 1 D/T, 1-minute average	Any residential neighborhood	0

Notes:

(1) D/T is a dimensionless ratio defined as the volume of dilution air divided by the volume of odorous air, or commonly described as the number of equivalent volumes of clean air which must be added to an odorous volume such that the odor is undetectable to the average person. The 5 D/T criterion is from a draft MassDEP policy for composting, and the 1 D/T criterion is a design benchmark that is more conservative than the draft MassDEP policy.

(2) Modeled concentration is the highest predicted concentration in ambient air at any of 6500 receptors, over 5 years of weather conditions.

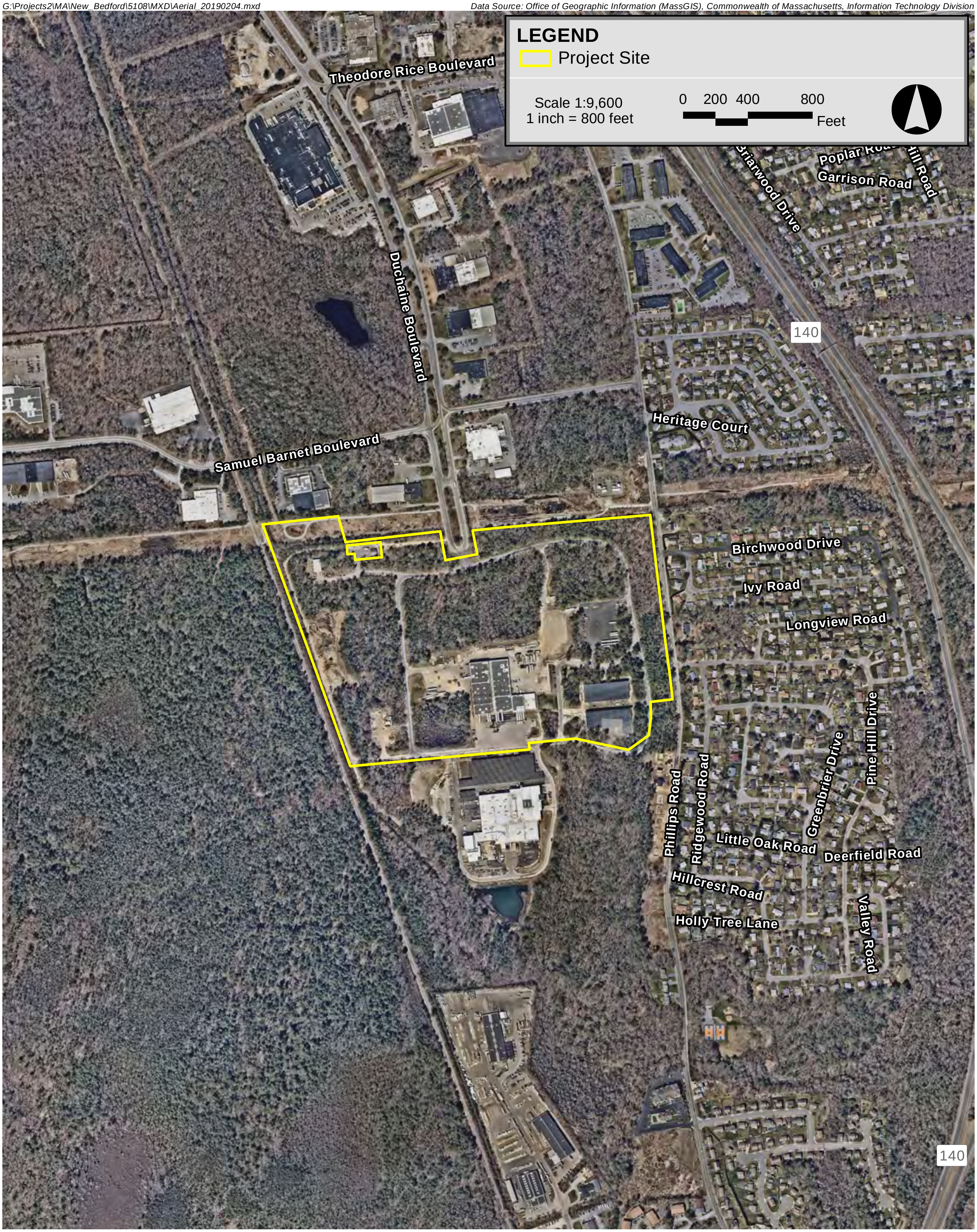
6.4.3 Odor Conclusions

The proposed project has been specifically designed to avoid causation of odor "nuisance" conditions in the residential neighborhoods. The biosolids odor will be managed by use of odor control technologies (ionization and a biofilter with carbon/zeolite polishing, or equal) and by stacks designed with good dispersion characteristics (stack heights 10-feet above the biosolids building with relatively high exit velocities). The MSW odor will be managed by use of high dilution air flows and by stack designs and locations that enhance odor dispersion (clustered, tall stacks 30-feet above the MSW buildings).

6.5 General Conclusions

The predicted air pollutant and odor concentrations are shown to be below the applicable NAAQS, MassDEP AALs and TELs (and RFCs, as applicable), and protective odor concentration criterion, using the USEPA AERMOD model. Therefore, it can be concluded that the proposed project as designed does not cause or contribute to a condition of air pollution in the area.

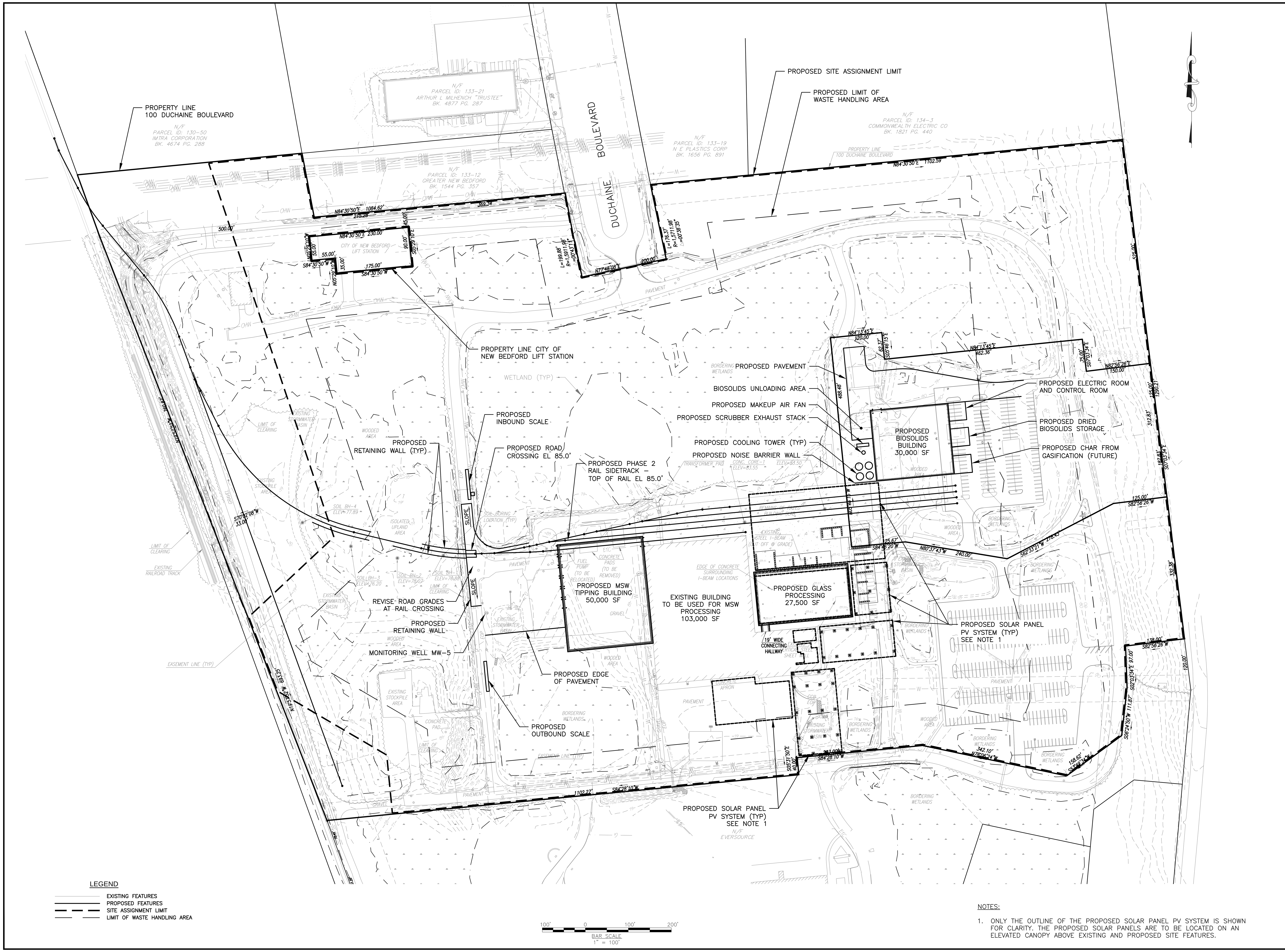
Figures



Parallel Products New Bedford, Massachusetts

Epsilon ASSOCIATES INC.

Figure 1
Aerial Locus Map



NOTES:

1. ONLY THE OUTLINE OF THE PROPOSED SOLAR PANEL PV SYSTEM IS SHOWN FOR CLARITY. THE PROPOSED SOLAR PANELS ARE TO BE LOCATED ON AN ELEVATED CANOPY ABOVE EXISTING AND PROPOSED SITE FEATURES.

SITE

LOCUS MAP NOT TO SCALE

Green Seal Environmental, Inc.
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: 508-888-6034
Fax: 508-888-1506

These drawings are the property of the Design Engineer, Green Seal Environmental, Inc. Unauthorized reproduction for any purpose is an infringement upon copyright laws. Violators will be subject to prosecution.

Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT
A	2/4/2019	ISSUED FOR PERMITTING

PURPOSE: PERMITTING

LOCUS: 100 DUCHAINE BOULEVARD NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS, LLC

DRAWING TITLE: PHASE 2 SITE PLAN

CAD TECH:	CHECKED BY:
T. JANICKI	

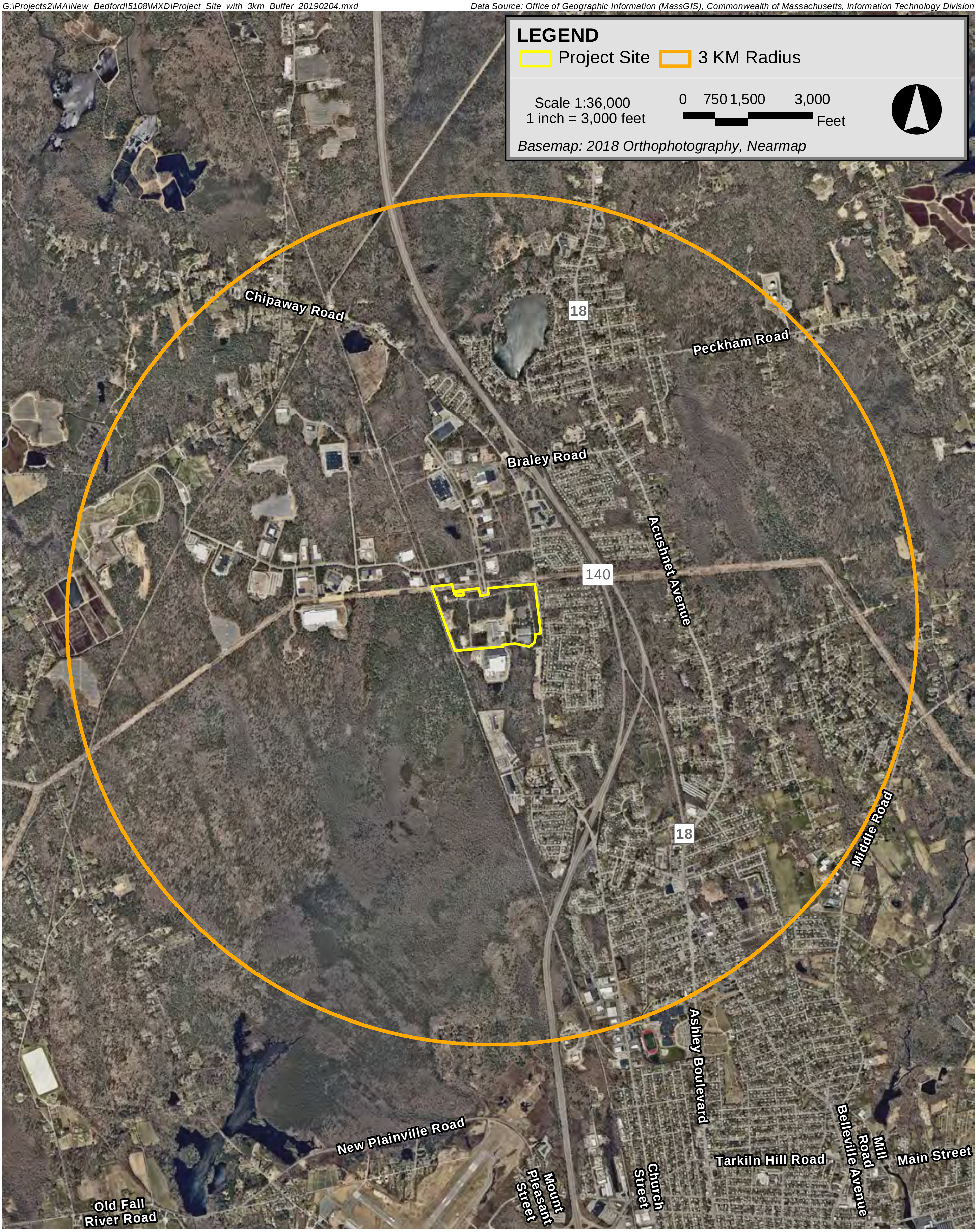
ENGINEER:	DATE:
W. HALL	2/1/2019

SCALE: 1"=100'

SHEET: C-2A

Figure 2
Conceptual Layout / Phase 2 Site Plan
(Green Seal Environmental, Inc.)

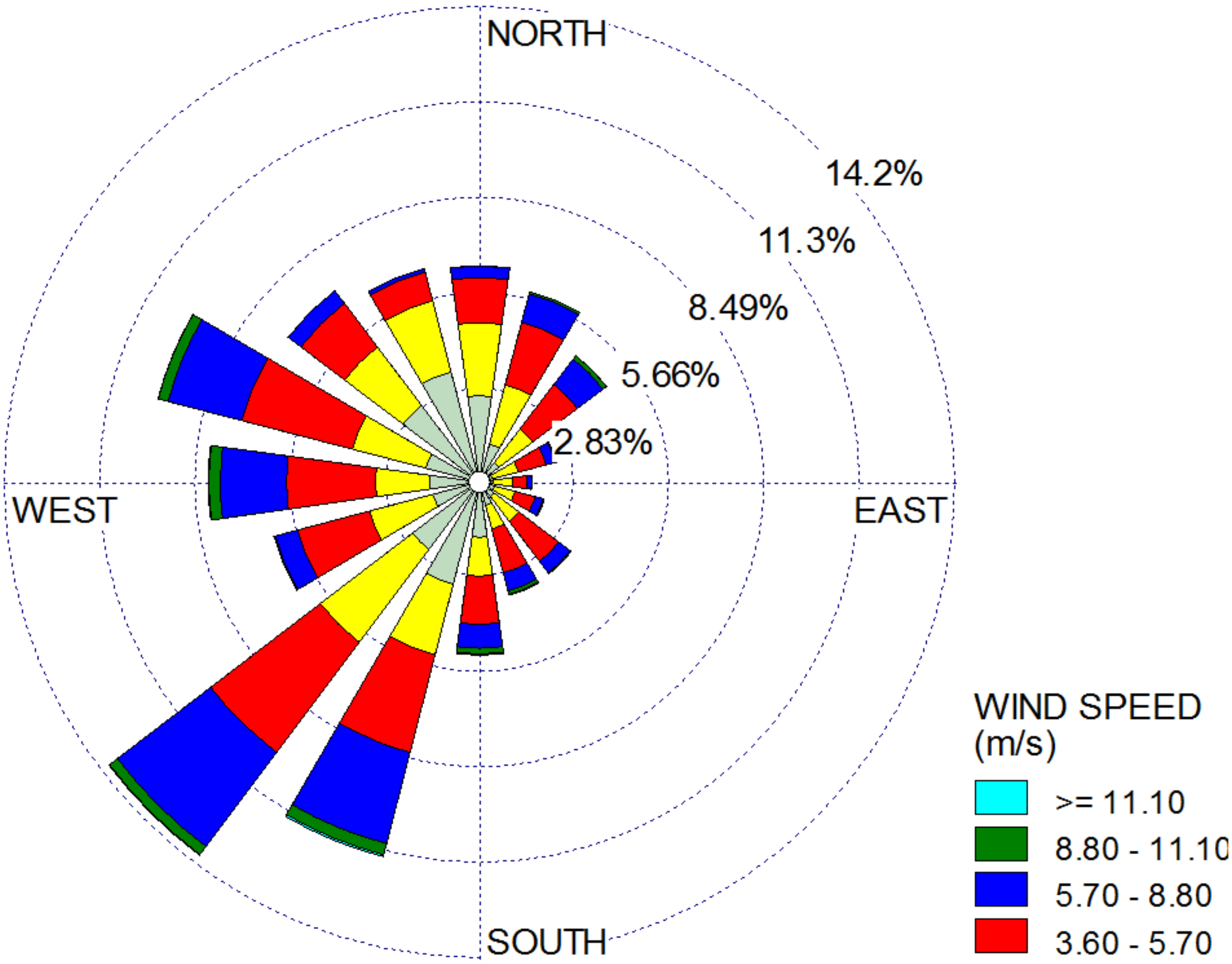
Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division



Parallel Products **New Bedford, Massachusetts**

Figure 3

Proposed Project Site and 3 Kilometer Radius



Parallel Products of New England   New Bedford, Massachusetts

Figure 4

2013-2017 New Bedford Regional Airport Wind Rose

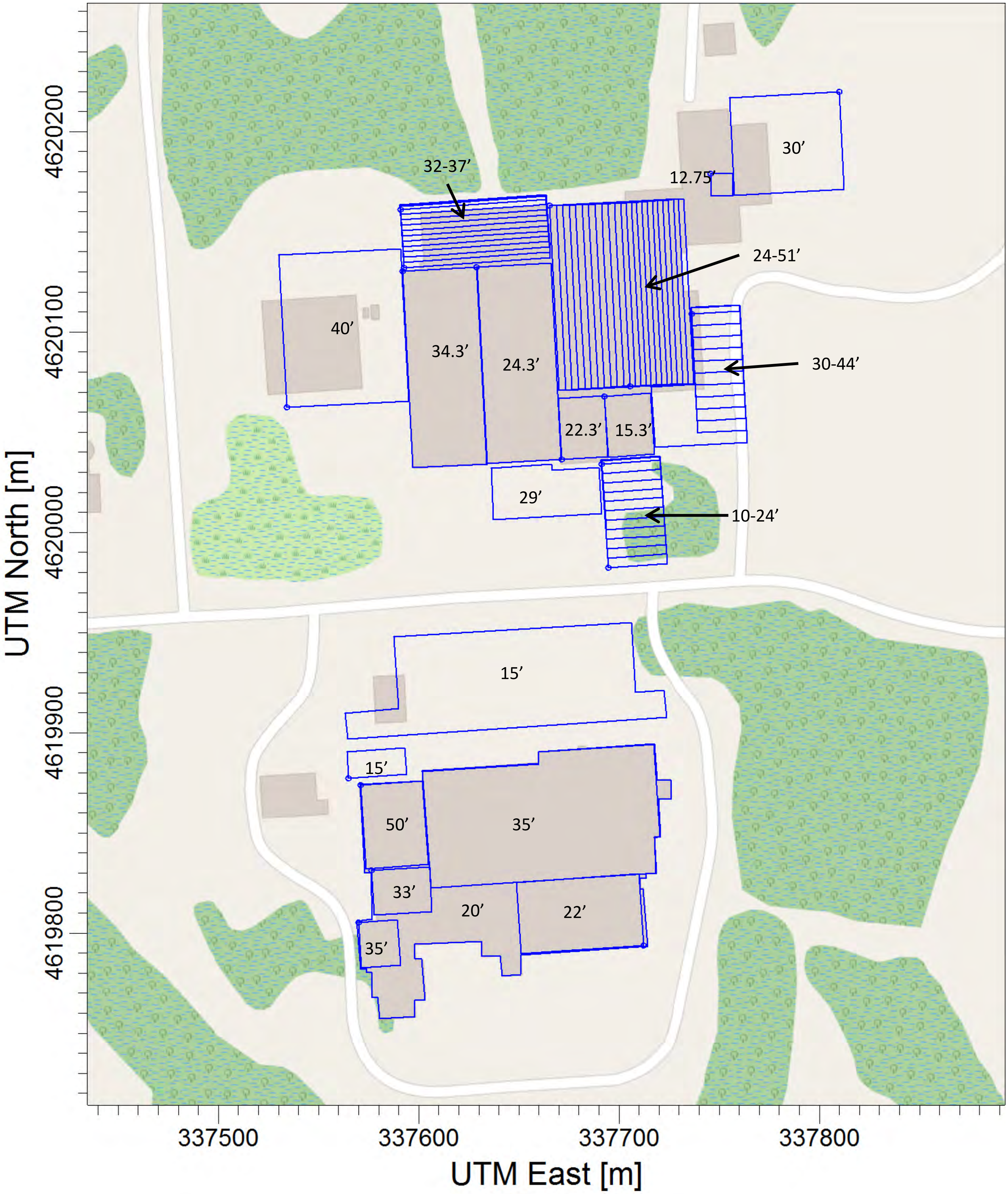
Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division

Parallel Products New Bedford, Massachusetts

Epsilon ASSOCIATES INC.

Figure 5

Receptor Locations



Parallel Products of New England New Bedford, Massachusetts

Epsilon ASSOCIATES INC.

Figure 6
Building Tiers

Attachment A

Stack Parameters

Process	Source	ID	Model ID	Merged Plume from Multiple Stacks?	X Coord (ft)	Y Coord (ft)	Base Elevation (ft)	Stack Height AGL (ft)	Roof Height AGL (ft)	Stack Height Above Roof (ft)	Gas Exit Tempera-ture (oF)	Temp Relative to	Exhaust Flow Rate (cfm)	Stack Inside Diameter (inches)	Stack Inside Diameter (feet)	Stack Cross-Sectional Area (ft2)	Stack Exit Velocity (fps)	Notes
Biosolids	Ionization	1	BIOION1	No	1108155	15157934	79.56	40	30	10	10	above ambient	24,250	32	2.67	5.585	72.4	
Biosolids	Ionization	2	BIOION2	No	1108246	15157938	79.56	40	30	10	10	above ambient	24,250	32	2.67	5.585	72.4	
Biosolids	Scrubber		BIOCS	No	1108084	15157921	79.56	40	30	10	10	above ambient	19,500	28	2.33	4.276	76.0	
Biosolids	Ionization Winter Ops	1	BIOION1W	No	1108155	15157934	79.56	40	30	10	50	absolute	24,250	32	2.67	5.585	72.4	
Biosolids	Ionization Winter Ops	2	BIOION2W	No	1108246	15157938	79.56	40	30	10	50	absolute	24,250	32	2.67	5.585	72.4	
Biosolids	Scrubber Winter Ops		BIOCSW	No	1108084	15157921	79.56	40	30	10	50	absolute	19,500	28	2.33	4.276	76.0	
Biosolids	Boiler		BIOBOIL	No	1108267	15157877	79.56	40	30	10	140	absolute	712	6	0.50	0.196	60.4	
Biosolids	Dryers (4)		BIODRYM	**Yes**	1108200	15157863	79.56	40	30	10	140	absolute	4,744	16.02	1.34	1.400	56.5	Each individual stack diameter 8"
Biosolids	Cooling Tower	1	BIOCT1	No	1108085	15157875	79.33	12.76	NA	NA	16	above ambient	91,030	117	9.75	74.662	20.3	
Biosolids	Cooling Tower	2	BIOCT2	No	1108103	15157875	79.33	12.76	NA	NA	16	above ambient	91,030	117	9.75	74.662	20.3	
Biosolids	Cooling Tower	3	BIOCT3	No	1108087	15157854	79.33	12.76	NA	NA	16	above ambient	91,030	117	9.75	74.662	20.3	
Biosolids	Cooling Tower	4	BIOCT4	No	1108103	15157855	79.33	12.76	NA	NA	16	above ambient	91,030	117	9.75	74.662	20.3	
Glass	Building Stack		GLASSVNT	No	1107950	15157588	81.56	32	22	10	10	above ambient	24,000	52	4.33	14.748	27.1	
MSW	Transfer Stacks (4)		TVENTM	**Yes**	1107465	15157635	80.15	70	40	30	10	above ambient	96,000	104.2	8.68	59.219	27.0	Each individual stack diameter 52"
MSW	Processing Stacks (3)		PVENTM	**Yes**	1107641	15157564	81.40	70	40	30	10	above ambient	72,000	90.3	7.53	44.474	27.0	Each individual stack diameter 52"

Process	Source	ID	Model ID	Merged Plume from Multiple Stacks?	X Coord (m)	Y Coord (m)	Base Elevation (m)	Stack Height AGL (m)	Roof Height AGL (m)	Stack Height Above Roof (m)	Gas Exit Tempera-ture (K)	Temp Relative to	Exhaust Flow Rate (m3/hr)	Stack Inside Diameter (m)	Stack Cross-Sectional Area (m2)	Stack Exit Velocity (m/s)	Notes
Biosolids	Ionization	1	BIOION1	No	337769.67	4620194.6	24.25	12.19	9.14	3.05	5.56	above ambient	41,203	0.813	0.519	22.1	
Biosolids	Ionization	2	BIOION2	No	337797.58	4620195.71	24.25	12.19	9.14	3.05	5.56	above ambient	41,203	0.813	0.519	22.1	
Biosolids	Scrubber		BIOCS	No	337748.03	4620190.49	24.25	12.19	9.14	3.05	5.56	above ambient	33,132	0.711	0.397	23.2	
Biosolids	Ionization Winter Ops	1	BIOION1W	No	337769.67	4620194.60	24.25	12.19	9.14	3.05	283.15	absolute	41,203	0.813	0.519	22.1	
Biosolids	Ionization Winter Ops	2	BIOION2W	No	337797.58	4620195.71	24.25	12.19	9.14	3.05	283.15	absolute	41,203	0.813	0.519	22.1	
Biosolids	Scrubber Winter Ops		BIOCSW	No	337748.03	4620190.49	24.25	12.19	9.14	3.05	283.15	absolute	33,132	0.711	0.397	23.2	
Biosolids	Boiler		BIOBOIL	No	337804.03	4620177.19	24.25	12.19	9.14	3.05	333.15	absolute	1,209	0.152	0.018	18.4	
Biosolids	Dryers (4)		BIODRYM	**Yes**	337783.51	4620172.70	24.25	12.19	9.14	3.05	333.15	absolute	8,060	0.407	0.130	17.2	Each individual stack diameter 0.203 m
Biosolids	Cooling Tower	1	BIOCT1	No	337748.33	4620176.33	24.18	3.89	NA	NA	9	above ambient	154,667	2.972	6.936	6.19	
Biosolids	Cooling Tower	2	BIOCT2	No	337753.83	4620176.33	24.18	3.89	NA	NA	9	above ambient	154,667	2.972	6.936	6.19	
Biosolids	Cooling Tower	3	BIOCT3	No	337748.90	4620170.13	24.18	3.89	NA	NA	9	above ambient	154,667	2.972	6.936	6.19	
Biosolids	Cooling Tower	4	BIOCT4	No	337753.97	4620170.41	24.18	3.89	NA	NA	9	above ambient	154,667	2.972	6.936	6.19	
Glass	Building Stack		GLASSVNT	No	337707.29	4620089.09	24.86	9.75	6.71	3.05	5.56	above ambient	40,778	1.321	1.370	8.27	
MSW	Transfer Stacks (4)		TVENTM	**Yes**	337559.45	4620103.24	24.43	21.34	12.19	9.14	5.56	above ambient	163,111	2.647	5.502	8.24	Each individual stack diameter 1.32 m
MSW	Processing Stacks (3)		PVENTM	**Yes**	337613.01	4620081.63	24.81	21.34	12.19	9.14	5.56	above ambient	122,333	2.294	4.132	8.22	Each individual stack diameter 1.32 m

Attachment A Note

Note the stack parameters, designs, and locations presented in this attachment are conceptual and subject to refinement during detailed design review. Future changes will include equivalent process, stack, or control designs or other mitigation measures to meet the criteria for NO2, PM2.5, odor, and air toxics which are presented in this report.

Merged Stack Diameter Calculations

Stack	Number of Stacks	Individual Stack Diameter	Individual Stack Diameter	Individual Stack Area	Total Stack Area	Equivalent Diameter	Equivalent Diameter	Total Volume Flow	Stack Velocity
		in	ft	ft^2	ft^2	ft	in	cfm	fps
Dryers	4	8	0.67	0.35	1.396	1.33	16.0	4,744	56.6
MSW Transfer Stacks	4	52	4.33	14.75	58.99	8.67	104	96,000	27.1
MSW Processing Stacks	3	52	4.33	14.75	44.24	7.51	90.1	72,000	27.1

Example Calculations:

(8 in diameter) x (1 ft/12 in) = 0.67 ft individual stack diameter

(0.67 ft diameter)^2 x (π) x (1/4) = 0.35 ft^2 individual stack area

(0.35 ft2 individual stack area) x (4 stacks) = 1.396 ft2 total stack area

((1.396 ft2 total stack area) x (1/π) x (4))^(1/2) = 1.33 ft equivalent diameter

(1.33 ft equivalent diameter) x (12 in/ 1 ft) = 16.0 in equivalent diameter

(4,744 cfm exhaust flow) x (1 min / 60 sec) x (1/1.396 ft2 total stack area) = 56.6 fps velocity

Attachment B

Air and Odor Emission Calculations

Boiler Assumed MMBTU/hr	3

Compound	Natural Gas Emissioni Factor (lb/MMscf)	Natural Gas Emission Factor (lb/MMBtu)	Mass Emissions (lb/hr)	Mass Emissions (g/s)
Nitrogen oxides (NOx)	100.00	0.0980	0.294	0.0371
Carbon monoxide (CO)	84.00	0.0824	0.247	0.0311
Particulate Matter (PM10, PM2.5)	7.60	0.00745	0.0224	0.00282
Sulfur Dioxide (SO2)	0.60	0.000588	0.00176	0.000222
Volatile Organic Compounds (VOC)	5.50	0.00539	0.0162	0.00204
Carbon dioxide (CO2)	120,000	118	353	44
Lead	0.0005	4.90E-07	1.47E-06	1.85E-07

Hazen & Sawyer Building Heat Gas Use per Year	2.7	MMscf/yr
	2,754	MMBtu/yr

Indvidual Dryer MMBTU/hr	5	each (there are 4 totalling 20 MMBtu/hr)

Compound	Natural Gas Emissioni Factor (lb/MMscf)	Natural Gas Emission Factor (lb/MMBtu)	Mass Emissions (lb/hr)	Mass Emissions (g/s)
Nitrogen oxides (NOx)	159.00	0.1559	0.779	0.0982
Carbon monoxide (CO)	84.00	0.0824	0.412	0.0519
Particulate Matter (PM10, PM2.5)	7.60	0.00745	0.0373	0.00469
Sulfur Dioxide (SO2)	0.60	0.000588	0.00294	0.000371
Volatile Organic Compounds (VOC)	5.50	0.00539	0.0270	0.00340
Carbon dioxide (CO2)	120,000	118	588	74.1
Lead	0.0005	4.90E-07	2.45E-06	3.09E-07

SOURCES	**Restriction**	**Number**	**Type**	**NOX (g/s)**	**CO (g/s)**	**PM10 (g/s)**	**PM2.5 (g/s)**	**SO2 (g/s)**
Biosolids Boiler Hourly	Winter	1	Point	0.0371	0.0311	0.00282	0.00282	0.000222
Glass Building Heating Hourly	Winter	1	Point	0.0371	0.0311	0.00282	0.00282	0.000222
Dryer Hourly		4	Point	0.0982	0.0519	0.00469	0.00469	0.000371

[1] Hourly emissions are max lb/hr converted to g/s

Dryer Burner Assumed MMBTU/hr	5	(there are 4 of these for a total of 20 MMBtu/hr)

Compound	Natural Gas Emission Factor (lb/MMscf)	Natural Gas Emission Factor (lb/MMBtu)	Mass Emissions (lb/hr)	Mass Emissions (g/s)	Mass Emissions (TPY)	MassDEP Air Toxic?
2-Methylnaphthalene	**2.40E-05**	**2.35E-08**	**1.18E-07**	**1.48E-08**	**5.15E-07**	*
Benzene	**2.10E-03**	**2.06E-06**	**1.03E-05**	**1.30E-06**	**4.51E-05**	**Yes**
Dichlorobenzene	**1.20E-03**	**1.18E-06**	**5.88E-06**	**7.41E-07**	**2.58E-05**	**
Formaldehyde	**7.50E-02**	**7.35E-05**	**3.68E-04**	**4.63E-05**	**1.61E-03**	**Yes**
Hexane	**1.80E+00**	**1.76E-03**	**8.82E-03**	**1.11E-03**	**3.86E-02**	**Yes***
Naphthalene	**6.10E-04**	**5.98E-07**	**2.99E-06**	**3.77E-07**	**1.31E-05**	*
Toluene	**3.40E-03**	**3.33E-06**	**1.67E-05**	**2.10E-06**	**7.30E-05**	**Yes**
Arsenic	**2.00E-04**	**1.96E-07**	**9.80E-07**	**1.24E-07**	**4.29E-06**	**Yes**
Beryllium	**1.20E-05**	**1.18E-08**	**5.88E-08**	**7.41E-09**	**2.58E-07**	**Yes**
Cadmium	**1.10E-03**	**1.08E-06**	**5.39E-06**	**6.79E-07**	**2.36E-05**	**Yes**
Chromium	**1.40E-03**	**1.37E-06**	**6.86E-06**	**8.65E-07**	**3.01E-05**	**Yes**
Copper	**8.50E-04**	**8.33E-07**	**4.17E-06**	**5.25E-07**	**1.83E-05**	**Yes**
Lead	**0.0005**	**4.90E-07**	**2.45E-06**	**3.09E-07**	**1.07E-05**	**Yes**
Mercury	**2.60E-04**	**2.55E-07**	**1.27E-06**	**1.61E-07**	**5.58E-06**	**Yes**
Nickel	**2.10E-03**	**2.06E-06**	**1.03E-05**	**1.30E-06**	**4.51E-05**	**Yes**
Selenium	**2.40E-05**	**2.35E-08**	**1.18E-07**	**1.48E-08**	**5.15E-07**	**Yes**
Vanadium	**2.30E-03**	**2.25E-06**	**1.13E-05**	**1.42E-06**	**4.94E-05**	**Yes**

MassDEP Air Toxics Special Notes:	lb/hr	g/s
* Compare sum of naphtalene and 1-methylnaphthalene for AAL and TEL	**3.11E-06**	**3.92E-07**
** Assume worst case ortho isomer for AAL and TEL comparison		
*** Alkanes and alkenes classification includes and mentions hexane		

USEPA AP-42 uses 1,020 Btu/scf as the HHV of natural gass

Boiler Assumed MMBTU/hr	3

Hazen & Sawyer Building Heat Gas Us	2.7	MMscf/yr
	2,754	MMBtu/yr

Compound	Natural Gas Emission Factor (lb/MMscf)	Natural Gas Emission Factor (lb/MMBtu)	Mass Emissions (lb/hr)	Mass Emissions (g/s)	Mass Emissions (TPY)	MassDEP Air Toxic?
2-Methylnaphthalene	**2.40E-05**	**2.35E-08**	**7.06E-08**	**8.89E-09**	**3.24E-08**	*
Benzene	**2.10E-03**	**2.06E-06**	**6.18E-06**	**7.78E-07**	**2.84E-06**	**Yes**
Dichlorobenzene	**1.20E-03**	**1.18E-06**	**3.53E-06**	**4.45E-07**	**1.62E-06**	**
Formaldehyde	**7.50E-02**	**7.35E-05**	**2.21E-04**	**2.78E-05**	**1.01E-04**	**Yes**
Hexane	**1.80E+00**	**1.76E-03**	**5.29E-03**	**6.67E-04**	**2.43E-03**	**Yes*** **
Naphthalene	**6.10E-04**	**5.98E-07**	**1.79E-06**	**2.26E-07**	**8.24E-07**	*
Toluene	**3.40E-03**	**3.33E-06**	**1.00E-05**	**1.26E-06**	**4.59E-06**	**Yes**
Arsenic	**2.00E-04**	**1.96E-07**	**5.88E-07**	**7.41E-08**	**2.70E-07**	**Yes**
Beryllium	**1.20E-05**	**1.18E-08**	**3.53E-08**	**4.45E-09**	**1.62E-08**	**Yes**
Cadmium	**1.10E-03**	**1.08E-06**	**3.24E-06**	**4.08E-07**	**1.49E-06**	**Yes**
Chromium	**1.40E-03**	**1.37E-06**	**4.12E-06**	**5.19E-07**	**1.89E-06**	**Yes**
Copper	**8.50E-04**	**8.33E-07**	**2.50E-06**	**3.15E-07**	**1.15E-06**	**Yes**
Lead	**0.0005**	**4.90E-07**	**1.47E-06**	**1.85E-07**	**6.75E-07**	**Yes**
Mercury	**2.60E-04**	**2.55E-07**	**7.65E-07**	**9.64E-08**	**3.51E-07**	**Yes**
Nickel	**2.10E-03**	**2.06E-06**	**6.18E-06**	**7.78E-07**	**2.84E-06**	**Yes**
Selenium	**2.40E-05**	**2.35E-08**	**7.06E-08**	**8.89E-09**	**3.24E-08**	**Yes**
Vanadium	**2.30E-03**	**2.25E-06**	**6.76E-06**	**8.52E-07**	**3.11E-06**	**Yes**

MassDEP Air Toxics Special Notes:	lb/hr	g/s
* Compare sum of naphtalene and 1-methylnaphthalene for AAL and TEL	**1.86E-06**	**2.35E-07**

** Assume worst case ortho isomer for AAL and TEL comparison

*** Alkanes and alkenes classification includes and mentions hexane

USEPA AP-42 uses 1,020 Btu/scf as the HHV of natural gas

Compound	Biosolids Boiler		Glass Building Heating		Dryer Burner		Notes
	Hourly	Annual[4]	Hourly	Annual[4]	Hourly	Annual	
	g/s	g/s	g/s	g/s	g/s	g/s	
2-Methylnaphthalene	8.89E-09	2.81E-09	8.89E-09	2.81E-09	1.48E-08	1.48E-08	1
Benzene	7.78E-07	2.46E-07	7.78E-07	2.46E-07	1.30E-06	1.30E-06	
Dichlorobenzene	4.45E-07	1.41E-07	4.45E-07	1.41E-07	7.41E-07	7.41E-07	2
Formaldehyde	2.78E-05	8.79E-06	2.78E-05	8.79E-06	4.63E-05	4.63E-05	
Hexane	6.67E-04	2.11E-04	6.67E-04	2.11E-04	1.11E-03	1.11E-03	3
Naphthalene	2.26E-07	7.15E-08	2.26E-07	7.15E-08	3.77E-07	3.77E-07	1
Toluene	1.26E-06	3.98E-07	1.26E-06	3.98E-07	2.10E-06	2.10E-06	
Arsenic	7.41E-08	2.34E-08	7.41E-08	2.34E-08	1.24E-07	1.24E-07	
Beryllium	4.45E-09	1.41E-09	4.45E-09	1.41E-09	7.41E-09	7.41E-09	
Cadmium	4.08E-07	1.29E-07	4.08E-07	1.29E-07	6.79E-07	6.79E-07	
Chromium	5.19E-07	1.64E-07	5.19E-07	1.64E-07	8.65E-07	8.65E-07	
Copper	3.15E-07	9.96E-08	3.15E-07	9.96E-08	5.25E-07	5.25E-07	
Lead	1.85E-07	5.86E-08	1.85E-07	5.86E-08	3.09E-07	3.09E-07	
Mercury	9.64E-08	3.05E-08	9.64E-08	3.05E-08	1.61E-07	1.61E-07	
Nickel	7.78E-07	2.46E-07	7.78E-07	2.46E-07	1.30E-06	1.30E-06	
Selenium	8.89E-09	2.81E-09	8.89E-09	2.81E-09	1.48E-08	1.48E-08	
Vanadium	8.52E-07	2.69E-07	8.52E-07	2.69E-07	1.42E-06	1.42E-06	

MassDEP Air Toxics Special Notes:

1 Compare sum of naphtalene and 2-methylnaphthalene for AAL and TEL

2 Assume worst case ortho isomer for AAL and TEL comparison

3 Alkanes and alkenes classification includes and mentions hexane

4 Annual Boiler Emissions are winter season only and are thus the total tpy divided by 2904 hours in Winter

Biofilter Air Toxics Mass Rates - Conservatively Assume Wet Scrubber Emission Rates = Biofilter Emission Rates
(A wet scrubber has greater removal efficiency capability than a biofilter for odor and air toxics)

Exhaust Flow Rate (V) 19,500 cfm

Exhaust Concentrations				Fractional	Formula	MW
H2S	0.09	ppm	1,000,000	9.000E-08	2H + S	34
Carbonyl Sulfide	18.5	ppb	1,000,000,000	1.850E-08	C + O + S	60
Ammonia	4.5	ppm	1,000,000	4.500E-06	3H + N	17

Ideal Gas Law PV = m/MW R T (m = P V MW / R / T)

0.7302	ft3-atm/deg.R-lbmol	Ideal Gas Law Constant
68	deg.F	Temperature
528	deg.R	= (deg.F) + 460
1	atm	Pressure

Exhaust Mass Rates	lb/min	lb/hr	grams/sec
H2S	1.548E-04	9.286E-03	1.170E-03
Carbonyl Sulfide	5.614E-05	3.368E-03	4.244E-04
Ammonia	3.869E-03	2.322E-01	2.925E-02

Ionization Air Toxics Mass Rates

Exhaust Flow Rate (V) 48,500 cfm Combined Flow Rate Both Stacks

Exhaust Concentrations				Fractional	Formula	MW
H2S	0.1	ppm	1,000,000	1.000E-07	2H + S	34
Carbonyl Sulfide	1.0	ppb	1,000,000,000	1.000E-09	C + O + S	60
Carbon Disulfide	1.0	ppb	1,000,000,000	1.000E-09	C + 2S	76
Ammonia	0.3	ppm	1,000,000	3.000E-07	3H + N	17

Ideal Gas Law PV = m/MW R T (m = P V MW / R / T)

0.7302	ft3-atm/deg.R-lbmol	Ideal Gas Law Constant
68	deg.F	Temperature
528	deg.R	= (deg.F) + 460
1	atm	Pressure

	Both Stacks			Each Stack
Exhaust Mass Rates	lb/min	lb/hr	grams/sec	grams/sec
H2S	4.277E-04	2.566E-02	3.233E-03	1.617E-03
Carbonyl Sulfide	7.548E-06	4.529E-04	5.706E-05	2.853E-05
Carbon Disulfide	9.560E-06	5.736E-04	7.228E-05	3.614E-05
Ammonia	6.416E-04	3.849E-02	4.850E-03	2.425E-03

Uncontrolled and Controlled Mass Rates - Additional Biosolids Process (Drying, Thickening, and Dewatering) VOC & Air Toxics Estimates

Benchmark Exhaust Flow Rate (acfm)	23,000
Project Exhaust Flow Rate (acfm)	19,500
Benchmark Sludge Throughput (DTPD)	6.8
Project Nominal Sludge Throughput (DTPD)	50
Operating Hours per Year	8,760
Thermal Dryer Airflow (% of total airflow)	33%
Remaining Process Airflow (% of total airflow)	67%
Ratio of compound concentration for non-thermal dryer airflow portion	1.3
Total VOC Carbon Removal %	90%

Volatile Organic Compounds (VOC)	CAS No.	Measured Concentration - Uncontrolled (ppbv)	MassDEP Air Toxic?	Molecular Weight (lb/lbmol)	Bench-mark Mass Rate (lb/hr)	Project Scaled Mass Rate (lb/hr)(3)	Biofilter Removal Efficiency (%)	BioFilter Controlled Project Scaled Mass Rate (lb/hr)	Carbon/Zeolite Polishing Removal Efficiency (%)	Total, Combined Removal Efficiency (max 99%) (%) (4)	Total Controlled Project Scaled Mass Rate (lb/hr)	Total Controlled Project Scaled Mass Rate (g/s)
Carbon Disulfide	75-15-01	158	Yes	76.14	0.04306	0.1204	50%	0.0602	85%	92.5%	0.009	0.0011
Propene	115-07-1	377	Yes(1)	42.08	0.05678	0.1587	0%	0.1587	25%	25.0%	0.119	0.0150
Chloromethane	74-87-3	99.7	No	50.49	0.01802	0.0504	10%	0.0453	25%	32.5%	0.034	0.0043
Chloroethane	75-00-3	2.5	Yes	64.51	0.00058	0.0016	10%	0.0015	85%	86.5%	0.000	0.0000
Ethanol	64-17-5	69.5	Yes	46.07	0.01146	0.0320	95%	0.0016	85%	99.0%	0.000	0.0000
2-propanol	67-63-0	22	No	60.10	0.00473	0.0132	95%	0.0007	85%	99.0%	0.000	0.0000
2-Propanone	67-64-1	531	Yes	58.08	0.11039	0.3086	95%	0.0154	25%	96.3%	0.012	0.0015
Methyl Ethyl Ketone (2-Butanone)	78-93-3	187	Yes	72.11	0.04827	0.1349	95%	0.0067	85%	99.0%	0.001	0.0002
Chloroform	67-66-3	158	Yes	119.38	0.06751	0.1887	10%	0.1699	85%	86.5%	0.025	0.0032
Bromomethane	74-83-9	30.6	No	94.94	0.01040	0.0291	10%	0.0262	25%	32.5%	0.020	0.0025
Bromodichloromethane	75-27-4	5.39	No	163.8	0.00316	0.0088	10%	0.0080	85%	86.5%	0.001	0.0002
Heptane	142-82-5	10.1	Yes(1)	100.21	0.00362	0.0101	50%	0.0051	85%	92.5%	0.001	0.0001
Benzene	71-43-2	179	Yes	78.11	0.05005	0.1399	95%	0.0070	85%	99.0%	0.001	0.0002
Toluene	108-88-3	220	Yes	92.14	0.07256	0.2028	95%	0.0101	85%	99.0%	0.002	0.0003
Ethylbenzene	100-41-4	5.35	Yes	106.17	0.00203	0.0057	95%	0.0003	85%	99.0%	0.000	0.0000
p+m-Xylene	106-42-3 &108-38-3	242	Yes	106.16	0.09196	0.2571	95%	0.0129	85%	99.0%	0.003	0.0003
o-Xylene	95-47-6	4.07	Yes	106.16	0.00155	0.0043	95%	0.0002	85%	99.0%	0.000	0.0000
Styrene	100-42-5	26.2	Yes	104.15	0.00977	0.0273	95%	0.0014	85%	99.0%	0.000	0.0000
1,2,4-Trimethylbenzene	95-63-6	3.3	No	120.19	0.00142	0.0040	95%	0.0002	85%	99.0%	0.000	0.0000
Chlorobenzene	108-90-7	1.67	Yes	112.56	0.00067	0.0019	95%	0.0001	85%	99.0%	0.000	0.0000
Hexane	110-54-3	8.8	Yes(1)	86.18	0.00271	0.0076	90%	0.0008	85%	98.5%	0.000	0.0000
Xylene (Total)	1330-20-7	246	Yes	106.16	0.09348	0.2613	95%	0.0131	85%	99.0%	0.003	0.0003
Total Alkanes/Alkenes	NA	NA	Yes(1)	NA	0.06312	0.1765	NA	0.1646	NA	NA	0.120	0.0151
TOTAL VOC (2)	**NA**	**NA**	**NA**	**NA**	**0.50030**	**1.3987**	**NA**	**0.5167**	NA	84.4%	**0.2177**	NA

Note: (1) Alkanes/Alkenes not to exceed 25% n-hexane are listed as a MassDEP air toxic. Here sum of propene (an alkene) and heptane and hexane (alkanes).
Note: (2) Sum of all rows above less 2-propanone (acetone) which is not a VOC, and less xylene (total) and total alkanes/alkenes (to avoid double counting compounds)
Note: (3) Assumes that thermal dryer portion of the odor control airflow is extrapolated linearly based on the Project-to-Benchmark throughput ratio, and that emissions from the other process areas are 1.3 times the benchmark data
Note: (4) RTO or other equivalent control may be used instead of carbon/zeolite and biofilter combination. RTO use would result in lower impacts due to higher exhaust temperature, and for some compounds, higher removal efficiencies.

Example calculations (carbon disuflide):

m (benchmark) = P x V x MW / R / T = (158E-9) x (23,000 ft3/min) x (60 min/hr) x (76.14 lb/lbmol) / (0.7302 ft3-atm/lbmol-oR) / (68 oF + 460 oR) = 0.04306 lb/hr

m (scaled) = [((0.04306 lb/hr) x (50 DTPD) / (6.8 DTPD) x (33% dryer airflow)) + ((0.04306 lb/hr) x (1.3 scaleup ratio) x (67% non-dryer airflow))] * [(19,500 acfm) / (23,000 acfm)] = 0.1204 lb/hr

total control = [1 - ((1 - 50%) * (1-85%))] = 92.5% (not to exceed 99%)

m (scaled and controlled) = (0.1204 lb/hr) x (1 - 92.5%) = 0.009 lb/hr

m (scaled and controlled) = (0.009 lb/hr) x (453.6 g/lb) / (3,600 sec/hr) = 0.0011 g/s (with more significant figures shown 0.001138 g/s)

Wet Scrubber Odor OU/s Rates

Exhaust Flow Rate (V)	19,500	ft3/min
	9.203	m3/sec
Uncontrolled Exhaust Concentration (D/T)	9,883	
Wet Scrubber Control Efficiency	99%	
Controlled Exhaust Concentration (D/T)	98.8	
Odor Emission Rate (OU/sec)	909.6	

Ionization Odor OU/s Rates

Exhaust Flow Rate (V) - Each of Two Exhausts	24,250	ft3/min
	11.45	m3/sec
Uncontrolled Exhaust Concentration (D/T)	500	
Wet Scrubber Control Efficiency	90%	
Controlled Exhaust Concentration (D/T)	50	
Odor Emission Rate (OU/sec)	572.3	

Conversion Factors:

3.2808	ft/meter
60	sec/min

Example Calculations:

(24,250 ft3/min) / (3.2808 ft/meter)^3 / (60 sec/min) = 11.45 m3/sec

(500 D/T) x (1 - 90%) = 50 D/T

(11.45 m3/sec) x (50 D/T) = 572.5 OU/sec
(slight discrepancy due to rounding)

Cooling Tower PM Emissions						
Circulation Rate	**900**	gpm each cell				
Drift Rate	**0.0020%**		99.9980%			
Drift	0.018	gpm				
Water Density	8.34	lb/gal				
Drift Rate	9.0	lb/hr				
TDS Conc	**1,800**	ppm (mg/l)				
Emission Rate	0.016	lb/hr				
Emission Rate	7.36	g/hr				
Emission Rate	0.0710	tpy				
Emission Rate	1.84	g/hr per cell				
Emission Rate	0.000511	g/s per cell				
	Est Air Flow Per Fan		Est Air Velocity Per Fan (check calc)			
Air Flow Per Fan	**91,030**	ACFM	91,000	rounded result		
# of Cells	**4**	cells	4			
Diameter	**9.75**	ft/cell	9.75	(117 inch fan diameter)		
Surface Area	74.66	ft2	74.66			
Air Velocity Per Fan	20.32	ft/s	**20.32**			
Air Velocity Per Fan	6.19	m/s	6.19			
Circulation Rate	900	gpm				
Drift Rate	0.0020%					
Drift Loss	0.018	gpm				
Water Density	8.34	lb/gal				
Drift Rate	9.0	lb/hr				
TDS Conc	1,800	ppm (mg/l)		PM2.5 < 12% total PM		
Emission Rate	0.016	lb/hr PM		0.0019	lb/hr PM2.5	
Emission Rate	7.36	g/hr PM		0.883	g/hr pm2.5	
Emission Rate	0.0710	tpy PM		0.00852	tpy pm2.5	
Emission Rate	7.36	g/hr PM per cell		0.883	g/hr pm2.5 per cell	
Emission Rate	0.00204	g/s PM per cell		0.000245	g/s pm2.5 per cell	
Assume total PM is PM10						
Mass Emission Rates for All Cells						
# of Cells	4					
Emission Rate	0.284	TPY PM10		0.0341	TPY PM2.5	
Note: Inputs In grey						

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PM-10, PM-2.5, Odor Emission Calculations and Stack Parameters for Parallel Products Transfer and MSW/Glass and Biosolids Processing Facility, New Bedford, MA.

Date	8/12/2019
Engineer	DTR / NRD(edits)
Checked	DKB

MSW Tipping - Particulate Matter

1000 tons per day of total waste handling (municipal solid waste)
500 tons per day of Category 2 C&D Residuals (bulkier C&D)
Total of 1,500 tons per day
From traffic study, 209 trucks in and out is worst case weekday volume including biosolids and glass, and ignoring rail transport out.

Facility accepts waste 7 days per week, 10 hours per day, limited to 362 days per year, so — 3620 hrs/yr of operation receiving
MSW Processing and C&D Residuals load out to rail cars up to 16 hours per day, 7 days per week. — 5792 hrs/yr of operation processing or loading

Loads are dumped on tipping floor from trucks (9 ton packers, 5.5 ton roll-off trucks, 4 ton roll-off containers, and self dumping live floor 100 CY, 28 ton trailers)

The MSW load is dumped and transferred via front end loader into a hopper for transfer via conveyor to processing.
The C&D load is dumped and transferred by front end loader to rail car to cover bales of MSW.

So, each ton of material is dumped (or loaded) twice and may othewise be handled (using front end loader or grapple for MSW) in the tipping floor area.
Processing of MSW will be calculated separately. Starting here with transfer and rail loadout.

Absent emission factors for MSW, assume all of the waste is C&D (conservative since C&D waste inherently dustier, as it includes drywall, wood, brick, concrete, etc)

Transfer building is 250' x 225' x 40' H for a total volume of	2,250,000 CF
Assume nominal three air changes per hour (2,250,000 CF x 3)/60 min/hr=	112,500 acfm
Assume the transfer building will have four vents (52" dia x8' each) out of roof - each designed for 24,000 acfm (total of 96,000 acfm)	96,000 acfm
Vent exit diameter:	4.33 ft
Vent exit area:	14.74 SF
Vent exit velocity:	27 fps

Air is pulled from the doors at front of building to the rear vents, creating a general flow across the working area
Place one vent over rail load out area, one over the hopper, and two in rear or tipping floor.

According to EPA AP-42, Section 13.2.3, Heavy Construction Operations (Table 13.2.3-1, Recommended Emission Factors for Construction Operations, under Construction Phase - Demolition and Debris Removal, Loading of Debris On-site or Unloading of Debris Offsite, this Table recommends the use of emission factor from Section 13.2.4)

Section 13.2.4 is called Aggregate Handling and Storage Piles, which includes material unloading from trucks onto piles and loading of trucks for shipment or transfer to process

E = k (0.0032) (U/5)^1.3 / (M/2)^1.4 - Equation (1) 13.2.4

where:

E = emission factor (lb/ton)
k = particle size multiplier (dimensionless); 0.35 for PM-10 (particles less than 10 microns in diameter), and 0.053 for PM-2.5
U = mean wind speed (mile/hr)
M = material moisture content (%)

E = 0.35 (0.0032) (U/5)^1.3 / (M/2)^1.4 (for PM10)

According to EPA, this emission factor is valid over a silt (% of particles less than 75 microns dia) content range of 0.44-19%, and a moisture content range of 0.25 -4.8%.

This equation will produce higher emissions with lower moisture content. Use the high end of range of 4.8% since MSW is typcially well above 20% moisture (Steam Chapter 29 Waste to Energy, Table 1 - Range of As Received Refuse Fuel Analysis)

While the unloading and loading occurs indoors, there is air movement caused by the ventilation system. This can be translated into a "wind speed" equivalent by dividing the volume of air flow, by the face area of the room normal to the exhaust pickups.
the four vents in the tipping area exhausting 96,000 acfm.

Assume all of this volume is drawn across 225' wide area at tipping floor, and over an avg height of 20'

(96,000 ft^3/min) x (1/(225x20)) SF = 21 ft/min
21 ft/min x 60 min/hr x 1 mile/5280 ft = 0.24 mph

The low end of the range of wind speed for emission factor equation above is 1.3 mph - use this as a default value to account for any stray currents caused by localized air movement

E = 0.35 x 0.0032 x (1.3/5)^1.3 / ((4.8/2)^1.4) = 0.000057 lb/ton

0.000057 lb/ton x 1500 ton/day x 1/24 hr/day x 2 drops = 0.0071 lb/hr (24 hr avg) uncontrolled PM-10
(add controls further below)

For PM-2.5, the k multiplier is 0.053 instead of 0.35, apply to emission rate: 0.053/0.35 x 0.0071 = 0.00108 lb/hr uncontrolled

Next, consider pushing of material to piles or to hopper (double counts with a drop)- use bulldozing pushing

According to EPA AP-42, Section 13.2.3, Heavy Construction Operations (Table 13.2.3-1, Recommended Emission Factors for Construction Operations, under Construction Phase - Site Preparation - Bulldozing
this Table recommends the use of emission factor from Section 11.9)

Section 11.9 is called Western Surface Coal Mining, and includes bulldozing overburden (dirt)

E = 1.0 x s^1.5/ M^1.4 - Table 11.9-1 PM-15

where:

E = emission factor (lb/hr)
s = material silt content (%)
M = material moisture content (%)

multiplier for PM-10 is 0.75 according to Table 11.9-1

According to EPA, this emission factor is valid over a silt (% of particles less than 75 microns dia) content range of 3.8-15.1%, and a moisture content range of 2.2-16.8%.

This equation will produce higher emissions with lower moisture content. The highest end of the range is 16.8%
Use a conservative silt content of 3.8% (higher than the 0.44% low end of range for the drop equation above)
Use a moderate moisture for mix of C&D and MSW, mostly MSW so say 500/1500 x 5% and 1000/1500x16.8%. 12.9 % moisture

E = 1.0 x (3.8)^1.5 / ((12.9)^1.4) = 0.206 lb/hr PM-15
0.206 lb/hr x 0.75 = 0.155 lb/hr PM-10

Assume pushing occurs for all of a 10 hours shift.

0.155 lb/hr x 10 hr/day x 1/24 hr/day = 0.065 lb/hr 24-hr avg PM-10 uncontrolled

For PM-2.5, the multiplier is 0.105 instead of 0.75, apply to emission rate: 0.105/0.75 x 0.045 = 0.009 lb/hr uncontrolled

Total uncontrolled PM-10 emissions from dumping, loading, pushing (handling) of waste

	PM-10	PM-2.5
2 dumping actions	0.007	0.001 lb/hr
10 hours pushing	0.065	0.009 lb/hr
Total	0.072	0.010 lb/hr

0.072 lb/hr x 24 hr/day x 362 day/yr/2000 lb/ton = **0.31 ton/yr** PM-10
0.010 lb/hr x 24 hr/day x 362 day/yr/2000 lb/ton = **0.04 ton/yr** PM-2.5

Sanity Check, stack test at UMW Holyoke in 2014 handling 750 tpd, including C&D found 0.17 lb/hr of PM-10 while operating
C&D is dustier than MSW — 0.17 lb/hr x 10 hr/day x 362 day/yr/2000 lb/ton = 0.31 ton/yr PM-10
Most of calculated emissions from pushing, and not directly related to tpd.

Calculate PM-10 and PM-2.5 Emissions from Fugitive Dust generated by Trucks on Paved Roads (on-site)

From EPA AP-42, Section 13.2.1 - Paved Roads

E = k (sL)^0.91 * (W)^1.02; Equation (1) - 13.2.1

where:

E = particulate emission factor (grams/vehicle mile traveled (g/VMT))
k = particle size multiplier; 1.0 g/VMT for PM-10 (particles less than 10 microns in diameter)
sL = road surface silt loading (grams per square meter)
W = average weight (tons) of vehicles traveling the road

According to EPA, this emission factor is valid over a silt (% of particles less than 75 microns dia) loading range of 0.03 - 400 g/m^2,
a mean vehicle weight of 2 - 42 tons, and a mean vehicle speed of 1 - 55 mph.

sL is from Table 13.2.1-2, for low volume roads (ADT < 500), use ubiquitous baseline value of 0.6 g/m^2
Even though the area is swept daily, to account for trackout waste floor, increase this to 2.4 g/M^2 (X4 as for winter baseline with anti skid abrasives)

	No of Truck trips	Material Weight (tons)	Truck Weight (tons)	Total Weight (tons/truck)	Weighted average
MSW Packer Truck full	27	9	3	12	0.66
MSW Packer Truck empty	27	0	3	3	0.16
MSW Rolloff Compactor full	4	6.5	3	10	0.08
MSW Rolloff Compactor empty	4	0	3	3	0.02
MSW Rolloff full	2	5.5	3	9	0.03
MSW Rolloff empty	2	0	3	3	0.01
MSW Transfer Trailer full	38	28.2	20	48	3.71
MSW Transfer Trailer empty	38	0	20	20	1.54
MSW Outbound Trailers full	54	28	20	48	5.25
MSW Outbound Trailers empty	54	0	20	20	2.19
C&D Cat 2 Transfer Trailer full	5	30	20	50	0.51
C&D Cat 2 Transfer Trailer empty	5	0	20	20	0.20
Glass By Others (in) full	3	32	20	52	0.32
Glass By Others (in) empty	3	0	20	20	0.12
Glass Route Trucks (in) full	45	3.5	3	7	0.59
Glass Route Trucks (in) empty	45	0	3	3	0.27
Glass Outbound full	5	32	20	52	0.53
Glass Outbound empty	5	0	20	20	0.20
Glass Outbound full	4	24	20	44	0.36
Glass Outbound empty	4	0	20	20	0.16
Parallel Products Trips Full	40	5.5	3	9	0.69
Parallel Products Trips Empty	40	0	3	3	0.24
Biosolids Liquid full	15	24	20	44	1.34
Biosolids Liquid empty	15	0	20	20	0.61
Biosolids Cake full	5	24	20	44	0.45
Biosolids Cake empty	5	0	20	20	0.20
Total Truck Trips	494 trips/day				20.43
Total Trucks	247 trucks/day				

E =1.0 x (2.4)^0.91 x (20.43) ^1.02 = 48.1 g/VMT
0.106 lb/VMT

Estimate each truck travels approximately 6200' total on-site which is 5600 ft for the primary loop and 600 ft from loop road to destination building and back 6200
Total daily PM-10 fugitive emissions: 247 x 6200/5280 x 0.106 lb/VMT 30.7 lb/day
5.57 tons/yr **PM-10**

For PM-2.5, the value of k is reduced to 0.25 X g/VMT, 12.0 g/VMT
0.03 lb/VMT
Factor down to PM-2.5: 0.25/1.0 x 5.57 ton/yr = **1.39 tons/yr** **PM-2.5**

SUMMARY: MSW Tipping & Processing and Paved Roads

Total PM from inside and outside of transfer building	5.88 tons/yr	PM-10
	1.43 tons/yr	PM-2.5
Assume same emissions from processing as for emissions from inside transfer building	0.31 tons/yr	PM-10
	0.04 tons/yr	PM-2.5
Total	**6.19 tons/yr**	**PM-10**
	1.47 tons/yr	**PM-2.5**

MSW Tipping & Processig Odor
Odor from transfer and processing, initial bag break in transfer and metering bin.
Odor from organic fines as they move through processing.

Odor from Transfer Station
Use 96,000 ACFM at 50 D/T 45.3 M3/s (96,000 ft3/min/(60 sec/min x 35.3 ft3/m3)
Calculate OU/s 2265 OU/s 45.3 M3/s x 50 D/T
This is higher OU/s than the highest measured at NYC Transfer Stations in the summer time in 2004 Study, also from Epsilon confidential work at TS
Divide by 4 stacks **566.3 OU/s per stack**
PM-10 emission rate **0.0023 g/s per stack**
PM-2.5 emission rate **0.00032 g/s per stack**

Odor from Processing (assume same D/T as transfer)
Use 72,000 ACFM at 50 D/T 34.0 M3/s
Calculate OU/s 1699 OU/s
Divide by 3 stacks **566.3 OU/s per stack**

Assume processing has same PM emissions as transfer building , 3 stacks
PM-10 emission rate **0.0023 g/s per stack**
PM-2.5 emission rate **0.00032 g/s per stack**

Ignore mobile source (truck and loader) engine PM emissions, also not currently modeling fugitives from road dust

Assume 90% capture of PM and odor emissons that occur indoors in Transfer area the vents and other 10% exits thru open doors

Check air flow thru doors when open to see if negative pressure:
Each door is 22' wide x 28 ' high
Assume on average that 3 door open at a time , total open area is 3 x 22 x 28 = 1848 SF

From above, there are 96000 ACFM venting from the transfer tipping area air coming in thru the doors (may be more from the processing area connected to transfer area)
96,000/1848 = 52 fpm
From experience, this should be enough inflowing air velocity to capture more than 90% of the PM and odor emissions originating inside the building

Odor from Each Transfer stack at 90% capture **509.7 OU/s per stack** 4 stacks
PM-10 emission rate at 90% capture **0.0020 g/s per stack**
PM-2.5 emission rate at 90% capture **0.00029 g/s per stack**

Odor from doors (10%) **226.5 OU/s from three doors total** 10% of 4 stacks
PM-10 emission rate at doors (10%) **0.000903 g/s from three doors total** 10% of 4 stacks
PM-2.5 emission rate at doors (10%) **0.000127 g/s from three doors total** 10% of 4 stacks

Odor from Each Processing Stack **566.3 OU/s per stack** 3 stacks
PM-2.5 from Processing Stacks **0.0023 g/s per stack**
PM-10 from Processing Stacks **0.00032 g/s per stack**

Each of Seven Stacks
Stack exit diameter: **4.33 ft**
Stack exit area: **14.74 SF**
Stack exit velocity: **27.1 fps**

Air Emissions Calculations

Constants/Assumptions	
Daily Capacity [TPD]	250
Yearly Capacity [TPY]	75,000
Conversion [lb/ton]	2,000
Indoor (Building Enclosure) Control Efficiency	90%
Primary Crushing % of total throughput	100%
Secondary Crushing % of total throughput	50%
1.5 Screening % of total throughput	250%
Ratio PM2.5/PM10	30%

Location	Air Emissions Results (75,000 TPY Throughput)						Annual Average Emissions (8760 hours, 91,250 TPY Throughput)	
	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
	TPY	TPY	lb/hr	lb/hr	Max Hourly g/s	Max Hourly g/s	Annual Avg. g/s	Annual Avg. g/s
Process	0.397	0.119	0.11	0.033	0.014	0.0042	0.014	0.0042
Side Bunker	0.00825	0.00248	0.010	0.0031	0.0013	0.00039	0.0003	0.00009
Bunker	0.00825	0.00248	0.010	0.0031	0.0013	0.00039	0.0003	0.00009
Outdoor	0.00375	0.00113	0.00104	0.000313	0.000131	0.0000394	0.000131	0.0000394
Total	**0.417**	**0.125**	**0.132**	**0.040**	**0.0166**	**0.0050**	**0.0146**	**0.00438**

*Annual Average g/s emission values are based on the total ton per year from the particular location converted to grams and divided by 8760 hr/yr and 3600 s/hr

Model Inputs				
Source	**Short Term Max**		**Annual Average**	
	PM10	**PM2.5**	**PM10**	**PM2.5**
	g/s	g/s	g/s	g/s
Side Bunker Volume Source	0.0013	0.00039	0.0003	0.00009
Combined Volume Source	0.015	0.0046	0.0143	0.0043
Total	**0.0166**	**0.0050**	**0.0146**	**0.00438**

Air Emissions Calculations												
Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
Drop Description	**Forklift to Sorting Conveyors**	**Sorting Conveyors to Sorted Unprocessed Bins**	**Front Loader to Process Line Conveyor**	**Conveyor to Cross Belt Magnet**	**Primary Crushing**	**Secondary Crushing**	**1.5 Screening**	**Sizing Screening**	**Final Product to Sorted or Reject Bunker**	**Front End Loader from Sorted Bunker to Train Hopper**	**Conveyor to Railcar**	**Total**
Location	Process	Side Bunker	Side Bunker	Process	Process	Process	Process	Process	Bunker	Bunker	Outdoor	
Handling Rate [TPH]	10.4	10.4	83	10.4	10.4	5.21	26.0	10.4	10.4	83	10.4	
Maximum Operating Hours [hr/yr] (a)	7,200	7,200	900	7,200	7,200	7,200	7,200	7,200	7,200	900	7,200	
Modeled Operating Hours [hr/yr] (b)	8,760	8,760	1,095	8,760	8,760	8,760	8,760	8,760	8,760	1,095	8,760	
Control Efficiency	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	0%	
PM_{10} Emissions Factor [lb/ton]	0.001	0.001	0.001	0.001	0.002	0.015	0.009	0.072	0.001	0.001	0.0001	
PM_{10} Emissions Uncontrolled [lb/hr]	0.011	0.011	0.092	0.011	0.025	0.078	0.227	0.750	0.011	0.092	0.001	
PM_{10} Emissions Controlled [lb/hr]	0.001	0.001	0.009	0.001	0.003	0.008	0.023	0.075	0.001	0.009	0.001	
PM_{10} Emissions Uncontrolled [TPY]	0.041	0.041	0.041	0.041	0.090	0.281	0.816	2.700	0.041	0.041	0.004	
Maximum PM10 Emissions Controlled [TPY] (a)	**0.004**	**0.004**	**0.004**	**0.004**	**0.009**	**0.028**	**0.082**	**0.270**	**0.004**	**0.004**	**0.004**	**0.417**
Modeled PM10 Emissions Controlled [TPY] (b)	**0.005**	**0.005**	**0.005**	**0.005**	**0.011**	**0.034**	**0.099**	**0.329**	**0.005**	**0.005**	**0.005**	**0.508**
$PM_{2.5}$ Emissions Uncontrolled [lb/hr]	0.003	0.003	0.028	0.003	0.008	0.023	0.068	0.225	0.003	0.028	0.0003	
$PM_{2.5}$ Emissions Controlled [lb/hr]	0.0003	0.0003	0.0028	0.0003	0.0008	0.0023	0.0068	0.0225	0.0003	0.0028	0.0003	
$PM_{2.5}$ Emissions Uncontrolled [TPY]	0.012	0.012	0.012	0.012	0.027	0.084	0.245	0.810	0.012	0.012	0.001	
$PM_{2.5}$ Emissions Controlled [TPY]	0.001	0.001	0.001	0.001	0.003	0.008	0.024	0.081	0.001	0.001	0.001	
Maximum $PM_{2.5}$ Emissions Controlled [TPY] (a)	**0.001**	**0.001**	**0.001**	**0.001**	**0.003**	**0.008**	**0.024**	**0.081**	**0.001**	**0.001**	**0.001**	**0.125**
Modeled PM2.5 Emissions Controlled [TPY] (b)	**0.002**	**0.002**	**0.002**	**0.002**	**0.003**	**0.010**	**0.030**	**0.099**	**0.002**	**0.002**	**0.001**	**0.152**

Notes/Assumptions:
1. PM10 Emission factors for drops 1, 2, 3, 4, 9, and 10 were determined using table 11.19.2-2 of AP-42 Conveyor Transfer Point emissions factors.
2. PM10 Emission factors for drops 5 and 6 were determined using table 11.19.2-2 of AP-42 Tertiary and Fines Crushing emissions factors respectively.
3. PM10 Emission factors for drops 7 and 8 were determined using table 11.19.2-2 of AP-42 Screening and Fine Screening emissions factors respectively.
4. PM10 Emission factors for drop 11 was determined using table 11.19.2-2 of AP-42 Truck Loading - Conveyor, Crushed Stone emissions factors.
5. PM2.5 Emissions factors were not available through table 11.19.2-2 of AP-42 so a 30% PM2.5 to PM10 ratio was assumed for the sake of conservativeness.
6. Given the maximum operating throughput of 250 TPD and approximate operating time of 3 hr/day, the loader was assumed to operate at 83 TPH. This corresponds to 1 bucket load every 1.9 minutes, assuming each bucket is 2.7 tons.
(a) At 75,000 TPY and 250 TPD, the number of equivalent operating hours is 7,200. Annual PM2.5 air emissions impacts are estimated here for this maximum annual throughput scenario.
(b) Using 250 TPD and 8,760 annual operating hours per year, maximum modeled air emission rates are calculated. This is a conservative over estimate of annual emissions.

MSW and Glass Front-End Loaders' Formaldehyde Emission Rate Estimates

I. MOVES Emission Factors for Tractors/Loaders/Backhoes in grams per horsepower-hour (g/hp-hr)

3.61055	Carbon Monoxide (CO)
0.67710	Total Hydrocarbons (THC)
0.17776	Formaldehyde (CH2O)

II. Project Caterpillar Loader Specifications

Cat 966 M	267 hp	Tier 4F
Cat 926 M	155 hp	Was Tier 2 in EENF filing, now Tier 4F for DEIR filing

Two 966's for the MSW operations and two 926's for the glass operations

III. Available Detailed Caterpillar Emissions Information

Cat Engine EM2776 Change Level 01 (Tier 4F) - Information from Data Sheet @ 2,200 RPM rated speed

Load (%)	Load (hp)	Pollutant	grams/hr	g/hp-hr
100%	375	CO	23	0.06
100%	375	THC	4	0.01
75%	282	CO	23	0.08
75%	282	THC	8	0.03
50%	188	CO	17	0.09
50%	188	THC	8	0.04
25%	93.9	CO	12	0.13
25%	93.9	THC	8	0.08
10%	37.5	CO	11	0.28
10%	37.5	THC	12	0.31

IV. Estimate Cat Engine EM2776 g/hp-hr at 21% Load

Using the data provided in Section III above, a curve fit was generated by plotting the data and using the trendline function in Excel. For both CO and THC, the best fit was a Power Curve as documented below. Note that the x variable refers to percent load as whole numbers (i.e. 25% load is x=25)

CO		
Type	R^2	Formula
Exp	0.8468	y=0.2384e^-0.015x
Power	0.9791	y=1.1256x^-0.635
Log	0.9062	y=-0.091ln(x)+0.463
Poly n=2	0.885	y=4E-05x^2-0.0067x+0.3152
THC		
Type	R^2	Formula
Exp	0.9203	y=0.2808e^-0.033x
Power	0.9562	y=6.8259x^-1.342
Log	0.8538	y=-0.123ln(x)+0.5464
Poly n=2	0.8452	y=6E-05x^2-0.0097x+0.3559

Using the Power Functions shown above the following emission factors were determined

% Load	BHP	CO (g/hp-hr)	THC (g/hp-hr)
21	78.75	0.163	0.115

V. Estimate Conservative Tier 4F Loader CH2O Emission Factors Using Ratio of THC

Load (%)	MOVES CH2O (g/hp-hr)	MOVES THC (g/hp-hr)	Cat THC (g/hp-hr)	Derived Tier 4F CH2O (g/hp-hr)
100%	0.17776	0.67710	0.01	0.002625
21%	0.17776	0.67710	0.115	0.03013
10%	0.17776	0.67710	0.31	0.08138

e.g. (0.17776) / (0.67710) x (0.01) = 0.002625 g/hp-hr

VI. Estimate Conservative Tier 4F Loader CH2O Emission Rates Using Derived Emission Factors

Loader Use	Load (%)	Load (hp)	Derived Tier 4F CH2O (g/hp-hr)
MSW	100%	267	0.002625
MSW	21%	56.07	0.03013
MSW	10%	26.7	0.08138
Glass	100%	155	0.002625
Glass	21%	32.55	0.03013
Glass	10%	15.5	0.08138

Parallel Products
Mobile Source Emissions Analysis

Glass Processing Loaders Exhaust

Temporal Data
365.0 days/yr
Assumed Caterpillar 926M Waste Handler Small Wheel Loader
155 hp 0.21 Load Factor (from EPA-420-R-10-016 for SCC #2270002066)
Operating Schedule
2 number of loaders
3 hours each per day
6 hr/day 2 loaders at 3hr/day.

g/hp-hr	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)	Primary Exhaust PM10 - Total	Primary Exhaust PM2.5 - Total	Sulfur Dioxide (SO2)	CO2e
NONROAD (via MOVES) Emission Factor						
Tractors/Loaders/Backhoes	3.881832154	3.610552705	0.567440815	0.550417475	0.00404926	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2						
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4						
Tier Standards						
Tier 3 Standards (100-175 hp)	3.0		0.22	0.22		
Tier 4 Standards (75-175 hp)	0.3		0.015	0.015		
AP-42 Table 3.3-1						
Diesel Fuel	14.06	3.03	1.00	1.00	0.93	521.63

Emissions	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)	Primary Exhaust PM10 - Total	Primary Exhaust PM2.5 - Total	Sulfur Dioxide (SO2)	CO2e
g/day	58.59	705.14	2.9295	2.9295	0.79	101874.0
lb/day	0.13	1.55	0.01	0.01	0.00	224.60
TPY	0.02	0.28	0.00	0.00	0.00	40.99
Annual (g/s)	0.00068	0.00816	0.00003	0.00003	0.00001	1.17910
over 24 hr work day (g/s)	0.00068	0.00816	0.00003	0.00003	0.00001	1.17910
Peak hour (g/s)	0.00543	0.06529	0.00027	0.00027	0.00007	9.43278

Parallel Products
Mobile Source Emissions Analysis

Glass Processing Loaders Exhaust

Temporal Data
365.0 days/yr
Assumed Caterpillar 926M Waste Handler Small Wheel Loader
155 hp 0.21
Operating Schedule
2 number of loaders
3 hours each per day
6 hr/day 2 loaders at 3hr,

	2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury
NONROAD (via MOVES) Emission Factor													
Tractors/Loaders/Backhoes		2.31E-02		1.78E-01	3.19E-03	1.83E-02	1.04E-06			1.87E-08			1.39E-08
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2		3.92E-02		2.06E-01		2.65E-02							
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4		4.73E-03		7.78E-02	5.43E-04	9.60E-03							
Tier Standards													
Tier 3 Standards (100-175 hp)													
Tier 4 Standards (75-175 hp)				2.63E-03									
AP-42 Table 3.3-1													
Diesel Fuel													

Emissions	2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury
g/day	0	4.51E+00	0	5.13E-01	1.06E-01	3.58E+00	2.04E-04	0	0.00E+00	3.65E-06	0	0	2.71E-06
lb/day	0	9.94E-03	0	1.13E-03	2.34E-04	7.90E-03	4.49E-07	0	0.00E+00	8.05E-09	0	0	5.97E-09
TPY	0	1.81E-03	0	2.06E-04	4.27E-05	1.44E-03	8.20E-08	0	0.00E+00	1.47E-09	0	0	1.09E-09
Annual (g/s)	0	5.22E-05	0	5.93E-06	1.23E-06	4.15E-05	2.36E-09	0	0.00E+00	4.23E-11	0	0	3.14E-11
over 24 hr work day (g/s)	0	5.22E-05	0	5.93E-06	1.23E-06	4.15E-05	2.36E-09	0	0.00E+00	4.23E-11	0	0	3.14E-11
Peak hour (g/s)	0	8.55E-05	0	1.41E-03	9.82E-06	1.74E-04	1.89E-08	0	0.00E+00	3.38E-10	0	0	2.51E-10

Parallel Products
Mobile Source Emissions Analysis

Glass Processing Loaders Exhaust

Temporal Data
365.0 days/yr
Assumed Caterpillar 926M Waste Handler Small Wheel Loader
155 hp 0.21
Operating Schedule
2 number of loaders
3 hours each per day
6 hr/day 2 loaders at 3hr,

	Nickel	Selenium	Vanadium	Ethanol	1,3-Butadiene	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane	Styrene	Xylene	Chloride
NONROAD (via MOVES) Emission Factor													
Tractors/Loaders/Backhoes					1.33E-03	6.28E-02	1.49E-02	5.40E-03	4.16E-03	1.43E-03		1.32E-02	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2					1.44E-03	7.36E-02	1.31E-02		3.00E-03			8.26E-03	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4					3.40E-04	2.60E-02	3.88E-03		2.43E-03	1.83E-03		1.31E-02	
Tier Standards													
Tier 3 Standards (100-175 hp)													
Tier 4 Standards (75-175 hp)													
AP-42 Table 3.3-1													
Diesel Fuel													

Emissions	Nickel	Selenium	Vanadium	Ethanol	1,3-Butadiene	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane	Styrene	Xylene	Chloride
g/day	0	0	0	0	6.64E-02	5.07E+00	2.91E+00	1.05E+00	4.76E-01	2.79E-01	0	2.58E+00	0
lb/day	0	0	0	0	1.46E-04	1.12E-02	6.43E-03	2.33E-03	1.05E-03	6.16E-04	0	5.68E-03	0
TPY	0	0	0	0	2.67E-05	2.04E-03	1.17E-03	4.24E-04	1.91E-04	1.12E-04	0	1.04E-03	0
Annual (g/s)	0	0	0	0	7.68E-07	5.87E-05	3.37E-05	1.22E-05	5.50E-06	3.23E-06	0	2.98E-05	0
over 24 hr work day (g/s)	0	0	0	0	7.68E-07	5.87E-05	3.37E-05	1.22E-05	5.50E-06	3.23E-06	0	2.98E-05	0
Peak hour (g/s)	0	0	0	0	6.15E-06	4.70E-04	7.02E-05	9.77E-05	4.40E-05	3.31E-05	0	2.37E-04	0

Parallel Products

Mobile Source Emissions Analysis

Glass Processing Loaders Exhaust

Temporal Data

365.0	days/yr		
Assumed Caterpillar 926M Waste Handler Small Wheel Loader			
155	hp		0.21
Operating Schedule			
2	number of loaders		
3	hours each per day		
6	hr/day		2 loaders at 3hr,

	Primary Exhaust PM2.5 - Total	Dioxins	Furans	Acetone	Methyl Ethyl Ketone
NONROAD (via MOVES) Emission Factor					
Tractors/Loaders/Backhoes	5.50E-01	1.74E-11	1.17E-11		
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2					6.52E-03
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4				5.85E-03	1.23E-03
Tier Standards					
Tier 3 Standards (100-175 hp)	0.22				
Tier 4 Standards (75-175 hp)					
AP-42 Table 3.3-1					
Diesel Fuel					

Emissions	Primary Exhaust PM2.5 - Total	Dioxins	Furans	Acetone	Methyl Ethyl Ketone
g/day	1.07E+02	3.39E-09	2.29E-09	1.14E+00	2.40E-01
lb/day	2.37E-01	7.47E-12	5.04E-12	2.52E-03	5.29E-04
TPY	4.33E-02	1.36E-12	9.20E-13	4.60E-04	9.66E-05
Annual (g/s)	1.24E-03	3.92E-14	2.65E-14	1.32E-05	2.78E-06
over 24 hr work day (g/s)	1.24E-03	3.92E-14	2.65E-14	1.32E-05	2.78E-06
Peak hour (g/s)	3.98E-03	3.14E-13	2.12E-13	1.06E-04	2.22E-05

Parallel Products

Mobile Source Emissions Analysis

MSW Tipping/Processing Loaders Exhaust

Temporal Data
365.0 days/yr
Assumed Two Caterpillar 966K Waste Handler Small Wheel Loader
267 hp 0.21 Load Factor (from EPA-420-R-10-016 for SCC #2270002066)
Operating Schedule
2 number of loaders
20 hours each per day
40 hr/day 2 operating together 16 hrs per day and 1 operating alone the other 8 hrs per day.

	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)	Primary Exhaust PM10 - Total	Primary Exhaust PM2.5 - Total	Sulfur Dioxide (SO2)	CO2e
	g/hp-hr					
NONROAD (via MOVES) Emission Factor						
Tractors/Loaders/Backhoes	3.881832154	3.610552705	0.567440815	0.550417475	0.004049263	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2						
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4						
Tier Standards						
Tier 3 Standards (175-300 hp)	3.0		0.15	0.15		
Tier 4 Standards (175-750 hp)	0.3		0.015	0.015		
AP-42 Table 3.3-1						
Diesel Fuel	14.06	3.03	1.00	1.00	0.93	521.63

Emissions	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)	Primary Exhaust PM10 - Total	Primary Exhaust PM2.5 - Total	Sulfur Dioxide (SO2)	CO2e
g/day	672.84	8097.75	33.642	33.642	9.08	1169908.4
lb/day	1.48	17.85	0.07	0.07	0.02	2579.22
TPY	0.27	3.26	0.01	0.01	0.00	470.71
Annual	7.79E-03	0.0937	0.0004	0.0004	0.0001	13.5406
10% to open doors	7.79E-04	0.0094	0.0000	0.0000	0.0000	1.3541
90% to exhaust vents	7.01E-03	0.0844	0.0004	0.0004	0.0001	12.1865
over 24 hr work day (g/s)	7.79E-03	0.0937	0.0004	0.0004	0.0001	13.5406
10% to open doors	7.79E-04	0.0094	0.0000	0.0000	0.0000	1.3541
90% to exhaust vents	7.01E-03	0.0844	0.0004	0.0004	0.0001	12.1865
Peak hour (g/s)	9.35E-03	0.1125	0.0005	0.0005	0.0001	16.2487
10% to open doors	9.35E-04	0.0112	0.0000	0.0000	0.0000	1.6249
90% to exhaust vents	8.41E-03	0.1012	0.0004	0.0004	0.0001	14.6239

Parallel Products

Mobile Source Emissions Analysis

MSW Tipping/Processing Loaders Exhaust

Temporal Data			
	365.0	days/yr	
Assumed Two Caterpillar 966K Waste Handler Small Wheel Loader			
	267	hp	0.21
Operating Schedule			
	2	number of loaders	
	20	hours each per day	
	40	hr/day	2 operating toge

	2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene	Arsenic
NONROAD (via MOVES) Emission Factor							
Tractors/Loaders/Backhoes		2.31E-02		1.78E-01	3.19E-03	1.83E-02	1.04E-06
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2		3.92E-02		2.06E-01		2.65E-02	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4		4.73E-03		7.78E-02	5.43E-04	9.60E-03	
Tier Standards							
Tier 3 Standards (175-300 hp)							
Tier 4 Standards (175-750 hp)				2.63E-03			
AP-42 Table 3.3-1							
Diesel Fuel							

Emissions	2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene	Arsenic
g/day	0	1.06E+01	0	5.89E+00	1.22E+00	2.15E+01	2.34E-03
lb/day	0	2.34E-02	0	1.30E-02	2.68E-03	4.74E-02	5.16E-06
TPY	0	4.27E-03	0	2.37E-03	4.90E-04	8.66E-03	9.42E-07
Annual	0	1.23E-04	0	6.81E-05	1.41E-05	2.49E-04	2.71E-08
10% to open doors	0	1.23E-05	0	6.81E-06	1.41E-06	2.49E-05	2.71E-09
90% to exhaust vents	0	1.10E-04	0	6.13E-05	1.27E-05	2.24E-04	2.44E-08
over 24 hr work day (g/s)	0	1.23E-04	0	6.81E-05	1.41E-05	2.49E-04	2.71E-08
10% to open doors	0	1.23E-05	0	6.81E-06	1.41E-06	2.49E-05	2.71E-09
90% to exhaust vents	0	1.10E-04	0	6.13E-05	1.27E-05	2.24E-04	2.44E-08
Peak hour (g/s)	0	1.47E-04	0	2.42E-03	1.69E-05	2.99E-04	3.25E-08
10% to open doors	0	1.47E-05	0	2.42E-04	1.69E-06	2.99E-05	3.25E-09
90% to exhaust vents	0	1.33E-04	0	2.18E-03	1.52E-05	2.69E-04	2.93E-08

Parallel Products
Mobile Source Emissions Analysis

MSW Tipping/Processing Loaders Exhaust

Temporal Data				
	365.0	days/yr		
Assumed Two Caterpillar 966K Waste Handler Small Wheel Loader				
	267	hp		0.21
Operating Schedule				
	2	number of loaders		
	20	hours each per day		
	40	hr/day	2 operating toge	

	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel
NONROAD (via MOVES) Emission Factor							
Tractors/Loaders/Backhoes			1.87E-08			1.39E-08	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2							
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4							
Tier Standards							
Tier 3 Standards (175-300 hp)							
Tier 4 Standards (175-750 hp)							
AP-42 Table 3.3-1							
Diesel Fuel							

Emissions	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel
g/day	0	0	4.19E-05	0	0	3.11E-05	0
lb/day	0	0	9.25E-08	0	0	6.86E-08	0
TPY	0	0	1.69E-08	0	0	1.25E-08	0
Annual	0	0	4.85E-10	0	0	3.60E-10	0
10% to open doors	0	0	4.85E-11	0	0	3.60E-11	0
90% to exhaust vents	0	0	4.37E-10	0	0	3.24E-10	0
over 24 hr work day (g/s)	0	0	4.85E-10	0	0	3.60E-10	0
10% to open doors	0	0	4.85E-11	0	0	3.60E-11	0
90% to exhaust vents	0	0	4.37E-10	0	0	3.24E-10	0
Peak hour (g/s)	0	0	5.83E-10	0	0	4.32E-10	0
10% to open doors	0	0	5.83E-11	0	0	4.32E-11	0
90% to exhaust vents	0	0	5.24E-10	0	0	3.89E-10	0

Parallel Products

Mobile Source Emissions Analysis

MSW Tipping/Processing Loaders Exhaust

Temporal Data

	365.0	days/yr	
Assumed Two Caterpillar 966K Waste Handler Small Wheel Loader			
	267	hp	0.21
Operating Schedule			
	2	number of loaders	
	20	hours each per day	
	40	hr/day	2 operating toge

	Selenium	Vanadium	Ethanol	1,3-Butadiene	Acetaldehyde	Acrolein	Ammonia (NH3)
NONROAD (via MOVES) Emission Factor							
Tractors/Loaders/Backhoes				1.33E-03	6.28E-02	1.49E-02	5.40E-03
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2				1.44E-03	7.36E-02	1.31E-02	
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4				3.40E-04	2.60E-02	3.88E-03	
Tier Standards							
Tier 3 Standards (175-300 hp)							
Tier 4 Standards (175-750 hp)							
AP-42 Table 3.3-1							
Diesel Fuel							

Emissions	Selenium	Vanadium	Ethanol	1,3-Butadiene	Acetaldehyde	Acrolein	Ammonia (NH3)
g/day	0	0	0	7.62E-01	5.83E+01	8.70E+00	1.21E+01
lb/day	0	0	0	1.68E-03	1.28E-01	1.92E-02	2.67E-02
TPY	0	0	0	3.07E-04	2.34E-02	3.50E-03	4.87E-03
Annual	0	0	0	8.82E-06	6.74E-04	1.01E-04	1.40E-04
10% to open doors	0	0	0	8.82E-07	6.74E-05	1.01E-05	1.40E-05
90% to exhaust vents	0	0	0	7.94E-06	6.07E-04	9.07E-05	1.26E-04
over 24 hr work day (g/s)	0	0	0	8.82E-06	6.74E-04	1.01E-04	1.40E-04
10% to open doors	0	0	0	8.82E-07	6.74E-05	1.01E-05	1.40E-05
90% to exhaust vents	0	0	0	7.94E-06	6.07E-04	9.07E-05	1.26E-04
Peak hour (g/s)	0	0	0	1.06E-05	8.09E-04	1.21E-04	1.68E-04
10% to open doors	0	0	0	1.06E-06	8.09E-05	1.21E-05	1.68E-05
90% to exhaust vents	0	0	0	9.53E-06	7.28E-04	1.09E-04	1.51E-04

Parallel Products

Mobile Source Emissions Analysis

MSW Tipping/Processing Loaders Exhaust

Temporal Data

	365.0	days/yr	
Assumed Two Caterpillar 966K Waste Handler Small Wheel Loader			
	267	hp	0.21
Operating Schedule			
	2	number of loaders	
	20	hours each per day	
	40	hr/day	2 operating toge

	Ethyl Benzene	Hexane	Styrene	Xylene	Chloride	Primary Exhaust PM2.5 - Total	Dioxins
NONROAD (via MOVES) Emission Factor							
Tractors/Loaders/Backhoes	4.16E-03	1.43E-03		1.32E-02		5.50E-01	1.74E-11
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2	3.00E-03			8.26E-03			
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4	2.43E-03	1.83E-03		1.31E-02			
Tier Standards							
Tier 3 Standards (175-300 hp)						0.15	
Tier 4 Standards (175-750 hp)						0.015	
AP-42 Table 3.3-1							
Diesel Fuel							

Emissions	Ethyl Benzene	Hexane	Styrene	Xylene	Chloride	Primary Exhaust PM2.5 - Total	Dioxins
g/day	5.46E+00	4.11E+00	0	2.94E+01	0	3.36E+01	3.89E-08
lb/day	1.20E-02	9.06E-03	0	6.49E-02	0	7.42E-02	8.58E-11
TPY	2.20E-03	1.65E-03	0	1.18E-02	0	1.35E-02	1.57E-11
Annual	6.32E-05	4.76E-05	0	3.40E-04	0	3.89E-04	4.50E-13
10% to open doors	6.32E-06	4.76E-06	0	3.40E-05	0	3.89E-05	4.50E-14
90% to exhaust vents	5.69E-05	4.28E-05	0	3.06E-04	0	3.50E-04	4.05E-13
over 24 hr work day (g/s)	6.32E-05	4.76E-05	0	3.40E-04	0	3.89E-04	4.50E-13
10% to open doors	6.32E-06	4.76E-06	0	3.40E-05	0	3.89E-05	4.50E-14
90% to exhaust vents	5.69E-05	4.28E-05	0	3.06E-04	0	3.50E-04	4.05E-13
Peak hour (g/s)	7.58E-05	5.71E-05	0	4.09E-04	0	4.67E-03	5.40E-13
10% to open doors	7.58E-06	5.71E-06	0	4.09E-05	0	4.67E-04	5.40E-14
90% to exhaust vents	6.83E-05	5.14E-05	0	3.68E-04	0	4.21E-03	4.86E-13

Parallel Products
Mobile Source Emissions Analysis

MSW Tipping/Processing Loaders Exhaust

Temporal Data

	365.0	days/yr	
Assumed Two Caterpillar 966K Waste Handler Small Wheel Loader			
	267	hp	0.21
Operating Schedule			
	2	number of loaders	
	20	hours each per day	
	40	hr/day	2 operating toge

	Furans	Acetone	Methyl Ethyl Ketone
NONROAD (via MOVES) Emission Factor			
Tractors/Loaders/Backhoes	1.17E-11		
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 2			6.52E-03
Tractors/Loaders/Backhoes TOG X SPECIATE Tier 4		5.85E-03	1.23E-03
Tier Standards			
Tier 3 Standards (175-300 hp)			
Tier 4 Standards (175-750 hp)			
AP-42 Table 3.3-1			
Diesel Fuel			

Emissions	Furans	Acetone	Methyl Ethyl Ketone
g/day	2.63E-08	1.31E+01	2.76E+00
lb/day	5.79E-11	2.89E-02	6.08E-03
TPY	1.06E-11	5.28E-03	1.11E-03
Annual	3.04E-13	1.52E-04	3.19E-05
10% to open doors	3.04E-14	1.52E-05	3.19E-06
90% to exhaust vents	2.74E-13	1.37E-04	2.87E-05
over 24 hr work day (g/s)	3.04E-13	1.52E-04	3.19E-05
10% to open doors	3.04E-14	1.52E-05	3.19E-06
90% to exhaust vents	2.74E-13	1.37E-04	2.87E-05
Peak hour (g/s)	3.65E-13	1.82E-04	3.83E-05
10% to open doors	3.65E-14	1.82E-05	3.83E-06
90% to exhaust vents	3.28E-13	1.64E-04	3.45E-05

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions At Idling Points at Facility

MOVES Emission Factors

	CO2E	CO	NOX	PM10	PM2.5	SO2	VOC
0 mph	7621.92	10.86238	37.46117	2.51465	2.31347	0.064505	3.977264

ONSITE

Idling Times	Idle Minutes Per Truck	Idle Hours per Truck	Peak Hour Trucks	Idling time ((veh-hr)/hr) (1)
Truck Exhaust Inbound Scale	2	0.0333	24	0.800
Truck Exhaust Pause Area (Stop) 1	2	0.0333		0.800
Truck Exhaust Pause Area (Stop) 2	2	0.0333		0.800
Truck Exhaust Outbound Scale	2	0.0333		0.800

(1) vehicle hours of delay (idle) per hour of actual time

Emissions (g/hr)

	CO2E	NOX	CO	PM10	PM2.5	SO2	VOC
Truck Exhaust Inbound Scale	6097.8	30.0	8.7	2.0	1.9	0.1	3.2
Truck Exhaust Pause Area (Stop) 1	6097.8	30.0	8.7	2.0	1.9	0.1	3.2
Truck Exhaust Pause Area (Stop) 2	6097.8	30.0	8.7	2.0	1.9	0.1	3.2
Truck Exhaust Outbound Scale	6097.8	30.0	8.7	2.0	1.9	0.1	3.2

AERMOD Emissions (g/s)

	CO2E	NOX	CO	PM10	PM2.5	SO2	VOC
Truck Exhaust Inbound Scale	1.69E+00	8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	8.84E-04
Truck Exhaust Pause Area (Stop) 1	1.69E+00	8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	8.84E-04
Truck Exhaust Pause Area (Stop) 2	1.69E+00	8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	8.84E-04
Truck Exhaust Outbound Scale	1.69E+00	8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	8.84E-04

OFFSITE

Idling Times	AM Peak Delay Time (s/veh)	PM Peak Delay Time (s/veh)	Average Delay (min/veh) (1)	Average Delay (hr/veh)	Peak Hour Trucks (veh/hr)	All Truck Idling time ((veh-hr)/hr) (2)
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	111.7	107.4	0.603	0.0100	48	0.482
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	42.2	145.7	0.517	0.0086	48	0.413
Phillips Road & Theodore Rice Boulevard/Braley Road	80.8	140.1	0.607	0.0101	48	0.486
Duchaine Boulevard & Theodore Rice Boulevard	8.9	9.7	0.051	0.0009	48	0.041
Duchaine Boulevard & Samuel Barnet Boulevard	1.2	4	0.014	0.0002	48	0.011
Phillips Road & Samuel Barnet Boulevard	4.9	8.6	0.037	0.0006	0	0.000

(1) uses factor of 33% to conservatively account for conversion of SYNCHRO Peak Hours to hourly traffic distribution.

(2) hours of delay (idle) for all vehicle per hour of actual time

Emissions (g/hr)

	CO2E	NOX	CO	PM10	PM2.5	SO2	VOC
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	3674.1	1.81E+01	5.24E+00	1.21E+00	1.12E+00	3.11E-02	1.92E+00
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	3150.9	1.55E+01	4.49E+00	1.04E+00	9.56E-01	2.67E-02	1.64E+00
Phillips Road & Theodore Rice Boulevard/Braley Road	3704.3	1.82E+01	5.28E+00	1.22E+00	1.12E+00	3.13E-02	1.93E+00
Duchaine Boulevard & Theodore Rice Boulevard	311.9	1.53E+00	4.45E-01	1.03E-01	9.47E-02	2.64E-03	1.63E-01
Duchaine Boulevard & Samuel Barnet Boulevard	87.2	4.29E-01	1.24E-01	2.88E-02	2.65E-02	7.38E-04	4.55E-02
Phillips Road & Samuel Barnet Boulevard	0.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

AERMOD Emissions (g/s)

	CO2E	NOX	CO	PM10	PM2.5	SO2	VOC
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1.02E+00	5.02E-03	1.45E-03	3.37E-04	3.10E-04	8.64E-06	5.33E-04
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	8.75E-01	4.30E-03	1.25E-03	2.89E-04	2.66E-04	7.41E-06	4.57E-04
Phillips Road & Theodore Rice Boulevard/Braley Road	1.03E+00	5.06E-03	1.47E-03	3.39E-04	3.12E-04	8.71E-06	5.37E-04
Duchaine Boulevard & Theodore Rice Boulevard	8.66E-02	4.26E-04	1.23E-04	2.86E-05	2.63E-05	7.33E-07	4.52E-05
Duchaine Boulevard & Samuel Barnet Boulevard	2.42E-02	1.19E-04	3.45E-05	7.99E-06	7.35E-06	2.05E-07	1.26E-05
Phillips Road & Samuel Barnet Boulevard	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions At Idling Points at Facility

MOVES Emission Factors

	Benzene	Ethanol	Naphthalene (total)	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane
0 mph	2.12E-03	0.00E+00	3.90E-02	1.01E-02	3.81E-01	1.56E-01	2.75E-02	3.77E-01	1.27E-02	1.08E-02

ONSITE

Idling Times
- Truck Exhaust Inbound Scale
- Truck Exhaust Pause Area (Stop) 1
- Truck Exhaust Pause Area (Stop) 2
- Truck Exhaust Outbound Scale

(1) vehicle hours of delay (idle) per hour of actual time

Emissions (g/hr)

	Benzene	Ethanol	Naphthalene (total)	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane
Truck Exhaust Inbound Scale	1.69E-03	0.00E+00	3.12E-02	8.05E-03	3.04E-01	1.25E-01	2.20E-02	3.01E-01	1.01E-02	8.64E-03
Truck Exhaust Pause Area (Stop) 1	1.69E-03	0.00E+00	3.12E-02	8.05E-03	3.04E-01	1.25E-01	2.20E-02	3.01E-01	1.01E-02	8.64E-03
Truck Exhaust Pause Area (Stop) 2	1.69E-03	0.00E+00	3.12E-02	8.05E-03	3.04E-01	1.25E-01	2.20E-02	3.01E-01	1.01E-02	8.64E-03
Truck Exhaust Outbound Scale	1.69E-03	0.00E+00	3.12E-02	8.05E-03	3.04E-01	1.25E-01	2.20E-02	3.01E-01	1.01E-02	8.64E-03

AERMOD Emissions (g/s)

	Benzene	Ethanol	Naphthalene (total)	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane
Truck Exhaust Inbound Scale	4.71E-07	0.00E+00	8.67E-06	2.24E-06	8.46E-05	3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06
Truck Exhaust Pause Area (Stop) 1	4.71E-07	0.00E+00	8.67E-06	2.24E-06	8.46E-05	3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06
Truck Exhaust Pause Area (Stop) 2	4.71E-07	0.00E+00	8.67E-06	2.24E-06	8.46E-05	3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06
Truck Exhaust Outbound Scale	4.71E-07	0.00E+00	8.67E-06	2.24E-06	8.46E-05	3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06

OFFSITE

Idling Times

Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	North Route	100%
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road		
Phillips Road & Theodore Rice Boulevard/Braley Road		
Duchaine Boulevard & Theodore Rice Boulevard		
Duchaine Boulevard & Samuel Barnet Boulevard		
Phillips Road & Samuel Barnet Boulevard	South Route	0%

(1) uses factor of 33% to conservatively account for conversion of SYNCHR

(2) hours of delay (idle) for all vehicle per hour of actual time

Emissions (g/hr)

	Benzene	Ethanol	Naphthalene (total)	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1.02E-03	0.00E+00	1.88E-02	4.85E-03	1.83E-01	7.53E-02	1.32E-02	1.82E-01	6.12E-03	5.21E-03
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	8.75E-04	0.00E+00	1.61E-02	4.16E-03	1.57E-01	6.46E-02	1.14E-02	1.56E-01	5.24E-03	4.47E-03
Phillips Road & Theodore Rice Boulevard/Braley Road	1.03E-03	0.00E+00	1.90E-02	4.89E-03	1.85E-01	7.60E-02	1.33E-02	1.83E-01	6.17E-03	5.25E-03
Duchaine Boulevard & Theodore Rice Boulevard	8.67E-05	0.00E+00	1.60E-03	4.12E-04	1.56E-02	6.40E-03	1.12E-03	1.54E-02	5.19E-04	4.42E-04
Duchaine Boulevard & Samuel Barnet Boulevard	2.42E-05	0.00E+00	4.47E-04	1.15E-04	4.35E-03	1.79E-03	3.14E-04	4.31E-03	1.45E-04	1.24E-04
Phillips Road & Samuel Barnet Boulevard	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

AERMOD Emissions (g/s)

	Benzene	Ethanol	Naphthalene (total)	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	2.84E-07	0.00E+00	5.23E-06	1.35E-06	5.10E-05	2.09E-05	3.68E-06	5.04E-05	1.70E-06	1.45E-06
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	2.43E-07	0.00E+00	4.48E-06	1.16E-06	4.37E-05	1.79E-05	3.15E-06	4.32E-05	1.46E-06	1.24E-06
Phillips Road & Theodore Rice Boulevard/Braley Road	2.86E-07	0.00E+00	5.27E-06	1.36E-06	5.14E-05	2.11E-05	3.71E-06	5.08E-05	1.71E-06	1.46E-06
Duchaine Boulevard & Theodore Rice Boulevard	2.41E-08	0.00E+00	4.44E-07	1.14E-07	4.33E-06	1.78E-06	3.12E-07	4.28E-06	1.44E-07	1.23E-07
Duchaine Boulevard & Samuel Barnet Boulevard	6.73E-09	0.00E+00	1.24E-07	3.20E-08	1.21E-06	4.97E-07	8.73E-08	1.20E-06	4.03E-08	3.43E-08
Phillips Road & Samuel Barnet Boulevard	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions At Idling Points at Facility

MOVES Emission Factors

	Styrene	Toluene	Xylene	Chloride	Mercury (total)	Arsenic Compounds	Chromium 6+	Nickel Compounds	Exhaust PM2.5 - Total	Dioxins
0 mph	1.41E-03	3.29E-02	3.54E-02	1.11E-02	6.63E-06	1.39E-03	5.37E-06	2.15E-03	2.31E+00	6.10E-09

ONSITE

Idling Times
- Truck Exhaust Inbound Scale
- Truck Exhaust Pause Area (Stop) 1
- Truck Exhaust Pause Area (Stop) 2
- Truck Exhaust Outbound Scale

(1) vehicle hours of delay (idle) per hour of actual time

Emissions (g/hr)

	Styrene	Toluene	Xylene	Chloride	Mercury (total)	Arsenic Compounds	Chromium 6+	Nickel Compounds	Primary Exhaust PM2.5 - Total	Dioxins
Truck Exhaust Inbound Scale	1.13E-03	2.63E-02	2.83E-02	8.89E-03	5.30E-06	1.11E-03	4.30E-06	1.72E-03	1.85E+00	4.88E-09
Truck Exhaust Pause Area (Stop) 1	1.13E-03	2.63E-02	2.83E-02	8.89E-03	5.30E-06	1.11E-03	4.30E-06	1.72E-03	1.85E+00	4.88E-09
Truck Exhaust Pause Area (Stop) 2	1.13E-03	2.63E-02	2.83E-02	8.89E-03	5.30E-06	1.11E-03	4.30E-06	1.72E-03	1.85E+00	4.88E-09
Truck Exhaust Outbound Scale	1.13E-03	2.63E-02	2.83E-02	8.89E-03	5.30E-06	1.11E-03	4.30E-06	1.72E-03	1.85E+00	4.88E-09

AERMOD Emissions (g/s)

	Styrene	Toluene	Xylene	Chloride	Mercury (total)	Arsenic Compounds	Chromium 6+	Nickel Compounds	Primary Exhaust PM2.5 - Total	Dioxins
Truck Exhaust Inbound Scale	3.14E-07	7.31E-06	7.86E-06	2.47E-06	1.47E-09	3.08E-07	1.19E-09	4.79E-07	5.14E-04	1.36E-12
Truck Exhaust Pause Area (Stop) 1	3.14E-07	7.31E-06	7.86E-06	2.47E-06	1.47E-09	3.08E-07	1.19E-09	4.79E-07	5.14E-04	1.36E-12
Truck Exhaust Pause Area (Stop) 2	3.14E-07	7.31E-06	7.86E-06	2.47E-06	1.47E-09	3.08E-07	1.19E-09	4.79E-07	5.14E-04	1.36E-12
Truck Exhaust Outbound Scale	3.14E-07	7.31E-06	7.86E-06	2.47E-06	1.47E-09	3.08E-07	1.19E-09	4.79E-07	5.14E-04	1.36E-12

OFFSITE

Idling Times
- Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road
- Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road
- Phillips Road & Theodore Rice Boulevard/Braley Road
- Duchaine Boulevard & Theodore Rice Boulevard
- Duchaine Boulevard & Samuel Barnet Boulevard
- Phillips Road & Samuel Barnet Boulevard

(1) uses factor of 33% to conservatively account for conversion of SYNCHR

(2) hours of delay (idle) for all vehicle per hour of actual time

Emissions (g/hr)

	Styrene	Toluene	Xylene	Chloride	Mercury (total)	Arsenic Compounds	Chromium 6+	Nickel Compounds	Primary Exhaust PM2.5 - Total	Dioxins
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	6.80E-04	1.58E-02	1.70E-02	5.36E-03	3.19E-06	6.68E-04	2.59E-06	1.04E-03	1.12E+00	2.94E-09
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	5.83E-04	1.36E-02	1.46E-02	4.60E-03	2.74E-06	5.73E-04	2.22E-06	8.91E-04	9.56E-01	2.52E-09
Phillips Road & Theodore Rice Boulevard/Braley Road	6.86E-04	1.60E-02	1.72E-02	5.40E-03	3.22E-06	6.73E-04	2.61E-06	1.05E-03	1.12E+00	2.97E-09
Duchaine Boulevard & Theodore Rice Boulevard	5.77E-05	1.35E-03	1.45E-03	4.55E-04	2.71E-07	5.67E-05	2.20E-07	8.82E-05	9.47E-02	2.50E-10
Duchaine Boulevard & Samuel Barnet Boulevard	1.61E-05	3.76E-04	4.05E-04	1.27E-04	7.58E-08	1.59E-05	6.14E-08	2.46E-05	2.65E-02	6.98E-11
Phillips Road & Samuel Barnet Boulevard	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

AERMOD Emissions (g/s)

	Styrene	Toluene	Xylene	Chloride	Mercury (total)	Arsenic Compounds	Chromium 6+	Nickel Compounds	Primary Exhaust PM2.5 - Total	Dioxins
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1.89E-07	4.40E-06	4.73E-06	1.49E-06	8.87E-10	1.86E-07	7.19E-10	2.88E-07	3.10E-04	8.17E-13
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1.62E-07	3.77E-06	4.06E-06	1.28E-06	7.61E-10	1.59E-07	6.17E-10	2.47E-07	2.66E-04	7.01E-13
Phillips Road & Theodore Rice Boulevard/Braley Road	1.90E-07	4.44E-06	4.77E-06	1.50E-06	8.95E-10	1.87E-07	7.25E-10	2.91E-07	3.12E-04	8.24E-13
Duchaine Boulevard & Theodore Rice Boulevard	1.60E-08	3.74E-07	4.02E-07	1.26E-07	7.53E-11	1.58E-08	6.10E-11	2.45E-08	2.63E-05	6.94E-14
Duchaine Boulevard & Samuel Barnet Boulevard	4.48E-09	1.04E-07	1.12E-07	3.53E-08	2.11E-11	4.40E-09	1.71E-11	6.85E-09	7.35E-06	1.94E-14
Phillips Road & Samuel Barnet Boulevard	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions At Idling Points at Facility

MOVES Emission Factors

	Furans
0 mph	3.72E-09

ONSITE

Idling Times
- Truck Exhaust Inbound Scale
- Truck Exhaust Pause Area (Stop) 1
- Truck Exhaust Pause Area (Stop) 2
- Truck Exhaust Outbound Scale

(1) vehicle hours of delay (idle) per hour of actual time

Emissions (g/hr)

	Furans
Truck Exhaust Inbound Scale	2.97E-09
Truck Exhaust Pause Area (Stop) 1	2.97E-09
Truck Exhaust Pause Area (Stop) 2	2.97E-09
Truck Exhaust Outbound Scale	2.97E-09

AERMOD Emissions (g/s)

	Furans
Truck Exhaust Inbound Scale	8.26E-13
Truck Exhaust Pause Area (Stop) 1	8.26E-13
Truck Exhaust Pause Area (Stop) 2	8.26E-13
Truck Exhaust Outbound Scale	8.26E-13

OFFSITE

Idling Times
- Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road
- Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road
- Phillips Road & Theodore Rice Boulevard/Braley Road
- Duchaine Boulevard & Theodore Rice Boulevard
- Duchaine Boulevard & Samuel Barnet Boulevard
- Phillips Road & Samuel Barnet Boulevard

(1) uses factor of 33% to conservatively account for conversion of SYNCHR

(2) hours of delay (idle) for all vehicle per hour of actual time

Emissions (g/hr)

	Furans
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1.79E-09
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1.54E-09
Phillips Road & Theodore Rice Boulevard/Braley Road	1.81E-09
Duchaine Boulevard & Theodore Rice Boulevard	1.52E-10
Duchaine Boulevard & Samuel Barnet Boulevard	4.25E-11
Phillips Road & Samuel Barnet Boulevard	0.00E+00

AERMOD Emissions (g/s)

	Furans
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	4.98E-13
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	4.27E-13
Phillips Road & Theodore Rice Boulevard/Braley Road	5.02E-13
Duchaine Boulevard & Theodore Rice Boulevard	4.23E-14
Duchaine Boulevard & Samuel Barnet Boulevard	1.18E-14
Phillips Road & Samuel Barnet Boulevard	0.00E+00

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

					NOX				CO			
			Link Area	Link Vehicle Miles Traveled	MOVES Emission Factor	MOVES Total NOX	Total Roadway NOX	Total Roadway NOX	MOVES Emission Factor	MOVES Total CO	Total Roadway CO	Total Roadway CO
Link ID	Link Description	link Avg Speed	m2	VMT/hr (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	15	2086.0	4.1	8.976	36.625	1.02E-02	4.88E-06	2.382	9.720	2.70E-03	1.29E-06
2	Onsite - 1st Scale to Tipping	5	651.0	1.4	17.170	24.725	6.87E-03	1.06E-05	5.156	7.425	2.06E-03	3.17E-06
3	Onsite - Tipping to 2nd Scale	5	623.0	1.4	17.170	24.725	6.87E-03	1.10E-05	5.156	7.425	2.06E-03	3.31E-06
4	Onsite - 2nd Scale to Exit	15	8358.7	18.5	8.976	165.888	4.61E-02	5.51E-06	2.382	44.026	1.22E-02	1.46E-06
5	Duchaine Blvd to Barnet (100% NB)	25	2032.1	8.6	7.195	62.164	1.73E-02	8.50E-06	1.778	15.364	4.27E-03	2.10E-06
6	Duchaine Blvd Barnet to Rice (100% NB)	25	4537.4	19.2	7.195	138.141	3.84E-02	8.46E-06	1.778	34.142	9.48E-03	2.09E-06
7	Rice Blvd to Rte 140 (100% NB)	25	4441.5	18.7	7.195	134.688	3.74E-02	8.42E-06	1.778	33.288	9.25E-03	2.08E-06
8	Rte 140 NB On-Ramp (100% NB)	15	2541.7	10.6	8.976	94.793	2.63E-02	1.04E-05	2.382	25.158	6.99E-03	2.75E-06
9	Rte 140 SB Off-Ramp (100% NB)	15	1936.2	8.2	8.976	73.249	2.03E-02	1.05E-05	2.382	19.440	5.40E-03	2.79E-06

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		PM10					PM2.5				
		Fugitive:	48.1	g/VMT			Fugitive:	12.0	g/VMT		
		MOVES Emission Factor	MOVES Total PM10	Fugitive Roadway PM10	Total Roadway PM10	Total Roadway PM10	MOVES Emission Factor	MOVES Total PM2.5	Fugitive Roadway PM2.5	Total Roadway PM2.5	Total Roadway PM2.5
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	1.149	4.688	196.38	5.59E-02	2.68E-05	0.509	2.077	49.09	1.42E-02	6.81E-06
2	Onsite - 1st Scale to Tipping	2.938	4.231	69.31	2.04E-02	3.14E-05	1.043	1.502	17.33	5.23E-03	8.03E-06
3	Onsite - Tipping to 2nd Scale	2.938	4.231	69.31	2.04E-02	3.28E-05	1.043	1.502	17.33	5.23E-03	8.40E-06
4	Onsite - 2nd Scale to Exit	1.149	21.233	889.47	2.53E-01	3.03E-05	0.509	9.408	222.37	6.44E-02	7.70E-06
5	Duchaine Blvd to Barnet (100% NB)	0.757	6.545	0.000	1.82E-03	8.95E-07	0.393	3.398	0.000	9.44E-04	4.65E-07
6	Duchaine Blvd Barnet to Rice (100% NB)	0.757	14.544	0.000	4.04E-03	8.90E-07	0.393	7.552	0.000	2.10E-03	4.62E-07
7	Rice Blvd to Rte 140 (100% NB)	0.757	14.180	0.000	3.94E-03	8.87E-07	0.393	7.363	0.000	2.05E-03	4.61E-07
8	Rte 140 NB On-Ramp (100% NB)	1.149	12.133	0.000	3.37E-03	1.33E-06	0.509	5.376	0.000	1.49E-03	5.88E-07
9	Rte 140 SB Off-Ramp (100% NB)	1.149	9.376	0.000	2.60E-03	1.35E-06	0.509	4.154	0.000	1.15E-03	5.96E-07

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		SO2				Benzene				Ethanol				Naphthalene			
		MOVES Emission Factor	MOVES Total SO2	Total Roadway SO2	Total Roadway SO2	MOVES Emission Factor	MOVES Total Benzene	Total Roadway Benzene	Total Roadway Benzene	MOVES Emission Factor	MOVES Total Ethanol	Total Roadway Ethanol	Total Roadway Ethanol	MOVES Emission Factor	Total Naphthalene	Roadway Naphthalene	Roadway Naphthalene
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	0.021	0.088	2.43E-05	1.17E-08	4.41E-03	1.80E-02	4.99E-06	2.39E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-03	2.05E-02	5.70E-06	2.73E-09
2	Onsite - 1st Scale to Tipping	0.036	0.053	1.46E-05	2.24E-08	1.19E-02	1.72E-02	4.77E-06	7.33E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-02	1.99E-02	5.53E-06	8.49E-09
3	Onsite - Tipping to 2nd Scale	0.036	0.053	1.46E-05	2.34E-08	1.19E-02	1.72E-02	4.77E-06	7.66E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-02	1.99E-02	5.53E-06	8.87E-09
4	Onsite - 2nd Scale to Exit	0.021	0.397	1.10E-04	1.32E-08	4.41E-03	8.14E-02	2.26E-05	2.71E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-03	9.30E-02	2.58E-05	3.09E-09
5	Duchaine Blvd to Barnet (100% NB)	0.018	0.153	4.26E-05	2.10E-08	2.87E-03	2.48E-02	6.88E-06	3.38E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.24E-03	2.80E-02	7.77E-06	3.82E-09
6	Duchaine Blvd Barnet to Rice (100% NB)	0.018	0.341	9.46E-05	2.09E-08	2.87E-03	5.50E-02	1.53E-05	3.37E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.24E-03	6.21E-02	1.73E-05	3.80E-09
7	Rice Blvd to Rte 140 (100% NB)	0.018	0.332	9.22E-05	2.08E-08	2.87E-03	5.36E-02	1.49E-05	3.36E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.24E-03	6.06E-02	1.68E-05	3.79E-09
8	Rte 140 NB On-Ramp (100% NB)	0.021	0.227	6.30E-05	2.48E-08	4.41E-03	4.65E-02	1.29E-05	5.09E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-03	5.31E-02	1.48E-05	5.81E-09
9	Rte 140 SB Off-Ramp (100% NB)	0.021	0.175	4.87E-05	2.51E-08	4.41E-03	3.60E-02	9.99E-06	5.16E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-03	4.11E-02	1.14E-05	5.89E-09

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		1,3-Butadiene				Formaldehyde				Acetaldehyde				Acrolein			
		MOVES Emission Factor	MOVES Total 1,3-Butadiene	Roadway 1,3-Butadiene	Roadway 1,3-Butadiene	MOVES Emission Factor	Total Formaldehyde	Roadway Formaldehyde	Roadway Formaldehyde	MOVES Emission Factor	Total Acetaldehyde	Roadway Acetaldehyde	Roadway Acetaldehyde	MOVES Emission Factor	MOVES Total Acrolein	Total Roadway Acrolein	Total Roadway Acrolein
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	1.22E-03	5.00E-03	1.39E-06	6.65E-10	5.03E-02	2.05E-01	5.70E-05	2.73E-08	2.02E-02	8.25E-02	2.29E-05	1.10E-08	3.51E-03	1.43E-02	3.98E-06	1.91E-09
2	Onsite - 1st Scale to Tipping	3.34E-03	4.81E-03	1.34E-06	2.05E-09	1.39E-01	2.00E-01	5.54E-05	8.51E-08	5.56E-02	8.01E-02	2.22E-05	3.42E-08	9.62E-03	1.39E-02	3.85E-06	5.91E-09
3	Onsite - Tipping to 2nd Scale	3.34E-03	4.81E-03	1.34E-06	2.14E-09	1.39E-01	2.00E-01	5.54E-05	8.90E-08	5.56E-02	8.01E-02	2.22E-05	3.57E-08	9.62E-03	1.39E-02	3.85E-06	6.18E-09
4	Onsite - 2nd Scale to Exit	1.22E-03	2.26E-02	6.29E-06	7.52E-10	5.03E-02	9.29E-01	2.58E-04	3.09E-08	2.02E-02	3.74E-01	1.04E-04	1.24E-08	3.51E-03	6.48E-02	1.80E-05	2.15E-09
5	Duchaine Blvd to Barnet (100% NB)	7.92E-04	6.85E-03	1.90E-06	9.36E-10	3.23E-02	2.79E-01	7.75E-05	3.81E-08	1.30E-02	1.12E-01	3.12E-05	1.54E-08	2.26E-03	1.95E-02	5.42E-06	2.67E-09
6	Duchaine Blvd Barnet to Rice (100% NB)	7.92E-04	1.52E-02	4.23E-06	9.31E-10	3.23E-02	6.20E-01	1.72E-04	3.79E-08	1.30E-02	2.50E-01	6.94E-05	1.53E-08	2.26E-03	4.34E-02	1.20E-05	2.66E-09
7	Rice Blvd to Rte 140 (100% NB)	7.92E-04	1.48E-02	4.12E-06	9.28E-10	3.23E-02	6.04E-01	1.68E-04	3.78E-08	1.30E-02	2.44E-01	6.77E-05	1.52E-08	2.26E-03	4.23E-02	1.17E-05	2.65E-09
8	Rte 140 NB On-Ramp (100% NB)	1.22E-03	1.29E-02	3.59E-06	1.41E-09	5.03E-02	5.31E-01	1.48E-04	5.80E-08	2.02E-02	2.14E-01	5.93E-05	2.34E-08	3.51E-03	3.71E-02	1.03E-05	4.05E-09
9	Rte 140 SB Off-Ramp (100% NB)	1.22E-03	9.99E-03	2.78E-06	1.43E-09	5.03E-02	4.10E-01	1.14E-04	5.89E-08	2.02E-02	1.65E-01	4.59E-05	2.37E-08	3.51E-03	2.86E-02	7.95E-06	4.11E-09

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		Ammonia (NH3)				Ethyl Benzene				Hexane				Styrene			
		MOVES Emission Factor	Total Ammonia (NH3)	Roadway Ammonia (NH3)	Roadway Ammonia (NH3)	MOVES Emission Factor	Total Ethyl Benzene	Roadway Ethyl Benzene	Roadway Ethyl Benzene	MOVES Emission Factor	MOVES Total Hexane	Total Roadway Hexane	Total Roadway Hexane	MOVES Emission Factor	MOVES Total Styrene	Total Roadway Styrene	Total Roadway Styrene
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	3.15E-02	1.29E-01	3.57E-05	1.71E-08	1.74E-03	7.09E-03	1.97E-06	9.44E-10	1.68E-03	6.86E-03	1.90E-06	9.13E-10	3.97E-04	1.62E-03	4.50E-07	2.16E-10
2	Onsite - 1st Scale to Tipping	7.84E-02	1.13E-01	3.13E-05	4.82E-08	4.65E-03	6.69E-03	1.86E-06	2.86E-09	4.18E-03	6.03E-03	1.67E-06	2.57E-09	7.54E-04	1.09E-03	3.01E-07	4.63E-10
3	Onsite - Tipping to 2nd Scale	7.84E-02	1.13E-01	3.13E-05	5.03E-08	4.65E-03	6.69E-03	1.86E-06	2.98E-09	4.18E-03	6.03E-03	1.67E-06	2.69E-09	7.54E-04	1.09E-03	3.01E-07	4.84E-10
4	Onsite - 2nd Scale to Exit	3.15E-02	5.82E-01	1.62E-04	1.93E-08	1.74E-03	3.21E-02	8.92E-06	1.07E-09	1.68E-03	3.11E-02	8.63E-06	1.03E-09	3.97E-04	7.35E-03	2.04E-06	2.44E-10
5	Duchaine Blvd to Barnet (100% NB)	2.38E-02	2.06E-01	5.72E-05	2.81E-08	1.14E-03	9.85E-03	2.73E-06	1.35E-09	1.16E-03	9.99E-03	2.77E-06	1.37E-09	2.95E-04	2.55E-03	7.08E-07	3.48E-10
6	Duchaine Blvd Barnet to Rice (100% NB)	2.38E-02	4.57E-01	1.27E-04	2.80E-08	1.14E-03	2.19E-02	6.08E-06	1.34E-09	1.16E-03	2.22E-02	6.17E-06	1.36E-09	2.95E-04	5.66E-03	1.57E-06	3.47E-10
7	Rice Blvd to Rte 140 (100% NB)	2.38E-02	4.46E-01	1.24E-04	2.79E-08	1.14E-03	2.13E-02	5.93E-06	1.33E-09	1.16E-03	2.16E-02	6.01E-06	1.35E-09	2.95E-04	5.52E-03	1.53E-06	3.45E-10
8	Rte 140 NB On-Ramp (100% NB)	3.15E-02	3.33E-01	9.24E-05	3.63E-08	1.74E-03	1.83E-02	5.10E-06	2.01E-09	1.68E-03	1.77E-02	4.93E-06	1.94E-09	3.97E-04	4.20E-03	1.17E-06	4.59E-10
9	Rte 140 SB Off-Ramp (100% NB)	3.15E-02	2.57E-01	7.14E-05	3.69E-08	1.74E-03	1.42E-02	3.94E-06	2.03E-09	1.68E-03	1.37E-02	3.81E-06	1.97E-09	3.97E-04	3.24E-03	9.01E-07	4.65E-10

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		Toluene				Xylene				Chloride				Mercury (total)			
		MOVES Emission Factor	MOVES Total Toluene	Total Roadway Toluene	Total Roadway Toluene	MOVES Emission Factor	MOVES Total Xylene	Total Roadway Xylene	Total Roadway Xylene	MOVES Emission Factor	MOVES Total Chloride	Total Roadway Chloride	Total Roadway Chloride	MOVES Emission Factor	Total Mercury (total)	Roadway Mercury (total)	Roadway Mercury (total)
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	4.94E-03	2.02E-02	5.60E-06	2.68E-09	5.36E-03	2.19E-02	6.07E-06	2.91E-09	9.93E-04	4.05E-03	1.13E-06	5.40E-10	4.42E-07	1.80E-06	5.01E-10	2.40E-13
2	Onsite - 1st Scale to Tipping	1.31E-02	1.89E-02	5.24E-06	8.05E-09	1.44E-02	2.07E-02	5.76E-06	8.84E-09	3.19E-03	4.59E-03	1.27E-06	1.96E-09	1.33E-06	1.91E-06	5.30E-10	8.14E-13
3	Onsite - Tipping to 2nd Scale	1.31E-02	1.89E-02	5.24E-06	8.42E-09	1.44E-02	2.07E-02	5.76E-06	9.24E-09	3.19E-03	4.59E-03	1.27E-06	2.05E-09	1.33E-06	1.91E-06	5.30E-10	8.51E-13
4	Onsite - 2nd Scale to Exit	4.94E-03	9.13E-02	2.54E-05	3.03E-09	5.36E-03	9.90E-02	2.75E-05	3.29E-09	9.93E-04	1.84E-02	5.10E-06	6.10E-10	4.42E-07	8.17E-06	2.27E-09	2.71E-13
5	Duchaine Blvd to Barnet (100% NB)	3.26E-03	2.81E-02	7.82E-06	3.85E-09	3.51E-03	3.03E-02	8.41E-06	4.14E-09	6.28E-04	5.42E-03	1.51E-06	7.41E-10	2.65E-07	2.29E-06	6.36E-10	3.13E-13
6	Duchaine Blvd Barnet to Rice (100% NB)	3.26E-03	6.25E-02	1.74E-05	3.83E-09	3.51E-03	6.73E-02	1.87E-05	4.12E-09	6.28E-04	1.21E-02	3.35E-06	7.38E-10	2.65E-07	5.09E-06	1.41E-09	3.12E-13
7	Rice Blvd to Rte 140 (100% NB)	3.26E-03	6.10E-02	1.69E-05	3.81E-09	3.51E-03	6.56E-02	1.82E-05	4.10E-09	6.28E-04	1.17E-02	3.26E-06	7.35E-10	2.65E-07	4.96E-06	1.38E-09	3.10E-13
8	Rte 140 NB On-Ramp (100% NB)	4.94E-03	5.22E-02	1.45E-05	5.70E-09	5.36E-03	5.66E-02	1.57E-05	6.19E-09	9.93E-04	1.05E-02	2.91E-06	1.15E-09	4.42E-07	4.67E-06	1.30E-09	5.10E-13
9	Rte 140 SB Off-Ramp (100% NB)	4.94E-03	4.03E-02	1.12E-05	5.78E-09	5.36E-03	4.37E-02	1.21E-05	6.27E-09	9.93E-04	8.11E-03	2.25E-06	1.16E-09	4.42E-07	3.61E-06	1.00E-09	5.17E-13

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		Arsenic Compounds				Chromium 6+				Nickel Compounds				Primary Exhaust PM2.5 - Total			
		MOVES Emission Factor	Total Arsenic Compoun	Roadway Arsenic Compoun	Roadway Arsenic Compoun	MOVES Emission Factor	Total Chromiu m 6+	Roadway Chromiu m 6+	Roadway Chromiu m 6+	MOVES Emission Factor	Total Nickel Compoun	Roadway Nickel Compoun	Roadway Nickel Compoun	MOVES Emission Factor	Total Primary Exhaust	Roadway Primary Exhaust	Roadway Primary Exhaust
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	9.24E-05	3.77E-04	1.05E-07	5.02E-11	3.58E-07	1.46E-06	4.06E-10	1.94E-13	1.44E-04	5.86E-04	1.63E-07	7.80E-11	4.21E-01	1.72E+00	4.78E-04	2.29E-07
2	Onsite - 1st Scale to Tipping	2.77E-04	3.99E-04	1.11E-07	1.70E-10	1.07E-06	1.55E-06	4.30E-10	6.60E-13	4.31E-04	6.21E-04	1.72E-07	2.65E-10	7.80E-01	1.12E+00	3.12E-04	4.79E-07
3	Onsite - Tipping to 2nd Scale	2.77E-04	3.99E-04	1.11E-07	1.78E-10	1.07E-06	1.55E-06	4.30E-10	6.90E-13	4.31E-04	6.21E-04	1.72E-07	2.77E-10	7.80E-01	1.12E+00	3.12E-04	5.01E-07
4	Onsite - 2nd Scale to Exit	9.24E-05	1.71E-03	4.74E-07	5.67E-11	3.58E-07	6.62E-06	1.84E-09	2.20E-13	1.44E-04	2.65E-03	7.37E-07	8.82E-11	4.21E-01	7.79E+00	2.16E-03	2.59E-07
5	Duchaine Blvd to Barnet (100% NB)	5.54E-05	4.79E-04	1.33E-07	6.55E-11	2.15E-07	1.86E-06	5.16E-10	2.54E-13	8.62E-05	7.45E-04	2.07E-07	1.02E-10	3.44E-01	2.98E+00	8.26E-04	4.07E-07
6	Duchaine Blvd Barnet to Rice (100% NB)	5.54E-05	1.06E-03	2.96E-07	6.52E-11	2.15E-07	4.12E-06	1.15E-09	2.52E-13	8.62E-05	1.65E-03	4.60E-07	1.01E-10	3.44E-01	6.61E+00	1.84E-03	4.05E-07
7	Rice Blvd to Rte 140 (100% NB)	5.54E-05	1.04E-03	2.88E-07	6.49E-11	2.15E-07	4.02E-06	1.12E-09	2.51E-13	8.62E-05	1.61E-03	4.48E-07	1.01E-10	3.44E-01	6.45E+00	1.79E-03	4.03E-07
8	Rte 140 NB On-Ramp (100% NB)	9.24E-05	9.76E-04	2.71E-07	1.07E-10	3.58E-07	3.78E-06	1.05E-09	4.13E-13	1.44E-04	1.52E-03	4.21E-07	1.66E-10	4.21E-01	4.45E+00	1.24E-03	4.86E-07
9	Rte 140 SB Off-Ramp (100% NB)	9.24E-05	7.54E-04	2.09E-07	1.08E-10	3.58E-07	2.92E-06	8.11E-10	4.19E-13	1.44E-04	1.17E-03	3.26E-07	1.68E-10	4.21E-01	3.44E+00	9.55E-04	4.93E-07

Parallel Products
Mobile Source Emissions Analysis

Truck Emissions on Roadway Links

		Dioxins				Furans			
		MOVES Emission Factor	MOVES Total Dioxins	Total Roadway Dioxins	Total Roadway Dioxins	MOVES Emission Factor	MOVES Total Furans	Total Roadway Furans	Total Roadway Furans
Link ID	Link Description	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)	g/VMT	g/hr (peak hr)	g/s (peak hr)	g/s/m2 (peak hr)
1	Onsite - Entry to 1st Scale	4.07E-10	1.66E-09	4.61E-13	2.21E-16	2.48E-10	1.01E-09	2.81E-13	1.35E-16
2	Onsite - 1st Scale to Tipping	1.22E-09	1.76E-09	4.88E-13	7.50E-16	7.44E-10	1.07E-09	2.97E-13	4.57E-16
3	Onsite - Tipping to 2nd Scale	1.22E-09	1.76E-09	4.88E-13	7.84E-16	7.44E-10	1.07E-09	2.97E-13	4.77E-16
4	Onsite - 2nd Scale to Exit	4.07E-10	7.52E-09	2.09E-12	2.50E-16	2.48E-10	4.58E-09	1.27E-12	1.52E-16
5	Duchaine Blvd to Barnet (100% NB)	2.44E-10	2.11E-09	5.86E-13	2.88E-16	1.49E-10	1.28E-09	3.57E-13	1.76E-16
6	Duchaine Blvd Barnet to Rice (100% NB)	2.44E-10	4.69E-09	1.30E-12	2.87E-16	1.49E-10	2.86E-09	7.93E-13	1.75E-16
7	Rice Blvd to Rte 140 (100% NB)	2.44E-10	4.57E-09	1.27E-12	2.86E-16	1.49E-10	2.78E-09	7.73E-13	1.74E-16
8	Rte 140 NB On-Ramp (100% NB)	4.07E-10	4.30E-09	1.19E-12	4.70E-16	2.48E-10	2.62E-09	7.27E-13	2.86E-16
9	Rte 140 SB Off-Ramp (100% NB)	4.07E-10	3.32E-09	9.22E-13	4.76E-16	2.48E-10	2.02E-09	5.62E-13	2.90E-16

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	NOX (g/s)	CO (g/s)	PM10 (g/s)	PM2.5 (g/s)	SO2 (g/s)	ODOR (OU/S)
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	572.3
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	572.3
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	0	0	0	0	0	909.6
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	572.3
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	572.3
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	0	0	0	0	0	909.6
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	0.3928	0.2075	0.0188	0.0188	0.0015	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0.0371	0.0311	0.0028	0.0028	0.0002	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0.0371	0.0311	0.0028	0.0028	0.0002	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0.00841	0.10122	0.00855	0.00157	0.00011	2038.8
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0.00701	0.08435	0.00848	0.00150	0.00009	2038.8
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0.00701	0.08435	0.00848	0.00150	0.00009	2038.8
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0.00903	0.00127	0	1699.0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	2.04E-03	2.45E-04	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	2.04E-03	2.45E-04	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	2.04E-03	2.45E-04	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	2.04E-03	2.45E-04	0	0
VOLUME SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Y (m)**		**Init Sig-Z (m)**			**NOX (g/s)**	**CO (g/s)**	**PM10 (g/s)**	**PM2.5 (g/s)**	**SO2 (g/s)**	**ODOR (OU/S)**
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			9.35E-04	1.12E-02	9.49E-04	1.74E-04	1.26E-05	226.5
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			7.79E-04	9.37E-03	9.42E-04	1.66E-04	1.05E-05	226.5
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			7.79E-04	9.37E-03	9.42E-04	1.66E-04	1.05E-05	226.5
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			5.43E-03	6.53E-02	1.57E-03	6.61E-04	7.32E-05	0
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			5.43E-03	6.53E-02	1.56E-02	4.87E-03	7.32E-05	0
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			6.78E-04	8.16E-03	1.33E-03	4.24E-04	9.15E-06	0
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			6.78E-04	8.16E-03	1.54E-02	4.63E-03	9.15E-06	0
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			6.78E-04	8.16E-03	3.23E-04	1.21E-04	9.15E-06	0
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			6.78E-04	8.16E-03	1.43E-02	4.33E-03	9.15E-06	0
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	0
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	0
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	0
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.33E-03	2.41E-03	5.59E-04	5.14E-04	1.43E-05	0
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			5.02E-03	1.45E-03	3.37E-04	3.10E-04	8.64E-06	0
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.30E-03	1.25E-03	2.89E-04	2.66E-04	7.41E-06	0
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			5.06E-03	1.47E-03	3.39E-04	3.12E-04	8.71E-06	0
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.26E-04	1.23E-04	2.86E-05	2.63E-05	7.33E-07	0
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.19E-04	3.45E-05	7.99E-06	7.35E-06	2.05E-07	0
AREA SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**		**Init Sig-Z (m)**		**Area (ft2)**			**NOX (g/s)**	**CO (g/s)**	**PM10 (g/s)**	**PM2.5 (g/s)**	**SO2 (g/s)**	**ODOR (OU/S)**
None																		
LINE (AREA) SOURCES (roadway segments)	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Z (m)**					**NOX (g/s/m2)**	**CO (g/s/m2)**	**PM10 (g/s/m2)**	**PM2.5 (g/s/m2)**	**SO2 (g/s/m2)**	**ODOR (OU/S/m2)**
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					4.88E-06	1.29E-06	2.68E-05	6.81E-06	1.17E-08	0
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					1.06E-05	3.17E-06	3.14E-05	8.03E-06	2.24E-08	0
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					1.10E-05	3.31E-06	3.28E-05	8.40E-06	2.34E-08	0
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					5.51E-06	1.46E-06	3.03E-05	7.70E-06	1.32E-08	0
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					8.50E-06	2.10E-06	8.95E-07	4.65E-07	2.10E-08	0
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					8.46E-06	2.09E-06	8.90E-07	4.62E-07	2.09E-08	0
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					8.42E-06	2.08E-06	8.87E-07	4.61E-07	2.08E-08	0
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					1.04E-05	2.75E-06	1.33E-06	5.88E-07	2.48E-08	0
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					1.05E-05	2.79E-06	1.35E-06	5.96E-07	2.51E-08	0

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	0	1.76E-04	0	0	0	2.56E-04
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	0	1.76E-04	0	0	0	2.56E-04
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	5.93E-08	5.19E-06	2.96E-06	1.85E-04	1.51E-06	8.40E-06
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	8.89E-09	7.78E-07	4.45E-07	2.78E-05	2.26E-07	1.26E-06
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	8.89E-09	7.78E-07	4.45E-07	2.78E-05	2.26E-07	1.26E-06
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	1.33E-04	0	2.18E-03	1.52E-05	2.69E-04
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	1.10E-04	0	6.13E-05	1.27E-05	2.24E-04
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	1.10E-04	0	6.13E-05	1.27E-05	2.24E-04
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0

VOLUME SOURCES	#			Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Init Sig-Y (m)		Init Sig-Z (m)			2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			0	1.47E-05	0	2.42E-04	1.69E-06	2.99E-05
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			0	1.23E-05	0	6.81E-06	1.41E-06	2.49E-05
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			0	1.23E-05	0	6.81E-06	1.41E-06	2.49E-05
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			0	8.55E-05	0	1.41E-03	9.82E-06	1.74E-04
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			0	8.55E-05	0	1.41E-03	9.82E-06	1.74E-04
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			0	5.22E-05	0	5.93E-06	1.23E-06	4.15E-05
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			0	5.22E-05	0	5.93E-06	1.23E-06	4.15E-05
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			0	5.22E-05	0	5.93E-06	1.23E-06	4.15E-05
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			0	5.22E-05	0	5.93E-06	1.23E-06	4.15E-05
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	4.71E-07	0	8.46E-05	8.67E-06	7.31E-06
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	4.71E-07	0	8.46E-05	8.67E-06	7.31E-06
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	4.71E-07	0	8.46E-05	8.67E-06	7.31E-06
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	4.71E-07	0	8.46E-05	8.67E-06	7.31E-06
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	2.84E-07	0	5.10E-05	5.23E-06	4.40E-06
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	2.43E-07	0	4.37E-05	4.48E-06	3.77E-06
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	2.86E-07	0	5.14E-05	5.27E-06	4.44E-06
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	2.41E-08	0	4.33E-06	4.44E-07	3.74E-07
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	6.73E-09	0	1.21E-06	1.24E-07	1.04E-07

AREA SOURCES	#			Location known?	EMISFACT Restrictions	Release Height (ft)		Init Sig-Z (m)		Area (ft2)			2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene
None																		

LINE (AREA) SOURCES (roadway segments)	#			Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Init Sig-Z (m)					2-Methylnaphthalene	Benzene	Dichlorobenzene	Formaldehyde	Naphthalene	Toluene
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					0	2.39E-09	0	2.73E-08	2.73E-09	2.68E-09
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					0	7.33E-09	0	8.51E-08	8.49E-09	8.05E-09
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					0	7.66E-09	0	8.90E-08	8.87E-09	8.42E-09
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					0	2.71E-09	0	3.09E-08	3.09E-09	3.03E-09
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					0	3.38E-09	0	3.81E-08	3.82E-09	3.85E-09
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					0	3.37E-09	0	3.79E-08	3.80E-09	3.83E-09
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					0	3.36E-09	0	3.78E-08	3.79E-09	3.81E-09
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					0	5.09E-09	0	5.80E-08	5.81E-09	5.70E-09
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					0	5.16E-09	0	5.89E-08	5.89E-09	5.78E-09

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	0	0	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	0	0	0	0	0	0
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	4.94E-07	2.96E-08	2.72E-06	3.46E-06	2.10E-06	1.24E-06
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	7.41E-08	4.45E-09	4.08E-07	5.19E-07	3.15E-07	1.85E-07
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	7.41E-08	4.45E-09	4.08E-07	5.19E-07	3.15E-07	1.85E-07
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	2.93E-08	0	0	5.24E-10	0	0
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	2.44E-08	0	0	4.37E-10	0	0
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	2.44E-08	0	0	4.37E-10	0	0
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
VOLUME SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Y (m)**		**Init Sig-Z (m)**			**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Lead**
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			3.25E-09	0	0	5.83E-11	0	0
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			2.71E-09	0	0	4.85E-11	0	0
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			2.71E-09	0	0	4.85E-11	0	0
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			1.89E-08	0	0.00E+00	3.38E-10	0	0
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			1.89E-08	0	0.00E+00	3.38E-10	0	0
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			2.36E-09	0	0.00E+00	4.23E-11	0	0
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			2.36E-09	0	0.00E+00	4.23E-11	0	0
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			2.36E-09	0	0.00E+00	4.23E-11	0	0
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			2.36E-09	0	0.00E+00	4.23E-11	0	0
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.08E-07	0	0	1.19E-09	0	0
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.08E-07	0	0	1.19E-09	0	0
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.08E-07	0	0	1.19E-09	0	0
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.08E-07	0	0	1.19E-09	0	0
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.86E-07	0	0	7.19E-10	0	0
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.59E-07	0	0	6.17E-10	0	0
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.87E-07	0	0	7.25E-10	0	0
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.58E-08	0	0	6.10E-11	0	0
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.40E-09	0	0	1.71E-11	0	0
AREA SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**		**Init Sig-Z (m)**		**Area (ft2)**			**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Lead**
None																		
LINE (AREA) SOURCES (roadway segments)	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Z (m)**					**Arsenic**	**Beryllium**	**Cadmium**	**Chromium**	**Copper**	**Lead**
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					5.02E-11	0	0	1.94E-13	0	0
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					1.70E-10	0	0	6.60E-13	0	0
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					1.78E-10	0	0	6.90E-13	0	0
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					5.67E-11	0	0	2.20E-13	0	0
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					6.55E-11	0	0	2.54E-13	0	0
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					6.52E-11	0	0	2.52E-13	0	0
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					6.49E-11	0	0	2.51E-13	0	0
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					1.07E-10	0	0	4.13E-13	0	0
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					1.08E-10	0	0	4.19E-13	0	0

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	Mercury	Nickel	Selenium	Vanadium	Ethanol	1,3-Butadiene
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	0	0	0	0	4.04E-05	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	0	0	0	0	4.04E-05	0
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	6.42E-07	5.19E-06	5.93E-08	5.68E-06	0	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	9.64E-08	7.78E-07	8.89E-09	8.52E-07	0	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	9.64E-08	7.78E-07	8.89E-09	8.52E-07	0	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.89E-10	0	0	0	0	9.53E-06
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.24E-10	0	0	0	0	7.94E-06
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.24E-10	0	0	0	0	7.94E-06
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
VOLUME SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Y (m)**		**Init Sig-Z (m)**			**Mercury**	**Nickel**	**Selenium**	**Vanadium**	**Ethanol**	**1,3-Butadiene**
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			4.32E-11	0	0	0	0	1.06E-06
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			3.60E-11	0	0	0	0	8.82E-07
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			3.60E-11	0	0	0	0	8.82E-07
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			2.51E-10	0	0	0	0	6.15E-06
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			2.51E-10	0	0	0	0	6.15E-06
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			3.14E-11	0	0	0	0	7.68E-07
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			3.14E-11	0	0	0	0	7.68E-07
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			3.14E-11	0	0	0	0	7.68E-07
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			3.14E-11	0	0	0	0	7.68E-07
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.47E-09	4.79E-07	0	0	0	2.24E-06
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.47E-09	4.79E-07	0	0	0	2.24E-06
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.47E-09	4.79E-07	0	0	0	2.24E-06
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.47E-09	4.79E-07	0	0	0	2.24E-06
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.87E-10	2.88E-07	0	0	0	1.35E-06
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			7.61E-10	2.47E-07	0	0	0	1.16E-06
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.95E-10	2.91E-07	0	0	0	1.36E-06
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			7.53E-11	2.45E-08	0	0	0	1.14E-07
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			2.11E-11	6.85E-09	0	0	0	3.20E-08
AREA SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**		**Init Sig-Z (m)**		**Area (ft2)**			**Mercury**	**Nickel**	**Selenium**	**Vanadium**	**Ethanol**	**1,3-Butadiene**
None																		
LINE (AREA) SOURCES (roadway segments)	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Z (m)**					**Mercury**	**Nickel**	**Selenium**	**Vanadium**	**Ethanol**	**1,3-Butadiene**
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					2.40E-13	7.80E-11	0	0	0	6.65E-10
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					8.14E-13	2.65E-10	0	0	0	2.05E-09
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					8.51E-13	2.77E-10	0	0	0	2.14E-09
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					2.71E-13	8.82E-11	0	0	0	7.52E-10
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					3.13E-13	1.02E-10	0	0	0	9.36E-10
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					3.12E-13	1.01E-10	0	0	0	9.31E-10
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					3.10E-13	1.01E-10	0	0	0	9.28E-10
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					5.10E-13	1.66E-10	0	0	0	1.41E-09
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					5.17E-13	1.68E-10	0	0	0	1.43E-09

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	Acetaldehyde	Acrolein	Ammonia (NH3)	Ethyl Benzene	Hexane	Styrene
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	2.43E-03	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	2.43E-03	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	0	0	2.93E-02	7.16E-06	1.43E-05	3.44E-05
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	2.43E-03	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	2.43E-03	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	0	0	2.93E-02	7.16E-06	1.43E-05	3.44E-05
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	0	0	0	0	4.45E-03	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0	6.67E-04	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0	6.67E-04	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	7.28E-04	1.09E-04	1.51E-04	6.83E-05	5.14E-05	0
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	6.07E-04	9.07E-05	1.26E-04	5.69E-05	4.28E-05	0
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	6.07E-04	9.07E-05	1.26E-04	5.69E-05	4.28E-05	0
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
VOLUME SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Y (m)**		**Init Sig-Z (m)**			**Acetaldehyde**	**Acrolein**	**Ammonia (NH3)**	**Ethyl Benzene**	**Hexane**	**Styrene**
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			8.09E-05	1.21E-05	1.68E-05	7.58E-06	5.71E-06	0
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			6.74E-05	1.01E-05	1.40E-05	6.32E-06	4.76E-06	0
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			6.74E-05	1.01E-05	1.40E-05	6.32E-06	4.76E-06	0
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			4.70E-04	7.02E-05	9.77E-05	4.40E-05	3.31E-05	0.00E+00
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			4.70E-04	7.02E-05	9.77E-05	4.40E-05	3.31E-05	0.00E+00
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			5.87E-05	3.37E-05	1.22E-05	5.50E-06	3.23E-06	0
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			5.87E-05	3.37E-05	1.22E-05	5.50E-06	3.23E-06	0
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			5.87E-05	3.37E-05	1.22E-05	5.50E-06	3.23E-06	0
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			5.87E-05	3.37E-05	1.22E-05	5.50E-06	3.23E-06	0
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06	3.14E-07
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06	3.14E-07
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06	3.14E-07
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			3.47E-05	6.10E-06	8.37E-05	2.82E-06	2.40E-06	3.14E-07
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			2.09E-05	3.68E-06	5.04E-05	1.70E-06	1.45E-06	1.89E-07
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.79E-05	3.15E-06	4.32E-05	1.46E-06	1.24E-06	1.62E-07
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			2.11E-05	3.71E-06	5.08E-05	1.71E-06	1.46E-06	1.90E-07
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.78E-06	3.12E-07	4.28E-06	1.44E-07	1.23E-07	1.60E-08
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.97E-07	8.73E-08	1.20E-06	4.03E-08	3.43E-08	4.48E-09
AREA SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**		**Init Sig-Z (m)**		**Area (ft2)**			**Acetaldehyde**	**Acrolein**	**Ammonia (NH3)**	**Ethyl Benzene**	**Hexane**	**Styrene**
None																		
LINE (AREA) SOURCES (roadway segments)	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Z (m)**					**Acetaldehyde**	**Acrolein**	**Ammonia (NH3)**	**Ethyl Benzene**	**Hexane**	**Styrene**
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					1.10E-08	1.91E-09	1.71E-08	9.44E-10	9.13E-10	2.16E-10
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					3.42E-08	5.91E-09	4.82E-08	2.86E-09	2.57E-09	4.63E-10
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					3.57E-08	6.18E-09	5.03E-08	2.98E-09	2.69E-09	4.84E-10
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					1.24E-08	2.15E-09	1.93E-08	1.07E-09	1.03E-09	2.44E-10
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					1.54E-08	2.67E-09	2.81E-08	1.35E-09	1.37E-09	3.48E-10
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					1.53E-08	2.66E-09	2.80E-08	1.34E-09	1.36E-09	3.47E-10
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					1.52E-08	2.65E-09	2.79E-08	1.33E-09	1.35E-09	3.45E-10
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					2.34E-08	4.05E-09	3.63E-08	2.01E-09	1.94E-09	4.59E-10
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					2.37E-08	4.11E-09	3.69E-08	2.03E-09	1.97E-09	4.65E-10

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	Xylene	Chloride	Primary Exhaust PM2.5 - Total	Dioxins
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	3.29E-04	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	3.29E-04	0	0	0
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	0	0	0	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.68E-04	0	4.21E-03	4.86E-13
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.06E-04	0	3.50E-04	4.05E-13
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.06E-04	0	3.50E-04	4.05E-13
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0

VOLUME SOURCES	#			Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Init Sig-Y (m)		Init Sig-Z (m)			Xylene	Chloride	Primary Exhaust PM2.5 - Total	Dioxins
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			4.09E-05	0	4.67E-04	5.40E-14
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			3.40E-05	0	3.89E-05	4.50E-14
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			3.40E-05	0	3.89E-05	4.50E-14
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			2.37E-04	0.00E+00	3.98E-03	3.14E-13
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			2.37E-04	0.00E+00	3.98E-03	3.14E-13
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			2.98E-05	0	1.24E-03	3.92E-14
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			2.98E-05	0	1.24E-03	3.92E-14
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			2.98E-05	0	1.24E-03	3.92E-14
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			2.98E-05	0	1.24E-03	3.92E-14
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			7.86E-06	2.47E-06	5.14E-04	1.36E-12
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			7.86E-06	2.47E-06	5.14E-04	1.36E-12
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			7.86E-06	2.47E-06	5.14E-04	1.36E-12
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			7.86E-06	2.47E-06	5.14E-04	1.36E-12
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.73E-06	1.49E-06	3.10E-04	8.17E-13
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.06E-06	1.28E-06	2.66E-04	7.01E-13
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.77E-06	1.50E-06	3.12E-04	8.24E-13
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.02E-07	1.26E-07	2.63E-05	6.94E-14
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.12E-07	3.53E-08	7.35E-06	1.94E-14

AREA SOURCES	#			Location known?	EMISFACT Restrictions	Release Height (ft)		Init Sig-Z (m)		Area (ft2)			Xylene	Chloride	Primary Exhaust PM2.5 - Total	Dioxins
None																

LINE (AREA) SOURCES (roadway segments)	#			Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Init Sig-Z (m)					Xylene	Chloride	Primary Exhaust PM2.5 - Total	Dioxins
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					2.91E-09	5.40E-10	2.29E-07	2.21E-16
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					8.84E-09	1.96E-09	4.79E-07	7.50E-16
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					9.24E-09	2.05E-09	5.01E-07	7.84E-16
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					3.29E-09	6.10E-10	2.59E-07	2.50E-16
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					4.14E-09	7.41E-10	4.07E-07	2.88E-16
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					4.12E-09	7.38E-10	4.05E-07	2.87E-16
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					4.10E-09	7.35E-10	4.03E-07	2.86E-16
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					6.19E-09	1.15E-09	4.86E-07	4.70E-16
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					6.27E-09	1.16E-09	4.93E-07	4.76E-16

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	Furans	Hydrogen Sulfide	Carbonyl Sulfide	Carbon Disulfide	Acetone	Methyl Ethyl Ketone
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	1.62E-03	2.85E-05	3.61E-05	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	1.62E-03	2.85E-05	3.61E-05	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	0	1.17E-03	4.24E-04	1.14E-03	1.46E-03	1.70E-04
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	1.62E-03	2.85E-05	3.61E-05	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	1.62E-03	2.85E-05	3.61E-05	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	0	1.17E-03	4.24E-04	1.14E-03	1.46E-03	1.70E-04
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	0	0	0	0	0	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0	0	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0	0	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	3.28E-13	0	0	0	1.64E-04	3.45E-05
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	2.74E-13	0	0	0	1.37E-04	2.87E-05
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	2.74E-13	0	0	0	1.37E-04	2.87E-05
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
VOLUME SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Y (m)**		**Init Sig-Z (m)**			**Furans**	**Hydrogen Sulfide**	**Carbonyl Sulfide**	**Carbon Disulfide**	**Acetone**	**Methyl Ethyl Ketone**
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			3.65E-14	0	0	0	1.82E-05	3.83E-06
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			3.04E-14	0	0	0	1.52E-05	3.19E-06
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			3.04E-14	0	0	0	1.52E-05	3.19E-06
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			2.12E-13	0	0	0	1.06E-04	2.22E-05
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			2.12E-13	0	0	0	1.06E-04	2.22E-05
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			2.65E-14	0	0	0	1.32E-05	2.78E-06
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			2.65E-14	0	0	0	1.32E-05	2.78E-06
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			2.65E-14	0	0	0	1.32E-05	2.78E-06
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			2.65E-14	0	0	0	1.32E-05	2.78E-06
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.26E-13	0	0	0	0	0
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.26E-13	0	0	0	0	0
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.26E-13	0	0	0	0	0
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			8.26E-13	0	0	0	0	0
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.98E-13	0	0	0	0	0
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.27E-13	0	0	0	0	0
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			5.02E-13	0	0	0	0	0
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			4.23E-14	0	0	0	0	0
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			1.18E-14	0	0	0	0	0
AREA SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**		**Init Sig-Z (m)**		**Area (ft2)**			**Furans**	**Hydrogen Sulfide**	**Carbonyl Sulfide**	**Carbon Disulfide**	**Acetone**	**Methyl Ethyl Ketone**
None																		
LINE (AREA) SOURCES (roadway segments)	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Z (m)**					**Furans**	**Hydrogen Sulfide**	**Carbonyl Sulfide**	**Carbon Disulfide**	**Acetone**	**Methyl Ethyl Ketone**
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					1.35E-16	0	0	0	0	0
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					4.57E-16	0	0	0	0	0
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					4.77E-16	0	0	0	0	0
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					1.52E-16	0	0	0	0	0
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					1.76E-16	0	0	0	0	0
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					1.75E-16	0	0	0	0	0
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					1.74E-16	0	0	0	0	0
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					2.86E-16	0	0	0	0	0
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					2.90E-16	0	0	0	0	0

POINT SOURCES	**#**	**ID**	**Type**	**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Vs (ft/s)**	**Vs (m/s)**	**Ds (ft)**	**Ds (m)**	**Ts (F)**	**Propene**	**Chloromethane**	**Chloroethane**	**2-propanol**	**Chloroform**	**Bromomethane**
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	1.50E-02	4.28E-03	2.75E-05	1.67E-05	3.21E-03	2.47E-03
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	1.50E-02	4.28E-03	2.75E-05	1.67E-05	3.21E-03	2.47E-03
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	0	0	0	0	0	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0	0	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0	0	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	0	0	0	0	0
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	0	0	0	0	0
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	0	0	0	0	0
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0	0	0
VOLUME SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Y (m)**		**Init Sig-Z (m)**			**Propene**	**Chloromethane**	**Chloroethane**	**2-propanol**	**Chloroform**	**Bromomethane**
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			0	0	0	0	0	0
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			0	0	0	0	0	0
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			0	0	0	0	0	0
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0	0	0
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0	0	0
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0	0	0
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0	0	0
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0	0	0
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0	0	0
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0	0	0
AREA SOURCES	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**		**Init Sig-Z (m)**		**Area (ft2)**			**Propene**	**Chloromethane**	**Chloroethane**	**2-propanol**	**Chloroform**	**Bromomethane**
None																		
LINE (AREA) SOURCES (roadway segments)	**#**			**Location known?**	**EMISFACT Restrictions**	**Release Height (ft)**	**Release Height (m)**	**Init Sig-Z (m)**					**Propene**	**Chloromethane**	**Chloroethane**	**2-propanol**	**Chloroform**	**Bromomethane**
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0	0	0

POINT SOURCES	#	ID	Type	Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Vs (ft/s)	Vs (m/s)	Ds (ft)	Ds (m)	Ts (F)	Bromodichloromethane	Heptane	1,2,4-Trimethylbenzene	Chlorobenzene
Biosolids Ionization Stacks (APR-NOV)	1	BIOION1	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0
Biosolids Ionization Stacks (APR-NOV)	1	BIOION2	Point	Y	Apr-Nov	40	12.19	72.4	22.07	2.6667	0.81	Amb+10°F	0	0	0	0
Biosolids Scrubber Stack (APR-NOV)	1	BIOCS	Point	Y	Apr-Nov	40	12.19	76	23.16	2.3333	0.71	Amb+10°F	1.50E-04	9.57E-05	5.00E-06	2.37E-06
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION1W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0
Biosolids Ionization Stacks (DEC-MAR)	1	BIOION2W	Point	Y	Dec-Mar	40	12.19	72.4	22.07	2.6667	0.81	50	0	0	0	0
Biosolids Scrubber Stack (DEC-MAR)	1	BIOCSW	Point	Y	Dec-Mar	40	12.19	76	23.16	2.3333	0.71	50	1.50E-04	9.57E-05	5.00E-06	2.37E-06
Biosolids Dryers MERGED STACK	1	BIODRYM	Point	Y		40	12.19	56.57	17.24	1.3340	0.41	140	0	0	0	0
Biosolids Boiler Stack	1	BIOBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0
Glass Processing Boiler Stack	1	GLASBOIL	Point	Y	Dec-Mar	40	12.19	60.4	18.41	0.5	0.15	140	0	0	0	0
Transfer Building Vents MERGED STACK (1hr)	1	TVENTM1	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	0	0	0
Transfer Building Vents MERGED STACK (24hr)	1	TVENTM24	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	0	0	0
Transfer Building Vents MERGED STACK (ANNUAL)	1	TVENTMA	Point	Y		70	21.34	27	8.23	8.68	2.65	Amb+10°F	0	0	0	0
Processing Building Vents MERGED STACK	1	PVENTM	Point	Y		70	21.34	27	8.23	7.523	2.29	Amb+10°F	0	0	0	0
Cooling Tower Cells	1	BIOCT1	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0
Cooling Tower Cells	1	BIOCT2	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0
Cooling Tower Cells	1	BIOCT3	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0
Cooling Tower Cells	1	BIOCT4	Point	Y		12.76042	3.89	20.32	6.193536	9.75	2.9718	Amb+16°F	0	0	0	0

VOLUME SOURCES	#			Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Init Sig-Y (m)		Init Sig-Z (m)			Bromodichloromethane	Heptane	1,2,4-Trimethylbenzene	Chlorobenzene
Transfer Building Door (1hr)	1	DOORS1	Volume	Y		14	4.27	4.68		5.67			0	0	0	0
Transfer Building Door (24hr)	1	DOORS24	Volume	Y		14	4.27	4.68		5.67			0	0	0	0
Transfer Building Door (ANNUAL)	1	DOORSA	Volume	Y		14	4.27	4.68		5.67			0	0	0	0
Glass Processing North Bunker Area (1hr)	1	GLASSN1	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0
Glass Processing South Area (1hr)	1	GLASSS1	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0
Glass Processing North Bunker Area (24hr)	1	GLASSN24	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0
Glass Processing South Area (24hr)	1	GLASSS24	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0
Glass Processing North Bunker Area (ANNUAL)	1	GLASSNA	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0
Glass Processing South Area (ANNUAL)	1	GLASSSA	Volume	Y		25.443	7.76	11.63		7.21			0	0	0	0
Truck Exhaust Inbound Scale	1	INSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Truck Exhaust Pause Area (Stop) 1	1	STOP1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Truck Exhaust Pause Area (Stop) 2	1	STOP2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Truck Exhaust Outbound Scale	1	OUTSCALE	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	1	INT1	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	1	INT2	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Phillips Road & Theodore Rice Boulevard/Braley Road	1	INT3	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Duchaine Boulevard & Theodore Rice Boulevard	1	INT4	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0
Duchaine Boulevard & Samuel Barnet Boulevard	1	INT5	Volume	Y	5am-9pm	11.9	3.63	5.58		3.37			0	0	0	0

AREA SOURCES	#			Location known?	EMISFACT Restrictions	Release Height (ft)		Init Sig-Z (m)		Area (ft2)			Bromodichloromethane	Heptane	1,2,4-Trimethylbenzene	Chlorobenzene
None																

LINE (AREA) SOURCES (roadway segments)	#			Location known?	EMISFACT Restrictions	Release Height (ft)	Release Height (m)	Init Sig-Z (m)					Bromodichloromethane	Heptane	1,2,4-Trimethylbenzene	Chlorobenzene
Onsite - Entry to 1st Scale	1	ROAD1	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Onsite - 1st Scale to Tipping	1	ROAD2	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Onsite - Tipping to 2nd Scale	1	ROAD3	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Onsite - 2nd Scale to Exit	1	ROAD4	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Duchaine Blvd to Barnet (100% NB)	1	ROAD5	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Duchaine Blvd Barnet to Rice (100% NB)	1	ROAD6	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Rice Blvd to Rte 140 (100% NB)	1	ROAD7	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Rte 140 NB On-Ramp (100% NB)	1	ROAD8	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0
Rte 140 SB Off-Ramp (100% NB)	1	ROAD9	Line	Y	5am-9pm	11.9	3.63	3.37					0	0	0	0

Attachment C

Air Dispersion Modeling Analyses Supporting Information

Parallel Products New England - New Bedford, MA
AERMOD Dispersion Modeling Analysis
NAAQS Results

POLLUTANT	AVERAGING TIME	MAXIMUM MODELED CONCENTRATION ($\mu g/m^3$)	PERIOD of MODELED MAX (Year or YYMMDDHH)	Location (UTME, UTMN, Elev., Hill, Flag)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	TOTAL CONCENTRATION ($\mu g/m^3$)	STANDARD ($\mu g/m^3$)	% of Standard
SO_2	1 HOUR (1)	0.67185	2013-2017	337969.54, 4620236.45, 32.81, 35.26, 0.00	24.5	25.2	195	13%
	3 HOUR (2)	0.43785	17081403	337969.54, 4620156.45, 31.80, 31.80, 0.00	23.3	23.8	1300	2%
PM_{10}	24 HOUR (4)	38.00260	13012924	337929.54, 4619976.45, 24.49, 34.84, 0.00	33.0	71.0	150	47%
$PM_{2.5}$	24 HOUR (5)	7.43066	2013-2017	337929.54, 4619976.45, 24.49, 34.84, 0.00	17.5	24.9	35	71%
	ANNUAL (6)	2.82435	2013-2017	337929.54, 4619976.45, 24.49, 34.84, 0.00	6.4	9.2	15	61%
NO_2	1 HOUR (7)	177.04632	2013-2017	337969.54, 4620196.45, 32.29, 32.29, 0.00	Included in modeled value	177.0	188	94%
	ANNUAL (3)	46.63069	2013	337949.54, 4620036.45, 26.58, 35.02, 0.00		46.6	100	47%
CO	1 HOUR (2)	156.39534	16080406	337969.54, 4620236.45, 32.81, 35.26, 0.00	2005.5	2161.9	40000	5%
	8 HOUR (2)	96.64163	17120408	337769.54, 4619976.45, 23.75, 23.75, 0.00	1260.6	1357.2	10000	14%

Notes:

(1) Maximum 4th-Highest Maximum Daily 1-Hr Concentration Averaged Over 5 Years
(2) Highest 2nd-High Concentration Over 5 Years
(3) Highest Annual Concentration Over 5 Years
(4) Highest 6th-High Concentration Over 5 Years
(5) Maximum 8th-Highest 24-Hour Concentration Averaged Over 5 Years
(6) Maximum Annual Concentration Averaged Over 5 Years
(7) Maximum 8th-Highest Maximum Daily 1-Hour Concentration Averaged Over 5 Years

Parallel Products New England - New Bedford, MA

AERMOD Dispersion Modeling Analysis

NAAQS Results - Sensitive Receptors

POLLUTANT	AVERAGING TIME	MAXIMUM MODELED CONCENTRATION ($\mu g/m^3$)	PERIOD of MODELED MAX (Year or YYMMDDHH)	Location (UTME, UTMN, Elev., Hill, Flag)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	TOTAL CONCENTRATION ($\mu g/m^3$)	STANDARD ($\mu g/m^3$)	% of Standard
SO_2	1 HOUR (1)	0.06878	2013-2017	Pulaski Elementary (338252.99, 4621438.84)	24.5	24.6	195	13%
	1 HOUR (1)	0.05866	2013-2017	Campbell Elementary (338766.89, 4681472.33)		24.6	195	13%
	1 HOUR (1)	0.08096	2013-2017	Creative Preschool (339200.77, 4619453.22)		24.6	195	13%
	1 HOUR (1)	0.05160	2013-2017	Northstar Learning Center (335909.54, 4620636.45)		24.6	195	13%
	3 HOUR (2)	0.05549	13053103	Pulaski Elementary (338252.99, 4621438.84)	23.3	23.4	1300	2%
	3 HOUR (2)	0.05398	14062703	Campbell Elementary (338766.89, 4681472.33)		23.4	1300	2%
	3 HOUR (2)	0.06285	14121524	Creative Preschool (339200.77, 4619453.22)		23.4	1300	2%
	3 HOUR (2)	0.02505	15102121	Northstar Learning Center (335909.54, 4620636.45)		23.3	1300	2%
PM_{10}	24 HOUR (4)	1.47939	17111824	Pulaski Elementary (338252.99, 4621438.84)	33.0	34.5	150	23%
	24 HOUR (4)	1.30197	16012924	Campbell Elementary (338766.89, 4681472.33)		34.3	150	23%
	24 HOUR (4)	1.07220	17110124	Creative Preschool (339200.77, 4619453.22)		34.1	150	23%
	24 HOUR (4)	0.49321	14110924	Northstar Learning Center (335909.54, 4620636.45)		33.5	150	22%
$PM_{2.5}$	24 HOUR (5)	0.28751	2013-2017	Pulaski Elementary (338252.99, 4621438.84)	17.5	17.8	35	51%
	24 HOUR (5)	0.26466	2013-2017	Campbell Elementary (338766.89, 4681472.33)		17.8	35	51%
	24 HOUR (5)	0.23906	2013-2017	Creative Preschool (339200.77, 4619453.22)		17.7	35	51%
	24 HOUR (5)	0.06048	2013-2017	Northstar Learning Center (335909.54, 4620636.45)		17.6	35	50%
	ANNUAL (6)	0.05999	2013-2017	Pulaski Elementary (338252.99, 4621438.84)	6.4	6.4	15	43%
	ANNUAL (6)	0.03416	2013-2017	Campbell Elementary (338766.89, 4681472.33)		6.4	15	43%
	ANNUAL (6)	0.03807	2013-2017	Creative Preschool (339200.77, 4619453.22)		6.4	15	43%
	ANNUAL (6)	0.00644	2013-2017	Northstar Learning Center (335909.54, 4620636.45)		6.4	15	43%
NO_2	1 HOUR (7)	75.40778	2013-2017	Pulaski Elementary (338252.99, 4621438.84)	Included in Modeled Value	75.4	188	40%
	1 HOUR (7)	73.11680	2013-2017	Campbell Elementary (338766.89, 4681472.33)		73.1	188	39%
	1 HOUR (7)	72.45444	2013-2017	Creative Preschool (339200.77, 4619453.22)		72.5	188	39%
	1 HOUR (7)	67.24258	2013-2017	Northstar Learning Center (335909.54, 4620636.45)		67.2	188	36%
	ANNUAL (3)	41.80283	2015	Pulaski Elementary (338252.99, 4621438.84)		41.8	100	42%
	ANNUAL (3)	41.56152	2016	Campbell Elementary (338766.89, 4681472.33)		41.6	100	42%
	ANNUAL (3)	41.57571	2016	Creative Preschool (339200.77, 4619453.22)		41.6	100	42%
	ANNUAL (3)	41.34652	2016	Northstar Learning Center (335909.54, 4620636.45)		41.3	100	41%
CO	1 HOUR (2)	20.98959	13010620	Pulaski Elementary (338252.99, 4621438.84)	2005.5	2026.5	40000	5%
	1 HOUR (2)	19.30305	16081606	Campbell Elementary (338766.89, 4681472.33)		2024.8	40000	5%
	1 HOUR (2)	23.89601	16110107	Creative Preschool (339200.77, 4619453.22)		2029.4	40000	5%
	1 HOUR (2)	16.96223	17100123	Northstar Learning Center (335909.54, 4620636.45)		2022.5	40000	5%
	8 HOUR (2)	7.80272	15091624	Pulaski Elementary (338252.99, 4621438.84)	1260.6	1268.4	10000	13%
	8 HOUR (2)	7.26087	14020408	Campbell Elementary (338766.89, 4681472.33)		1267.9	10000	13%
	8 HOUR (2)	8.39220	15111008	Creative Preschool (339200.77, 4619453.22)		1269.0	10000	13%
	8 HOUR (2)	3.11292	17062508	Northstar Learning Center (335909.54, 4620636.45)		1263.7	10000	13%

Notes:

(1) Maximum 4th-Highest Maximum Daily 1-Hr Concentration Averaged Over 5 Years
(2) Highest 2nd-High Concentration Over 5 Years
(3) Highest Annual Concentration Over 5 Years
(4) Highest 6th-High Concentration Over 5 Years
(5) Maximum 8th-Highest 24-Hour Concentration Averaged Over 5 Years
(6) Maximum Annual Concentration Averaged Over 5 Years
(7) Maximum 8th-Highest Maximum Daily 1-Hour Concentration Averaged Over 5 Years

Summary of Snow Cover Analysis Results
New Bedford Regional Airport - KEWB

Summary					
	2013	2014	2015	2016	2017
January	Continuous Snow Cover	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow
February	Late Autumn/Winter w/o Snow	Continuous Snow Cover	Continuous Snow Cover	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow
March	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Continuous Snow Cover	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow
April	Transitional Spring	Transitional Spring	Transitional Spring	Transitional Spring	Transitional Spring
May	Transitional Spring	Transitional Spring	Transitional Spring	Transitional Spring	Transitional Spring
June	Midsummer	Midsummer	Midsummer	Midsummer	Midsummer
July	Midsummer	Midsummer	Midsummer	Midsummer	Midsummer
August	Midsummer	Midsummer	Midsummer	Midsummer	Midsummer
September	Autumn	Autumn	Autumn	Autumn	Autumn
October	Autumn	Autumn	Autumn	Autumn	Autumn
November	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow
December	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow	Late Autumn/Winter w/o Snow

Data from National Operational Hydrologic Remote Sensing Center Interactive Snow Information Website
http://www.nohrsc.noaa.gov/interactive/html/graph.html?station=KEWB&w=600&h=400&o=a&uc=0&by=2012&bm=1&bd=1&bh=0&ey=2012&em=12&ed=31&eh=23&data=1&units=0&region=us

Station:	KEWB - NEW BEDFORD REGIONAL AIRPORT
Latitude:	41.683333 N
Longitude:	70.966667 W
Elevation:	105 Feet
Start Date:	2012-01-01 00 UTC
Stop Date:	2012-12-31 23 UTC
Forest Density:	7%
Land Use:	Cool Forest and Field

Any month having >1" snow cover for greater than 60% of the hours was considered having “Continuous Snow Cover”.
April and May are always considered “Transitional Spring”
June/July/August are always "Midsummer"
September and October are always "Autumn"
November through March without snow cover is considered “Late Autumn/Winter Without Continuous Snow Cover”

New Bedford Precipitation.xlsx

Year	Annual Inches of Rain	Notes	30th Percentile	70th Percentile
1996	N/A	ASOS installed 3/20/96	42.08	49.19
1997	N/A	No Data		
1998	N/A	No Data		
1999	42.09			
2000	42.07			
2001	47.33			
2002	43.92			
2003	46.21			
2004	40.52			
2005	58.94			
2006	53.57			
2007	43.01			
2008	59.55			
2009	57.85			
2010	47.46			
2011	53.51			
2012	37.81			
2013	45.1			
2014	50.34			
2015	40.57			
2016	37.69			
2017	41.1			

Year	Inches	Selected Moisture Profile
2013	45.10	Average
2014	50.34	Wet
2015	40.57	Dry
2016	37.69	Dry
2017	41.1	Dry

Attachment D

Air Toxics Analysis

Chemical	Averaging Period	Max Concentration ($\mu g/m^3$)	TEL (24-hour) ($\mu g/m^3$)	Exceedance?	AAL (Annual) ($\mu g/m^3$)	Exceedance?	Note
1,2,4-Trimethylbenezene	24-Hour	3.17E-04	200.0	NO			1
	Annual	4.00E-05			60.00	NO	1
1,3-Butadiene	24-Hour	5.66E-03	1.20	NO			
	Annual	7.20E-04			3.00E-03	NO	
2-Methylnaphythalene	24-Hour	6.53E-06	14.25	NO			
	Annual	7.79E-07			14.25	NO	
Acetaldehyde	24-Hour	1.05E-01	30.00	NO			
	Annual	1.49E-02			0.40	NO	
Acetone	24-Hour	9.32E-02	160.54	NO			
	Annual	1.29E-02			160.54	NO	
Acrolein	24-Hour	2.86E-02	0.07	NO			
	Annual	4.75E-03			0.07	NO	
Ammonia	24-Hour	2.12E+00	100.00	NO			
	Annual	2.84E-01			100.00	NO	
Arsenic	24-Hour	6.90E-04	3.00E-03	NO			
	Annual	8.00E-05			3.00E-04	NO	
Benzene	24-Hour	4.88E-02	0.60	NO			
	Annual	7.83E-03			0.10	NO	
Beryllium	24-Hour	3.27E-06	1.00E-03	NO			
	Annual	3.89E-07			4.00E-04	NO	
Bromomethane	24-Hour	1.57E-01	5.28	NO			
	Annual	2.04E-02			2.64	NO	
Cadmium	24-Hour	2.99E-04	2.00E-03	NO			
	Annual	4.00E-05			2.00E-04	NO	
Carbon Disulfide	24-Hour	7.59E-02	0.10	NO			
	Annual	9.92E-03			0.10	NO	
Carbonyl Sulfide	24-Hour	2.99E-02	0.10	NO			
	Annual	3.93E-03			0.04	NO	
Chloride	24-Hour	5.73E-03	7.00	NO			
	Annual	6.90E-04			4.69	NO	
Chlorobenzene	24-Hour	1.50E-04	93.88	NO			
	Annual	2.00E-05			6.26	NO	
Chloroethane	24-Hour	1.74E-03	717.55	NO			
	Annual	2.30E-04			358.78	NO	
Chloroform	24-Hour	2.03E-01	132.76	NO			
	Annual	2.64E-02			0.04	NO	
Chloromethane	24-Hour	2.71E-01	92.0	NO			1
	Annual	3.53E-02			90.0	NO	1
Chromium	24-Hour	3.81E-04	1.36	NO			
	Annual	5.00E-05			1.36	NO	
Copper	24-Hour	2.31E-04	0.54	NO			
	Annual	3.00E-05			0.54	NO	
Dichlorobenzene	24-Hour	3.27E-04	81.74	NO			
	Annual	4.00E-05			0.18	NO	
Dioxins	24-Hour	3.03E-09	4.50E-08	NO			2
	Annual	3.69E-10			4.50E-08	NO	2
Ethanol	24-Hour	2.56E-03	51.24	NO			
	Annual	3.30E-04			51.24	NO	
Ethyl Benzene	24-Hour	8.89E-03	300.0	NO			
	Annual	1.33E-03			300.00	NO	
Formaldehyde	24-Hour	2.10E-01	2.0	NO			
	Annual	2.62E-02			0.08	NO	
Furans	24-Hour	1.85E-09	0.40	NO			
	Annual	2.25E-10			0.02	NO	
Hexane	24-Hour	4.90E-01	95.24	NO			
	Annual	5.90E-02			47.62	NO	
Hydrogen Sulfide	24-Hour	2.76E-01	0.90	NO			
	Annual	3.66E-02			0.90	NO	
Lead	24-Hour	1.36E-04	0.14	NO			
	Annual	2.00E-05			0.07	NO	
Mercury	24-Hour	7.08E-05	3.00E-03	NO			
	Annual	1.00E-05			1.40E-03	NO	
Methyl Etyl Ketone	24-Hour	1.11E-02	200.0	NO			
	Annual	1.60E-03			10.0	NO	
Naphthalene	24-Hour	2.16E-02	14.25	NO			
	Annual	2.67E-03			14.25	NO	
Nickel	24-Hour	1.10E-03	0.27	NO			
	Annual	1.40E-04			0.18	NO	
Primary Exhaust PM2.5	24-Hour	1.37E+00	5.0	NO			1
	Annual	2.02E-01			5.0	NO	1
Selenium	24-Hour	6.53E-06	0.54	NO			
	Annual	7.79E-07			0.54	NO	
Styrene	24-Hour	2.31E-03	200.0	NO			
	Annual	3.40E-04			2.00	NO	
Toluene	24-Hour	4.42E-02	80.0	NO			
	Annual	8.01E-03			20.00	NO	
Vanadium	24-Hour	6.26E-04	0.27	NO			
	Annual	7.00E-05			0.27	NO	
Xylene	24-Hour	3.73E-02	11.80	NO			
	Annual	7.71E-03			11.80	NO	

1 EPA Iris
2 MassDEP Policy

Notes to Air Toxics Analysis Result Table

(a) TEL, AAL, or other health protective standard as described further in notes (d) and (g) below.
(b) Chloride maximum concentrations were evaluated relative to the TEL and AAL for hydrogen chloride.
(c) Dichlorobenzene (undefined isomers) was conservatively evaluated against the TEL for o-dichlorobenzene and AAL for p-dichlorobenzene.
(d) AALs and TELs are not published for dioxins. The maximum concentration of dioxins represented in this table is the sum of dioxins and furans. The criterion used for evaluation of this pollutant is published by MassDEP as of November 2017 ("Assessment & Control of Dioxin in Massachusetts") and represents 2,3,7,8-TCDD toxic equivalency factors (TEF).
(e) Hexane maximum concentrations were evaluated relative to the TEL and AAL for alkanes and alkenes.
(f) Mercury maximum concentrations were conservatively evaluated relative to the TEL and AAL for methyl mercury.
(g) AALs and TELs are not published for primary exhaust PM2.5 total (diesel exhaust particulate matter). The criterion used for evaluation is published by USEPA ("Integrated Risk Information System Chemical Assessment Summary") as of June 1, 1993, and this criterion (inhalation reference criterion) remains unchanged at this writing (February 8, 2019).

ADDENDA

AIR & ODOR ANALYSIS ADDENDA

11.0 Air and Odor Addendum

During the course of MEPA's review of the DEIR, it became apparent to Epsilon Associates, Inc. that two documents were inadvertently omitted from the appendices of the supporting air and odor report. These documents are:

Figure A-1 Stack Locations

Figure B-1 Glass Processing Block Flow Diagram

This addendum is submitted proactively to address that deficiency, although no air and odor analysis scope is dictated by the DEIR Certificate.

Figure A-1 to the DEIR Air & Odor Analysis document is provided with this submittal as Figure 11-1.

Since submittal of the DEIR, the glass processing system design has advanced. This is not a significant change since the design now includes: (1) air pollution controls [baghouse(s)] which further reduce air emissions; and (2) a stack to be located between the MSW processing building and the glass processing building which will provide better dispersion than the previous side wall panel fan design. Based on this design change (which is also reflected in the noise modeling update in Section 6.0, we are accordingly providing the updated glass processing block flow diagram (Figure 11-2), as well as updated supporting air emission calculations (Appendix 11-1). The update shows annual potential-to-emit of 0.164 tons per year of PM10 and 0.049 tons per year of PM2.5. This compares to the previous estimates of 0.417 tons per year of PM10 and 0.125 tons per year of PM2.5.

The Parallel Products design results in a very small contribution to local air pollution. To illustrate this fact, a comparison to air emissions from previous operations at the site are presented here. A previous site operation was a Polaroid film manufacturing facility that had much higher potential and actual emissions than proposed by Parallel Products. Below is a comparison of the potential emissions from Parallel Products' proposed operation, compared to Polaroid in 2003. The potential emissions from Parallel Products are orders of magnitude lower than Polaroid's potential emissions. The potential is also well below the actual emissions in 2003 and similar emissions were occurring from Polaroid and its successor Multilayer Coating Technologies until the facility closed around 2007.

Compound	Potential Emissions		Actual Emissions (2003)
	Parallel Products	Polaroid	Polaroid
Nitrogen oxides (NOx)	14	1290	77
Carbon monoxide (CO)	7	134	12
Particulate Matter (PM2.5)	<1	11	38
Sulfur Dioxide (SO2)	0.1	1631	243
Volatile Organic Compounds (VOC)	<1	172	33

Finally, for documentation of the air and odor consultation with MassDEP that was requested by EOEA in the EENF scope, the requested meeting was held on June 19, 2019.

ATTACHMENT 6

NEW BEDFORD CONCOMM – ORDER OF CONDITIONS

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

Provided by MassDEP:
SE49-0831
MassDEP File #

eDEP Transaction #

New Bedford
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

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

1. From: New Bedford
   Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Tim — a. First Name
Cusson — b. Last Name
Parallel Products of New England — c. Organization
100 Duchaine Blvd. — d. Mailing Address
New Bedford — e. City/Town
MA — f. State
02745 — g. Zip Code

4. Property Owner (if different from applicant):

a. First Name
b. Last Name
SMRE 100, LLC c/o Ruberto, Israel & Weiner — c. Organization
225 State St., 7th Floor — d. Mailing Address
Boston — e. City/Town
MA — f. State
02109 — g. Zip Code

5. Project Location:

100 Duchaine Blvd. — a. Street Address
New Bedford — b. City/Town
Map 133; Map 134 — c. Assessors Map/Plat Number
Lot 67; Lots 5 & 462 — d. Parcel/Lot Number

Latitude and Longitude, if known: d m s — d. Latitude; d m s — e. Longitude

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A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

Bristol (S.D.)	24201
a. County	b. Certificate Number (if registered land)
c. Book	d. Page

7. Dates:

10/3/2019	7/21/2020	7/30/2020
a. Date Notice of Intent Filed	b. Date Public Hearing Closed	c. Date of Issuance

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

Phase I & Phase II Site Plan 100 Duchaine Blvd. Assessors Map 133 Lot 67 & Assessors Map 134 Lots 5 & 462. Sheets 1 through 24 of 26.

Farland Corp.	Christian Farland, P.E.
b. Prepared By	c. Signed and Stamped by
06/26/2020	various
d. Final Revision Date	e. Scale
Long Term Operation & Maintenance Plan	revised 3/4/2020
f. Additional Plan or Document Title	g. Date

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 (the 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.

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B. Findings (cont.)

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 the interests of the Act, 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).**

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) ______ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☒ Bank	45 a. linear feet	45 b. linear feet	c. linear feet	d. linear feet
5. ☒ Bordering Vegetated Wetland	4,095 perm 1,209 temp	4,095 perm 1,209 temp	6,700 c. square feet	6,700 d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
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	4, 700 a. total sq. feet	4, 700 b. total sq. feet		
Sq ft within 100 ft	4, 700 c. square feet	4, 700 d. square feet	4, 700 s. f. (restored)	4,700 s.f. (restored)
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

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B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
14. ☐ Coastal Dunes	a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
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. c/y dredged	d. c/y 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. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		
22. ☐ 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

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B. Findings (cont.)

* **#23.** 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.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. ☐ Restoration/Enhancement *:

a. square feet of BVW	b. square feet of salt marsh

24. ☒ Stream Crossing(s):

	1
a. number of new stream crossings	b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are 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.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
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. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 7/30/2023 unless extended in writing by the Department.
7. 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.

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C. General Conditions Under Massachusetts Wetlands Protection Act

8. 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.

9. 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 the 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.

10. 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, "MassDEP"]

    "File Number SE49-0831 "

11. 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 MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 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.

15. 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.

16. 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.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. 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.

18. 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.

19. The work associated with this Order (the "Project")
    (1) ☒ is subject to the Massachusetts Stormwater Standards
    (2) ☐ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):
See attached Special Conditions 21 through 55

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No
2. The New Bedford (Conservation Commission) hereby finds (check one that applies):
   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

      1. Municipal Ordinance or Bylaw ______ 2. 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.
   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

      Wetlands Ordinance (1. Municipal Ordinance or Bylaw) Sec. 15-101 thru 15-112
3. 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.

   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   MADEP General Conditions 1 through 20 are Special Conditions pursuant to the City of New Bedford Wetlands Ordinance (Sec. 15-101 through 15-112). In addition, see attached Special Conditions 21 through 55.

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

Provided by MassDEP:
SE49-0831
MassDEP File #

eDEP Transaction #

New Bedford
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

7/30/2020
1. 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.

3
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:

☐ by hand delivery on

Date

☒ by certified mail, return receipt requested, on

7/30/2020

Date

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 MassDEP 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 for 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 providing written information to the Department prior to issuance of a Superseding Order.

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.

PARALLEL PRODUCTS SPECIAL CONDITIONS
RAIL AND RECYCLING FACILITIES
100 DUCHAINE BOULEVARD
APPLICANT: Parallel Products of New England
OWNER: SMRE 100, LLC

SE49-0831 SPECIAL CONDITIONS

21. 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.

22. 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.

23. No modification to surface features, drainage or topography shall be permitted except as indicated by this Order of Conditions.

24. Contours shall remain unchanged except as permitted by this Order of Conditions.

25. There shall be no construction other than that proposed by the Notice of Intent and included on the plans.

26. Immediately following completion of construction and grading, permanent stabilization shall be carried out to minimize erosion.

27. All wetland areas not to be altered shall be kept clear of rubbish, debris, and construction material.

28. All exposed soil or subsoil shall be replanted with vegetation such as grass, groundcover, shrubs or a wetland seed mix so as to minimize erosion.

29. There shall be minimum disruption of existing grades and vegetation in order to minimize erosion.

30. No runoff shall be caused to drain on adjacent property.

31. All excess material shall be removed from the site.

32. The owners shall notify the Conservation Commission of the work start date prior to its commencement so that regular inspections may be made.

33. The inspector and/or 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.

34. All facilities and equipment shall be continually maintained so as to comply with this Order of Conditions and M.G.L. Ch. 131 S40, the Wetlands Protection Act and Regulations 310 CMR 10.00 et seq.

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. It is the responsibility of the applicant to complete the review required by agencies with jurisdiction over the activity that is subject to this Order of Conditions and procure all required permits or approvals before work commences. These reviews, permits, and approvals may include but are not limited to:

    - The Army Corps of Engineers
    - The MA Department of Environmental Protection
    - The MA Natural Heritage and Endangered Species Program
    - Review by local Planning Boards, Zoning Boards, Board of Health and Building Inspector.

39. The Conservation Commission shall not be responsible or liable for the construction, operation, or maintenance of any part of this project and does not warrant the safety of same.

40. Any fill or construction materials shall be placed in upland areas.

41. Any mitigation and resource protection devices and measures, e.g. straw bales, siltation fence or compost tubes are to be installed prior to the initiation of work under this Order of Conditions. Silt fence and straw bales shall be trenched into the ground. The Conservation Agent is to be notified when in place for inspection and verification. No work is to be undertaken until written or verbal approval is received from the Conservation Commission or its Agent.

42. In accordance with Condition number fourteen (14), 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 City 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 is to be received at that time.

44. Any changes in proposed drainage patterns shall require the written approval of the Conservation Commission.

45. Wetland flagging to remain in place until the project has been completed and a Certificate of Compliance issued.

46. Notice of Intent, Order of Conditions and approved plans shall be retained on the site during construction and made available to all contractors.

47. All conditions are on going and do not expire until the issuance of a Certificate of Compliance.

48. An as-built plan including utilities, grading and 25' No Disturb Zone shall be submitted upon completion of construction.

49. The Stormwater Pollution Prevention Plan (SWPPP) shall be submitted two weeks prior to construction start up.

50. The applicant shall maintain vegetative growth in the stormwater pond where Front voltaic canopy # 2 is proposed. Failure to maintain vegetative growth in the stormwater pond shall result in removal of the photovoltaic canopy and restoration of the vegetation in the stormwater pond.

51. The Conservation Commission's consulting engineer shall conduct inspections at a minimum of the following times: 1) at the pre-construction meeting. 2) When the proposed stormwater wetland subgrade has been established. 3) At the time of installation of the two equalizing culverts in the wetland impact area. 4) when the locations of the level spreaders are staked out in the field.

52. The Conservation Agent shall conduct inspections at a minimum of the following times: 1) at the pre - construction meeting. 2) when the erosion controls are installed. 3) when the wetland replication area has been excavated to subgrade. 4) when the wetland replication area has been planted. 5) when the wetland restoration areas have been restored.

53. The resume of the wetland scientist to oversee construction of the wetland replication area, the restoration of the temporarily impacted wetlands, the riverfront restorations and bridge crossing construction shall be sent to the Conservation Commission two weeks prior to construction commencement.

54. Two annual wetland monitoring reports shall be submitted to the Conservation Commission following the initial year of construction. They shall document the at least 75% of the surface of the wetland replication areas and wetland restoration areas are vegetated with indigenous wetland plant species. Documentation that the riverfront restoration areas has been completed in compliance with the approved plans shall also be included in the annual wetland monitoring reports.

55. An as-built of the wetland replication, riverfront restoration, and the wetland and stream crossing shall be submitted to the Conservation Commission at the completion of construction. The as-built

shall provide, at a minimum, the bottom elevation of the wetland replication area, the square footages of the replication area and the wetland impact areas. The wetland impact area as-built shall also include showing the size and restoration of the temporarily impacted wetlands, including the elevation of the restored wetlands and the elevation of the adjacent wetlands. The stream crossing as-built shall include the limits of the bridge, the entire slope leading to the stream and the distance from the limit of construction on the slope and the stream.

Massachusetts Department of Environmental Protection
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G. Recording Information

Prior to commencement of work, this Order of Conditions must be 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 subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

New Bedford
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

New Bedford
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

100 Duchaine Blvd — Project Location
SE49-0831 — MassDEP File Number

Has been recorded at the Registry of Deeds of:

Bristol (S.D.) — County
Book
Page

for: SMRE 100, LLC — Property Owner

and has been noted in the chain of title of the affected property in:

Book
Page

In accordance with the Order of Conditions issued on:

7/30/2023
Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

ATTACHMENT 7

SOUND LEVEL ASSESSMENTS REPORT

SOUND LEVEL ASSESSMENT REPORT

South Coast Renewables, LLC
New Bedford, Massachusetts

Prepared for:

South Coast Renewables, LLC
(FKA: Parallel Products of New England, Inc.)
100 Duchaine Boulevard
New Bedford, Massachusetts 02745

Prepared by:

Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

January 16, 2023

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1.0 INTRODUCTION

Noise assessments for this project have been presented within the historical Executive Office of Energy and Environmental Affairs MEPA filings including the Draft Environmental Impact Report [DEIR] (November 2019), the Final Environmental Impact Report [FEIR] (January 2021), and the Supplemental Final Environmental Impact Report {SFEIR] (July 2022). Previous reports have addressed noise from truck traffic due to operation of the facility, as well as continuous operating sources of sound such as rooftop HVAC equipment, loading/tipping operations, ground level cooling towers and building exhaust stacks. Since submittal of the FEIR, there have been modifications to the site plan, including the removal of the biosolids building and associated sound sources (both stationary and mobile).

This revised assessment documents the noise sources and mitigation associated with the current site plan and addresses comments made by the Massachusetts Department of Environmental Protection (MassDEP) during the SFEIR review by including all ambient data and further evaluating incidental and mobile sources such as truck tipping operations and rail logistics. This assessment shows that the impacts from all sounds due to the Project will be mitigated to the maximum extent practical and will not cause a nuisance noise condition or noise pollution.

2.0 PROJECT UPDATE

Since the initial noise assessment, modifications have been made to the project process equipment, and the MassDEP requested additional evaluation of noise produced by the Project. In response to the MassDEP comments, this revised assessment identifies and evaluates short term incidental noise sources from the Project including rail movement activities, onsite truck traffic, backup alarms, and documents that South Coast Renewables, LLC (SCR) has mitigated Project generated sound to the maximum extent practical.

This report provides a description of the applicable noise policy requirements, a brief explanation of noise terminology, a summary of the results of an ambient sound level monitoring program, a discussion of the sound level modeling analysis for the continuous sources of the proposed Project, a discussion of the sound level modeling analysis for the short-term incidental sound sources from the Project, and a review of mitigation feasibility. Noise control options are discussed in order to meet the requirements of the MassDEP Noise Policy at residential locations, and to avoid, minimize, and mitigate noise impacts.

3.0 PROJECT DESCRIPTION

SCR is currently operating a glass handling and processing facility at 100 Duchaine Boulevard in New Bedford, Massachusetts. SCR is proposing to construct a solid waste processing and handling facility at this site. The project will be implemented in sequential phases. The glass handling was implemented as Phase 1 and is not part of the Site Suitability application. The solid waste processing and handling operations will be implemented as Phase 2 and is subject to Site Suitability under 310 CMR 16.00. This sound level evaluation is cumulative and addresses both new and existing sound sources associated with the Project.

The glass handling operation will recycle the used glass containers that are collected through the Massachusetts deposit system. Bottles collected will be processed such that the glass can be reused to produce new glass containers. Processing at the site will include crushing, sizing, and separation of the glass by color. The cullet produced is then sold to glass manufacturers. To facilitate the shipment of recycled glass by rail, the Proponent will construct a rail sidetrack from the existing rail line adjacent to the project site. Glass handling operations are enclosed by three adjacent buildings.

A new solid waste processing and handling building will be constructed at the site, with a capacity to accept up to 1,500 tons per day of solid waste (MSW and C&D) delivered to the facility by truck. The tipping building is expected to be approximately 65,000+/- square feet in floor area and will connect with an existing 103,000 SF building. Approximately 50,000 square feet of the existing building will be used to house the solid waste processing equipment. The remainder will be used to handle recyclables that are not considered solid waste. The tipping building will be designed to allow waste delivery trucks to drive into the building to tip their loads of waste material for subsequent processing/handling. The facility will accept both baled MSW and MSW delivered loose in transfer trailers and packer trucks. Baled MSW will be delivered to the proposed facility from other transfer stations that have baled MSW to meet the railroad requirements for shipping MSW in rail cars. Baled MSW accepted at the proposed facility will be loaded into rail cars for shipment to disposal sites such as a landfill or waste to energy facility. The facility will also accept C&D defined as Category 2 (C&D processing residuals). All MSW will follow CSX approved standards with respect to the shipment of waste (e.g. baled, intermodal, or other approved method). Front-end loaders will load the unbaled MSW into a feed hopper that sends the MSW through a series of processing equipment. The existing building will be modified as required to house the MSW processing equipment used to extract recyclable material from MSW received. It is expected that approximately 20% of the MSW processed will be reclaimed and recycled.

Previously, the ENF, DEIR and FEIR discussed plans to construct a biosolids processing facility as part of Phase 2. As discussed in the SFEIR, addition of a biosolids facility is no longer being proposed.

The following describes the building ventilation, process equipment and other notable equipment associated with the Project that were included in the continuous sources sound study.

- Rooftop, ground level, and/or sidewall inlet and exhaust fans on MSW Building and Glass Processing Building;
- Baghouse exhaust stack

- Front-end loader and tipping operations inside open garage door bays of MSW Building (truck deliveries)
- Front-end loader operations inside open garage door bay of MSW Building (railcar)

The following describes the equipment associated with the Project that were included as short-term incidental sources sound study. Additional detail is provided in Section 6.6.2:

- Backup alarms
- Idling locomotive
- Railcar coupling
- Trucks associated with deliveries of solid waste

Operations at the proposed facility will vary between daytime and nighttime periods. Sound level modeling was conducted for both a daytime scenario and a nighttime scenario and compared to both daytime and nighttime ambient sound levels. Mitigation was applied to several of the sound sources including use of an electric rail car mover, fan silencers, low noise fans, stack silencer(s). Other mitigation was evaluated but found to be infeasible or ineffective including an L-shaped sound barrier wall, discussed further below. With the noise mitigation measures described in this report, or equivalent design changes, the proposed Project will meet the requirements set forth in the MassDEP Noise Policy at all nearby residential locations and will mitigate Project-generated sound to the maximum extent practical.

An aerial locus of the project site over aerial imagery is shown in Figure 3-1

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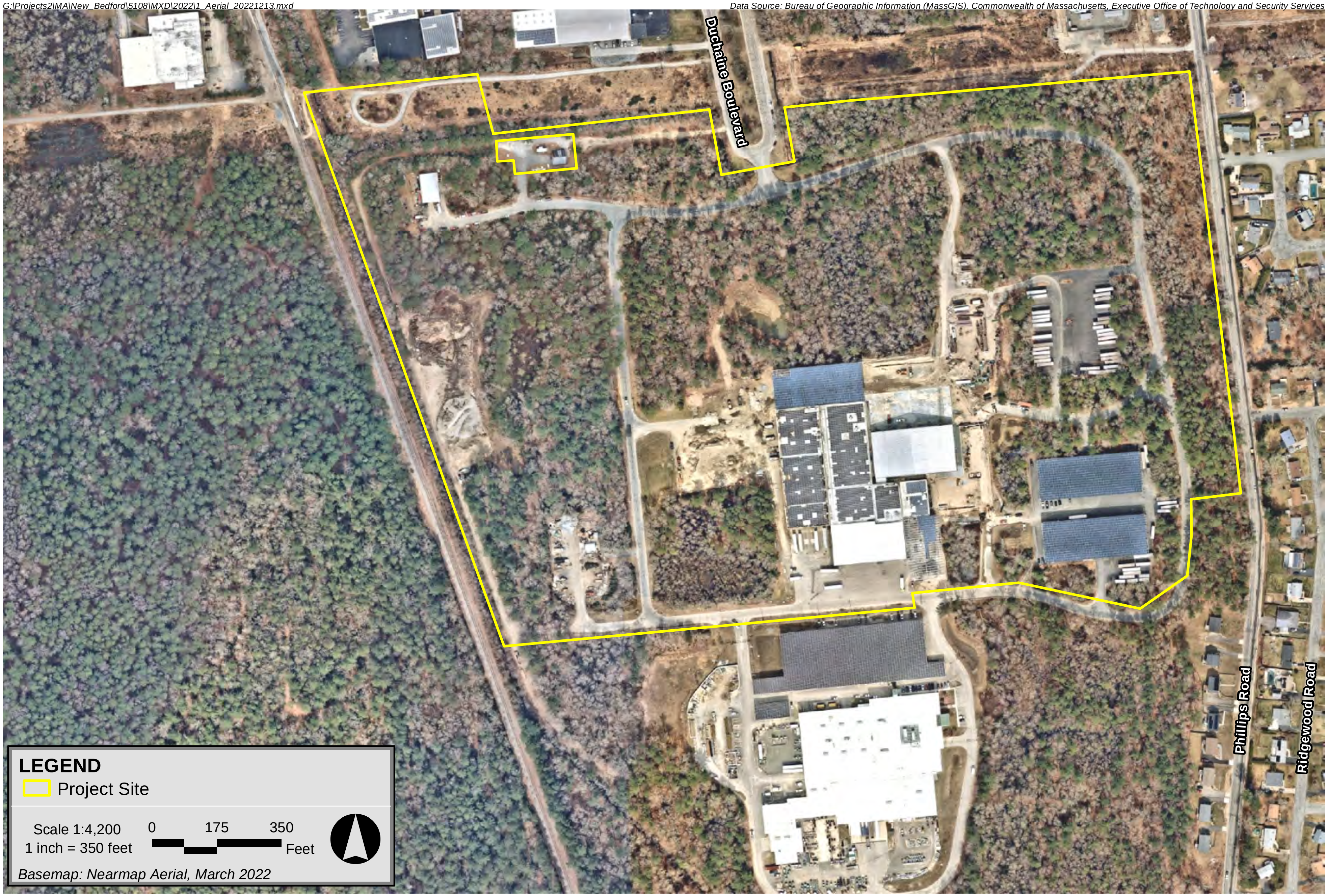
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



South Coast Renewables New Bedford, Massachusetts

Epsilon ASSOCIATES INC.

Figure 3-1

Aerial Locus

4.0 SOUND TERMINOLOGY

There are several ways in which sound levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two or more separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (53 dB), which is equal to doubling in sound energy but not equal to a doubling in decibel quantity (100 dB). Thus, every 3-dB change in sound level represents a doubling or halving of sound energy. A 3-dB increase or decrease corresponds to the threshold of perceptibility of change. In practice, a 3 dBA change in environmental sound is at the margin of perceptibility to the average person.[1]

Another mathematical property of decibels is that if one source of sound is at least 10 dB louder than another source, then the total sound level is simply the sound level of the higher-level source. For example, a sound source at 60 dB plus another sound source at 47 dB is equal to 60 dB.

A sound level meter (SLM) that is used to measure sound is a standardized instrument.2 It contains "weighting networks" (e.g., A-, C-, Z-weightings) to adjust the frequency response of the instrument. Frequencies, reported in Hertz (Hz), are detailed characterizations of sounds, often addressed in musical terms as "pitch" or "tone". The most commonly used weighting network is the A-weighting because it most closely approximates how the human ear responds to sound at various frequencies. The A-weighting network is the accepted scale used for community sound level measurements; therefore, sounds are frequently reported as detected with a sound level meter using this weighting. A-weighted sound levels emphasize middle frequency sounds (i.e., middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. These sound levels are reported in decibels designated as "dBA". Z-weighted sound levels are measured sound levels without any weighting curve and are otherwise referred to as "unweighted". Sound pressure levels for some common indoor and outdoor environments are shown in Figure 4-1.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated Ln, where n can

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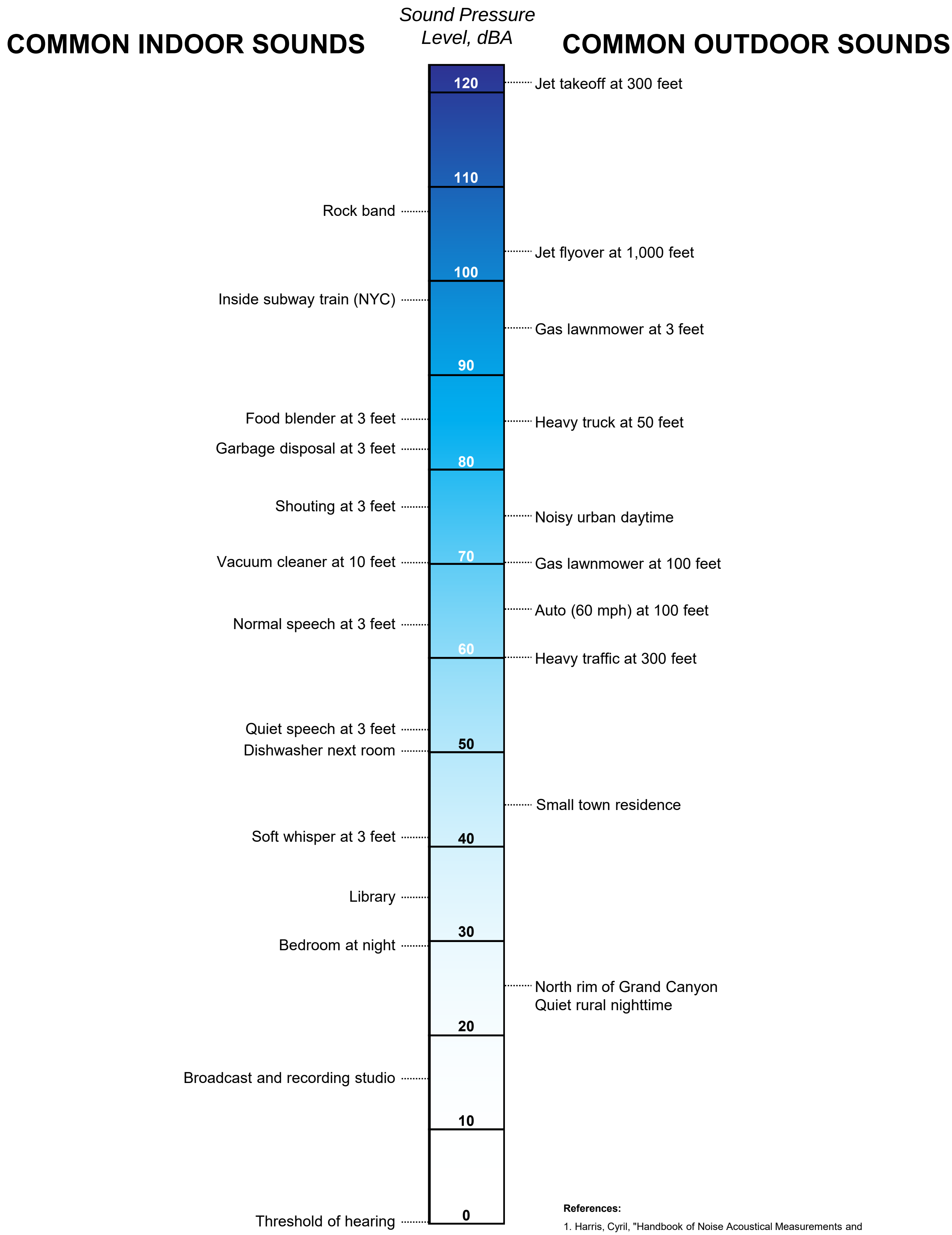
[1] 2009 ASHRAE Handbook – Fundamentals, American Society of Heating, Refrigeration, and Air-Conditioning Engineers, Inc., Atlanta, GA.

[2] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983 (R2006), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

have a value between 0 and 100 in terms of percentage. Three sound level metrics that are utilized in this report are described below.

- L_{90} is the sound level exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent sound sources. The L_{90} level is used to establish the "ambient" or "background" sound level as part of the MassDEP Noise Policy.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is typically A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by loud sounds if there are fluctuating sound levels.



References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 4-1

Common Indoor and Outdoor Sound Levels

5.0 NOISE REGULATIONS

5.1 Federal Regulations

There are no federal noise regulations applicable to this Project.

5.2 Massachusetts State Regulations

The Massachusetts Department of Environmental Protection (MassDEP) has the authority to regulate noise under 310 CMR 7.10, which is part of the Commonwealth's air pollution control regulations. Under MassDEP regulations, noise is considered to be an air contaminant and, thus, 310 CMR 7.10 prohibits "unnecessary emissions" of noise.

The MassDEP administers this regulation through its Noise Policy DAQC 90-001, dated February 1, 1990. The Noise Policy limits a source to a 10-dBA increase above the ambient sound measured (the L90 sound level) at the property line for the site and at the nearest residences. According to the MassDEP, "Noise levels that exceed the criteria at the source's property line by themselves do not necessarily result in a violation or a condition of air pollution under MassDEP regulations (see 310 CMR 7.10). The agency also considers the effect of noise on the nearest occupied residence and/or building housing sensitive receptors".[3] In addition, "…[a] new noise source that would be located in an area in which housing or buildings containing other sensitive receptors could be developed in the future may be required to mitigate its noise impact in these areas."

MassDEP's Noise Policy further prohibits "pure tone" conditions where the sound pressure level in one octave band is 3 dB or more than the sound levels in each of the two adjacent octave bands. A qualitative example of a source emitting a "pure tone" is a fan with a bad bearing that is producing an objectionable squealing sound.

5.3 Local Regulations

There are no local quantitative noise regulations applicable to this Project.

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[3] Energy and Environmental Affairs. *Noise Pollution Policy Interpretation | MassDEP*. http://www.mass.gov/eea/agencies/massdep/air/programs/noise-pollution-policy-interpretation.html. Accessed October 2016.

6.0 EXISTING SOUND LEVELS

6.1 Overview

The Project development is located at 100 Duchaine Boulevard in New Bedford, Massachusetts. The property is bordered by residential neighborhoods to the northeast, east and southeast, with a new residential development along the immediate southeast property line. SCR has purchased two of the newly built houses located on the west side of Phillips Road and closest to the industrial property to the southeast of the site. To the north and south, the property is bordered by industrial/commercial properties and to the west by conservation land (Acushnet Cedar Swamp). The site currently consists of multiple industrial buildings, several surface parking lots and solar arrays (primarily solar canopies).

6.2 Baseline Sound Environment

An existing sound level survey was conducted during the daytime and nighttime hours to characterize the existing "baseline" acoustical environment in the vicinity of the site. Two long-term continuous sound level monitoring stations were deployed for 7-days to:

1. Establish representative A-weighted broadband ambient sound pressure levels, for evaluating requirements of the MassDEP policy; and to

2. Establish representative octave-band ambient sound pressure levels to identify any existing "pure tones," as defined by MassDEP, and evaluate whether the addition of modeled sound levels from the proposed Project to these background sound levels may introduce or exacerbate existing "pure tones" in the community.

Only measurement periods during, or affected by, precipitation were excluded from the analysis. This approach is consistent with ANSI Standard S12.18-1994 (R2009).

In addition, two short-term sound level measurements were performed at two locations near the site. These measurements took place during the daytime and nighttime in residential areas that extended further away from the Project site. Daytime measurements were conducted between 10 AM and 3 PM to avoid influence from local commuter traffic. Nighttime measurements occurred between 12 AM and 3 AM to capture the quietest portion of the night. The short-term measurements were 20 minutes in duration.

For the purpose of these analyses, only the long-term location (CM-1) that was most conservative and most representative of residential receptors was used for the historical and present analysis. The DEIR Noise report discusses the other monitoring locations in more detail and can be provided to MassDEP upon request. These measurement locations are depicted in Figure 6-1. Location CM-1 is described in the subsequent section.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

South Coast Renewables **New Bedford, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 6-1

Sound Level Measurement Locations

Location CM-1 is located near the Project property line immediately southeast of the Project. The GPS coordinates for this location are 337911.14 East and 4619989.37 North per UTM-19N NAD83. This location is representative of the newly built residences situated next to the property line and immediately west of Phillips Road. This is also representative of all the residences that lie to the east of Phillips Road. Continuous hourly one-third octave-band and broadband sound level data were collected at this location. Noise sources at this location include on-site vehicle traffic and noise from the Eversource operations, immediately south of the Project site. Vehicle traffic along Phillips Road, birds, insects and planes overhead were also documented at this location.

6.3 Measurement Methodology

A comprehensive sound level measurement program was developed to quantify the ambient sound levels around the Project. Continuous A-weighted and octave-band measurements (24 hours/day) were made over approximately a one-week period from Tuesday, June 26, 2018 through Tuesday, July 3, 2018. The long-term monitor was generally unattended, with personal observations made by a field technician during deployment, a nighttime site visit, and demobilization. Meteorological data was collected concurrently nearby, three miles to the south at the New Bedford Regional Airport National Weather Service (NWS) station provided by the National Centers for Environmental Information (NCEI), for the duration of the measurement program. All sound level data collected from CM-1 and meteorological data collected during the program are included in the ambient analysis as presented in the DEIR.

6.4 Measurement Equipment

The CM-1 location was equipped with a Larson Davis (LD) Model 831 integrating sound level meter, tripod-mounted at a height of approximately five feet (1.5 meters) above ground level and fitted with the manufacturer's environmental windscreen. This LD Model 831 was used to collect continuous background sound pressure level data. The background meter was connected to a microphone, via an extension cable and housed in an environmental suitcase, that was programmed to log statistical A-weighted broadband and unweighted octave-band sound level data (L_1, L_{10}, L_{50}, L_{90}, L_{max}, and L_{eq}) over one-hour intervals with a one-minute time history.

All sound monitoring instrumentation met the "Type 1 – Precision" requirements set forth in ANSI S1.4-1983 as specified in the ANSI S12.18-1994 methodology as well as those in ANSI S1.11-2004 (octave filter standard) for acoustical measuring devices.

6.5 Baseline Ambient Sound Levels

The ambient sound level environment consists primarily of nearby vehicle traffic from Phillips Road, traffic on Route 140 and other roadways, nearby industrial work/construction noise during the daytime, children playing at the park, rustling vegetation, occasional aircraft, birds, and insects.

Long-term sound levels were measured continuously from Tuesday, June 26, 2018 through Tuesday, July 3, 2018. A brief summary of the measurement results is presented herein.

Continuous 1-hour sampling periods with a one-minute time history were measured. Daytime is defined as the hours between 7 AM and 10 PM. Nighttime is defined as the hours between 10 PM and 7 AM. Hourly A-weighted broadband sound pressure level data from the continuous ambient monitoring stations are presented in the DEIR. Periods of precipitation totaling approximately 16 hours as recorded at the nearby New Bedford Regional Airport National Weather Service (NWS) station, were excluded from the dataset. These precipitation periods are presented in the DEIR.

- The hourly daytime residual background (L_{90}) measurements for CM-1 ranged from 38 to 53 dBA;
- The hourly nighttime residual background (L_{90}) measurements for CM-1 ranged from 29 to 48 dBA.

6.6 Establishment of Background Sound Levels

As observed by the Epsilon field staff, sound levels at CM-1 during the measurements in the summer months of June & July 2018 were significantly affected by insect noise. Sound from insects likely affects the background in this area for many months of the year due to the forested landscape. During some periods of the year, sound from insects and birds will not be present (i.e., winter); therefore, to more closely replicate sound levels observed at the same monitoring locations during these periods ("quiet seasons"), a high-frequency natural sound (HFNS) filter was applied to the measured one-third octave-band data from which a new broadband sound level was calculated. This technique removes all sound energy above the 1,250 Hertz frequency band. The methodology for the filtration process was as specified in ANSI/ASA S12.100-2014 and the sound pressure levels presented in this report using this methodology are indicated as ANS-weighted levels (presented in dBA).

In order to accurately represent the data when activities at the Facility could have time restrictions, the ambient data were processed hourly to allow for ease of comparison to Project related sound levels. For each block hour (i.e. the 1 AM hour being from 1:00 AM to 1:59 AM), the lowest hourly L_{90} data point across all 7 days was determined. The hourly data were based on the ANS-weighted broadband (dBA) background sound levels described above.

Data from the last day of monitoring, July 3rd, were anomalous due to the holiday weekend. While Epsilon would ordinarily exclude anomalous data from the analysis because they are clearly not representative of typical conditions, MassDEP has requested that the data be included. Therefore, all collected data have been analyzed. The lowest hourly L_{90} data that were used to evaluate the Project and requirements of the MassDEP Noise Policy including the July 3rd data are presented in Table 6-1 below.

At the request of MassDEP, the lowest measured ANS-weighted hourly L_{90} level over the course of the week-long measurement program was used to quantify the ambient sound level in the project area. This results in a nighttime ambient sound level of 28 dBA, which is uncharacteristically low for the area as shown in Figure 6-2 Similarly for the daytime ambient sound level, the lowest ANS-weighted hourly L_{90} level from between the hours of 5:00 am and 9:00 pm was used to quantify the sound level resulting in a daytime ambient of 37 dBA, which is also quite low for the area since daytime sound levels are typically over 40 dBA as shown in Figure 6-2. These values were used as the point of comparison for project noise which is highly conservative and will tend to overstate the project impacts.

Table 6-1 Hourly Minimum L_{90} Across Monitoring Period at Location CM-1

Hour Start	Hour End	Lowest Hourly ANS Weighted L_{90} Ambient (dBA)
12:00 AM	12:59 AM	31
1:00 AM	1:59 AM	31
2:00 AM	2:59 AM	29*
3:00 AM	3:59 AM	28*
4:00 AM	4:59 AM	33*
5:00 AM	5:59 AM	38*
6:00 AM	6:59 AM	38
7:00 AM	7:59 AM	42
8:00 AM	8:59 AM	40
9:00 AM	9:59 AM	37
10:00 AM	10:59 AM	40
11:00 AM	11:59 AM	38
12:00 PM	12:59 PM	41
1:00 PM	1:59 PM	41
2:00 PM	2:59 PM	40
3:00 PM	3:59 PM	41
4:00 PM	4:59 PM	40
5:00 PM	5:59 PM	39
6:00 PM	6:59 PM	38
7:00 PM	7:59 PM	37
8:00 PM	8:59 PM	38
9:00 PM	9:59 PM	37
10:00 PM	10:59 PM	35
11:00 PM	11:59 PM	34

*Lowest level is due to inclusion of anomalous data from July 3rd.

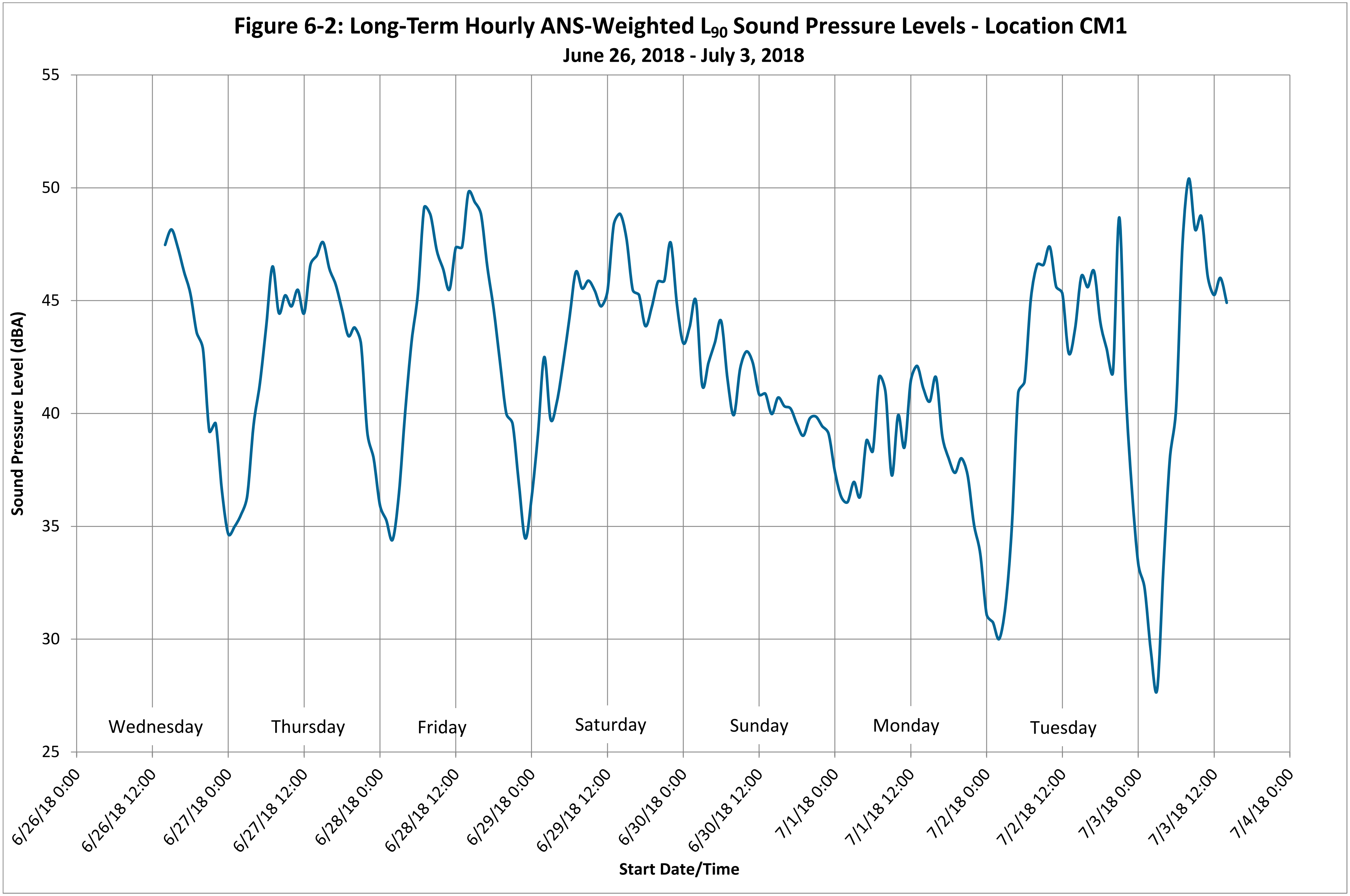

Figure 6-2: Long-Term Hourly ANS-Weighted L_{90} Sound Pressure Levels - Location CM1
June 26, 2018 - July 3, 2018
Sound Pressure Level (dBA)
55
50
45
40
35
30
25
Wednesday
Thursday
Friday
Saturday
Sunday
Monday
Tuesday
6/26/18 0:00
6/26/18 12:00
6/27/18 0:00
6/27/18 12:00
6/28/18 0:00
6/28/18 12:00
6/29/18 0:00
6/29/18 12:00
6/30/18 0:00
6/30/18 12:00
7/1/18 0:00
7/1/18 12:00
7/2/18 0:00
7/2/18 12:00
7/3/18 0:00
7/3/18 12:00
7/4/18 0:00
Start Date/Time

7.0 MODELED SOURCE SOUND LEVELS

Modeled sources are broken into two types – continuous and incidental. Continuous sources represent the primary sources of sound from system ventilation, tipping/moving of MSW, railcar loading, etc. Incidental noise sources represent sounds from mobile sources that do not occur continuously when the facility is operating such as backup alarms, railcar coupling, idling locomotives, and inbound and outbound trucking.

At this stage of the Project, key components for the facility have been selected, however some equipment selection may be refined as the design process progresses. Reference sound level data used in the noise model includes vendor data, as well as representative data from sound level measurements of a similar facility or equipment where no data are provided by the manufacturer.

7.1 Continuous Noise Sources

Continuous sources represent stationary sources that are operating the majority of the time that the facility is operational. Not all these sources will be operating continuously, so this is a conservative estimate of continuous site noise. The continuous sources that were input into the noise model are described individually below. The broadband model inputs associated with these sources are presented in Table 7-1 below. A more detailed breakdown of the pre-attenuation sound levels is presented in Table 7-2. The noise attenuation devices and their associated sound level reductions are presented in Table 7-3. The locations of the continuous noise sources are shown in Figure 7-1.

1. Rooftop Exhaust Fans – The model includes seven (7) rooftop exhaust fans with four (4) on the MSW building and three (3) on the existing glass building. Each of these fans uses sound level data obtained for representative “Cook 365UCIC Tubular Centrifugal Blower 25,000 CFM” fans.

    a. The fans on the MSW building and glass building (7 fans in total) have a 5 dBA sound level reduction applied. These sound levels could be achieved by using quieter fans, rooftop barriers, or fan silencers.

2. Loading Bay Doors – The model includes three (3) open loading bays on the west side of the MSW building. These bay doors are input into the model as vertical area sources to represent sound being emitted through the openings. These loading bay doors represent the sounds from a front-end loader (MSW tipping and handling activities) that is occurring inside the building. The sound levels associated with this source are based on actual measurements performed by Epsilon staff at a similar operation at another facility.

3. Railcar Loading Bay – The model includes one (1) open railcar loading bay on the west side of the MSW building. This source is modeled as a vertical area source to represent sound being emitted through the opening. The same sound level source data for the Loading Bay Doors was used to represent the sound of railcar loading.

4. Baghouse Intake – One (1) ventilation opening is included in the model on the west side of the glass building. This source represents the ventilation intake for the baghouse system on the glass building. The source is assumed to incorporate an acoustic louver of the "Slimshield Louver, type SL-12" variety which achieves a 17 dBA reduction.

5. Baghouse Exhaust – The baghouse exhaust is modeled as two (2) fans fed into the same stack. The model assumes minimal duct losses. Mitigation includes an additional 2 dBA reduction from noise controls such as a stack silencer or stack directional orientation that the project will incorporate.

Table 7-1 Continuous Source Sound Power Levels per Noise Source

Noise Source	Unattenuated Broadband (dBA)	Attenuated Broadband (dBA)
25,000 CFM Rooftop Exhaust Fans (7 total)	94	89
Three open loading bays (west side of MSW Building)	110	110
One open railcar loading bay (west side of MSW Building)	110	110
Ventilation opening for baghouse with acoustic louver (west side of Glass Building)	110	95
Baghouse exhaust fans	90	88

Table 7-2 Continuous Source Pre-Attenuation Octave Band Sound Power Levels per Noise Source

Noise Source	Sound Power Level (dB) per Octave-Band Center Frequency (Hz)									Total
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
25,000 CFM Rooftop Exhaust Fans	97	97	99	94	90	90	84	75	68	94
Open Loading Bays (Truck and Rail)	107	109	107	107	105	106	102	99	95	110
Baghouse Exhaust Fan – NYB HPBC Backward-Inclined 40 inch	104	104	98	93	94	92	90	84	79	97
Baghouse Exhaust Fan – NYB HPBC Backward-Inclined 33 inch	92	92	95	87	90	88	88	89	85	95

Table 7-3 Continuous Source Octave Band Noise Attenuation Levels

Mitigation Type	Insertion Loss (dB) per Octave-Band Center Frequency (Hz)									Broadband
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
Rooftop Exhaust Fan Reduction	-	-	-	-	-	-	-	-	-	5
Baghouse Exhaust Fan Reduction	-	-	-	-	-	-	-	-	-	2
Slimshield Louver SL-12	3	6	7	10	12	18	18	14	13	-
In-Duct Sound Power Level Reductions	0	0	0	5	10	15	20	22	25	-

7.2 Incidental Noise Sources

Incidental noise sources represent sounds from mobile sources that do not occur continuously when the facility is operating such as backup alarms, railcar coupling, idling locomotives, and inbound and outbound ‍trucklng. These are also known as intermittent sources. Most of these noise sources are federally regulated by the Occupational Safety and Health Administration (OSHA) (backup alarms) and the U.S. Environmental Protection Agency (USEPA) (railcar coupling and idling locomotives). Federal laws and regulations[4] preempt state and local government regulation of these sources. In addition, truck noise must comply with the Registry of Motor Vehicles regulations relative to sound emissions. However, these sources were modeled and additional noise mitigation for these sources was evaluated at the request of MassDEP.

Continuous sources are steady or relatively steady sources of sound, and the public will experience those sounds in toto, that is, as a combined total effect. Cadna/A modeling reflects the combined impact of the continuous sources. As noted in MassDEP's Noise Policy Interpretation, MassDEP evaluates how a new noise source may affect people when the agency reviews applications for approval under its air pollution regulations. The review of projects under the air pollution regulations has focused on sources subject to those regulations, and on directly supporting equipment such as cooling fans and other fixed equipment. To be responsive to MassDEP's comments, and to provide for meaningful opportunities for public review of the potential environmental impacts of the Project, this revised assessment evaluates the impacts of intermittent sound. Intermittent sources will have a different character than the continuous sound, and the potential for nuisance is separate. Each of these sources will be brief in duration such that they are unlikely to continually to occur simultaneously. Therefore, this revised analysis evaluates intermittent sources of sound separately from one another, with the exception of backup alarms which may occur at

[4] Federal law preempts state and local governments from regulating the sound of trucks making deliveries to a commercial site under the Noise Control Act of 1972 and the Surface Transportation Assistance Act of 1982. USEPA regulates railroad emissions in standards published at 40 CFR 201: Noise Emission Standards for Transportation Equipment: Interstate Rail Carriers.

the same time as trucking operations so these sources have been modeled both separately and combined. To quantify the maximum possible impacts each incidental source was also modeled with the continuous sources operating.

The incidental sources that were input into the noise model are described individually below. The model inputs associated with these sources are presented in Table 7-4 and Table 7-5 below. The location of each incidental noise source is shown in Figure 7-1.

1. Backup Alarm – Truck backup alarm operating at the west side of the MSW building where trucks are most likely to be reversing.

2. Idling Locomotive – Idling locomotive located just north of the northeast corner of the MSW building. This is as far east as the locomotive is likely to travel as the length of the rail spur will contain railcars.

3. Railcar Coupling – This source represents railcar coupling, assumed to be occurring at the furthest possible eastern point of the rail spur (closest to the residential area). The sound level of railcar coupling was based upon the day/night (DNL) sound level of railcar coupling at 200 ft.

4. Truck Inbound and Outbound Operations – This source represents a waste delivery truck near the entrance to the facility where the sound will have the greatest impact on residential receptors. The sound level is based on measurements taken by Epsilon at a similar facility of a passing semitruck.

Table 7-4 Incidental Source Broadband Sound Power Levels per Noise Source

Noise Source	Frequency (Hz)	Broadband (dBA)
Backup Alarm	1,000	109
Idling Locomotive	125	107
Railcar Coupling	2,500	95

Table 7-5 Incidental Source Spectral Sound Power Levels per Noise Source

Noise Source	Sound Power Level (dB) per Octave-Band Center Frequency (Hz)									Total
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
Truck Operations	85	91	94	92	95	95	92	88	80	99

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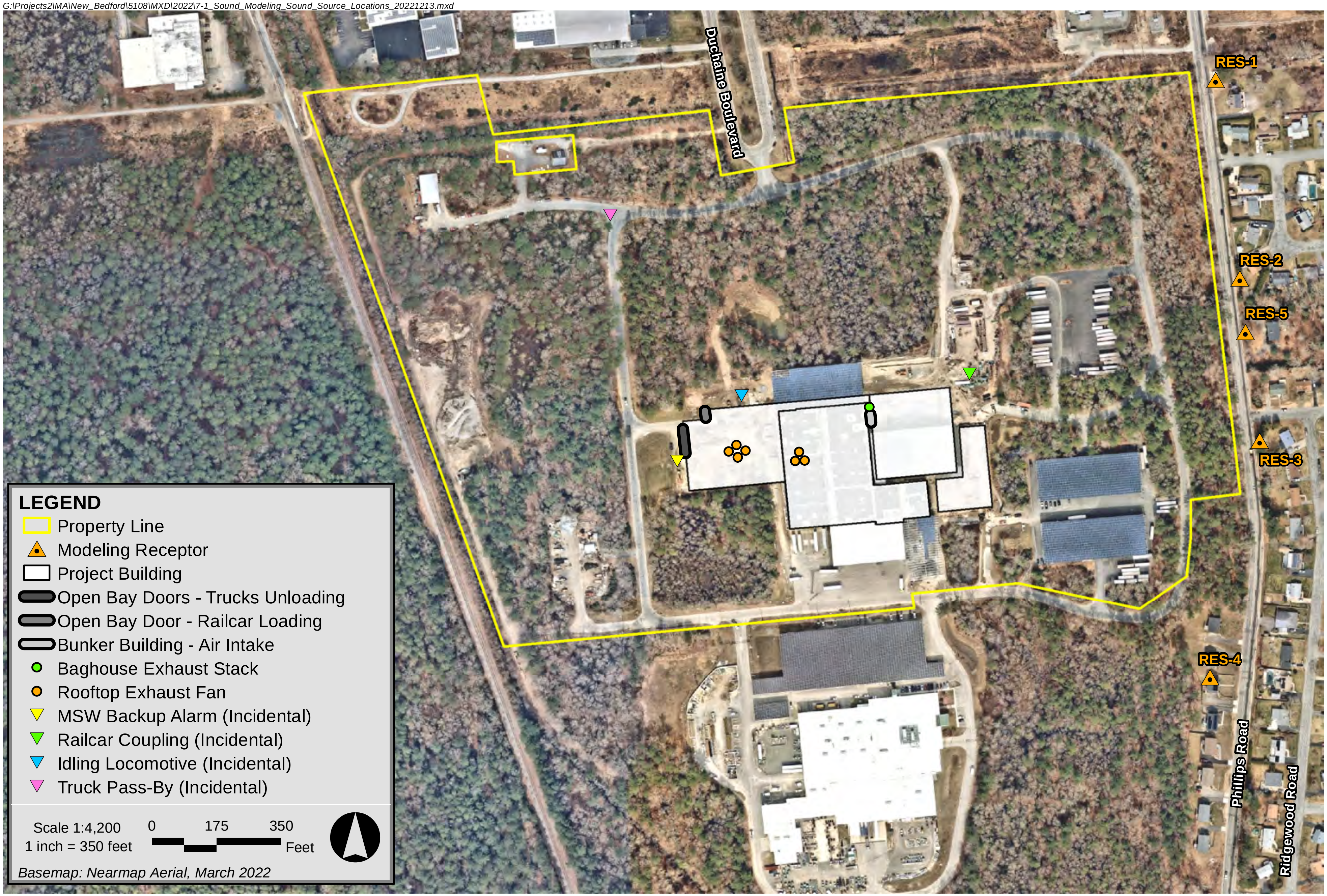

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Figure 7-1

Sound Level Modeling and Sound Source Locations

8.0 SOUND MODELING METHODOLOGY

The noise impacts associated with the proposed Project were predicted using the CadnaA noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave-band calculation of sound from multiple sources as well as computation of diffraction.

Inputs and significant parameters employed in the model are described below:

- *Site Plan:* The Project Site Plan provided the locations and dimensions of key inputs into the model such as site buildings, and rail spur locations.

- *Modeling Locations:* Sound level modeling was conducted at five residential locations RES-1 through RES-5. Residential modeling locations 1 through 4 are representative of the closest residential property lines to the northeast, east, and southeast of the Project, and location 5 was placed at the property line location that has the highest sound level contribution from continuous noise sources. SCR has purchased two of the newly built houses located on the west side of Phillips Road to the southeast of the site, and therefore Receptor RES-4 has been placed at the closest residential property line not owned by the Project to the southeast. The five residential modeling locations are shown in Figure 7-1. All receptors were modeled with a height of 5 feet above ground level (AGL) which is the approximate ear height of a typical standing observer.

- *Terrain Elevation:* Elevation contours for the modeling domain were directly imported into CadnaA which allowed for consideration of terrain shielding where appropriate. The terrain height contours for the modeling domain were generated from elevation information derived from the National Elevation Dataset (NED) developed by the U.S. Geological Survey.

- *Source Sound Levels:* Broadband and octave-band sound power levels (when available) for the potential noise sources for the Project presented in Table 7-1 through Table 7-5 were input in the model.

- *Meteorological Conditions:* A temperature of 10°C (50°F) and a relative humidity of 70% was assumed in the model.

- *Ground Attenuation:* Spectral ground absorption was calculated using a G-factor of 0 for the Project site which corresponds to “hard ground”. For all other offsite areas, a G-factor of 0.5 was used which corresponds to “mixed ground”.

- *Directivity:* A directivity correction was applied to the biofilter exhaust stack, and the baghouse exhaust stack.

Sound pressure levels due to the operation of all equipment operating simultaneously at full load were modeled at the five (5) sound level modeling locations. This is a conservative modeling assumption which will result in higher predicted sound levels relative to various actual part-load and intermittent operation of some of the sources.

Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by the user, were implemented in the CadnaA model to ensure conservative results (i.e., higher sound levels), and are described below:

- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night or equivalently downwind propagation.

- Meteorological conditions assumed in the model (T=10°C and RH=70%) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave-bands where the human ear is most sensitive.

- No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

Figure 7-1 shows the location of the receptors as well as the modeled location of the equipment for both the continuous and the incidental noise model runs.

9.0 SOUND MODELING RESULTS

The resulting sound levels from the Project's sources were exported from the CadnaA model. The results are grouped into continuous and incidental source results. The continuous sources were all modeled cumulatively, and the resulting project only sound levels are documented in Table 9-1 below for both the unmitigated and mitigated sources. In addition to the discrete modeling points, sound level isopleths generated from the modeling grid are presented in Figure 9-1 for the unmitigated case and in Figure 9-2 for the mitigated case.

Table 9-1 CadnaA Model Output Sound Levels for Continuous Sources

Receptor	Project Only Unmitigated Continuous Sound Level (dBA)	Project Only Mitigated Continuous Sound Level (dBA)
RES-1	39	34
RES-2	43	36
RES-3	41	35
RES-4	40	31
RES-5	44	36

The incidental source model outputs are shown in Table 9-2 below. The results from the model are evaluated against ambient sound levels and the MassDEP Noise Policy in Section 10.0 below.

Table 9-2 CadnaA Model Output Sound Levels for Incidental Sources

Receptor	Backup Alarm (dBA)	Idling Locomotive (dBA)	Railcar Coupling (dBA)	Truck Operations (dBA)	Truck Operations & Backup Alarm (dBA)
RES-1	34	47	38	33	36
RES-2	36	47	40	33	38
RES-3	35	41	40	32	37
RES-4	31	32	37	20	32
RES-5	36	47	40	33	38

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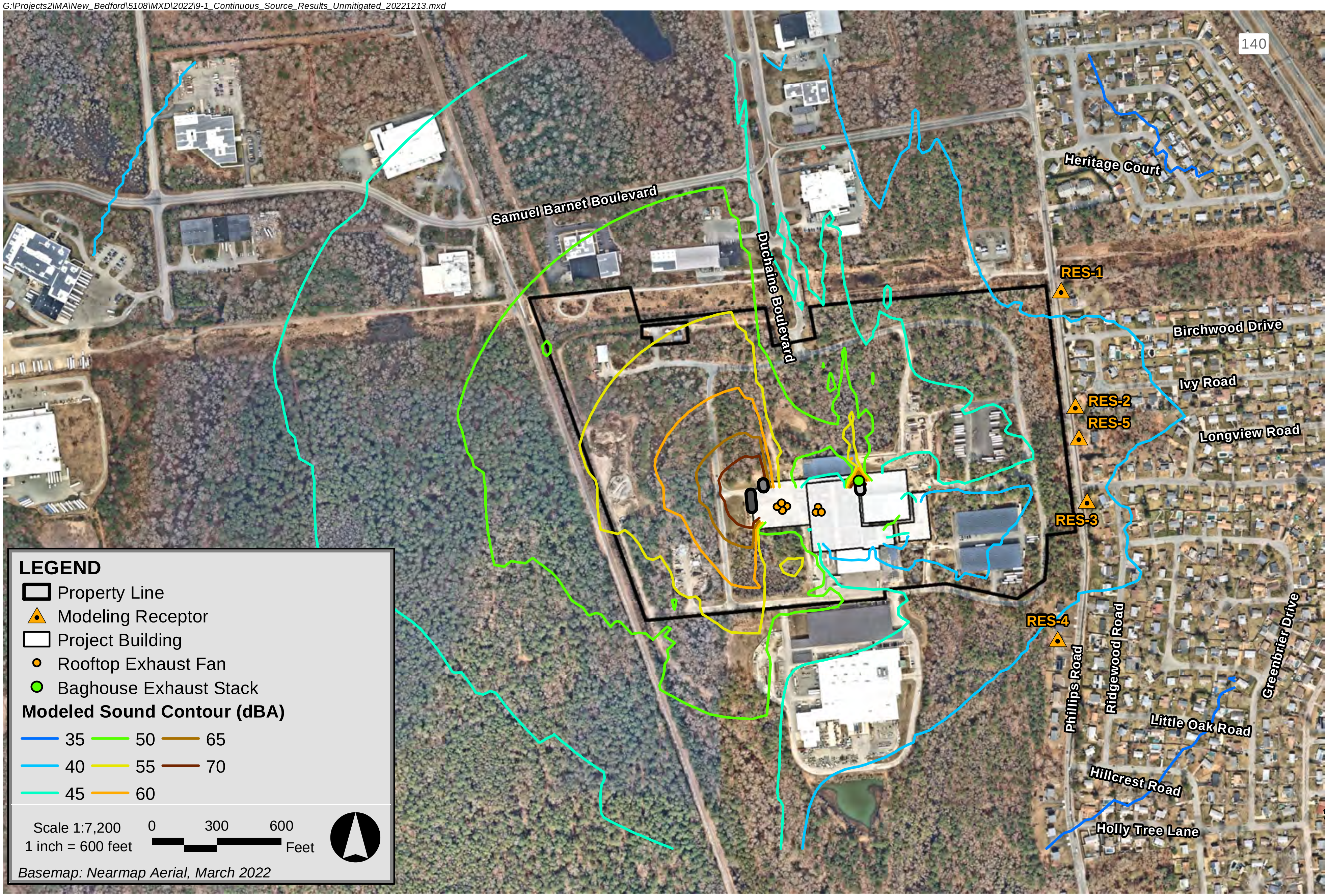

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Figure 9-1

Continuous Source Results - Unmitigated

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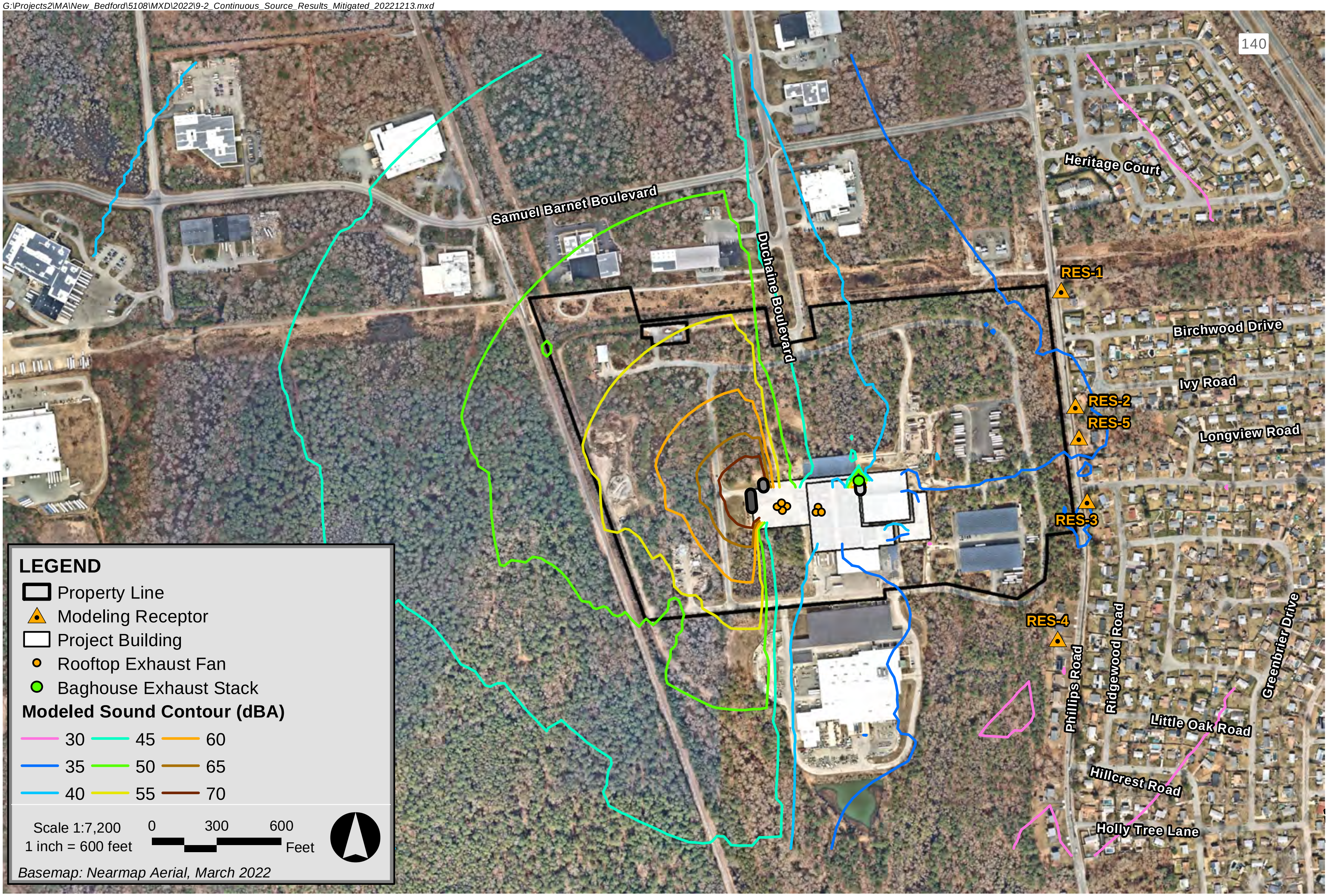

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Figure 9-2

Continuous Source Results - Mitigated

10.0 EVALUATION OF SOUND LEVELS

According to the MassDEP Noise Policy, a source of sound will be considered to be violating the noise regulation at 310 CMR 7.10 if the source increases the broadband sound level by more than 10 dBA above ambient. In addition to limiting the increase in the ambient sound level, the Noise Policy prohibits "pure tone" conditions where the sound pressure level in one octave band frequency is at least 3 dB greater than the sound levels in each of two adjacent frequency bands. The compliance analysis for the noise sources is presented for continuous and incidental sources.

10.1 Continuous Sources

For the continuous sources, the Project Only mitigated sound levels provided in Table 9-1 above are added to the ambient sound levels to calculate the predicted future total sound levels. It is important to note that the sound levels are logarithmic and thus must be added logarithmically. These new future predicted sound levels are then compared to the ambient sound level to document that the increase is at or below 10 dBA. The lowest ambient L_{90} sound level across the monitoring period is shown for each hour in Table 6-1 of Section 6.6 of this document. For the purposes of this analysis, the lowest individual hour is used as the ambient data to be as conservative as possible. The existing ambient sound level that corresponds to this lowest hour is 28 dBA which occurs between 3:00 am and 4:00 am. Table 10-1 below provides the comparison of the modeled results to the lowest existing ambient sound level.

Table 10-1 Modeled Continuous Sound Levels Compared to Nighttime Ambient

Receptor	Project Only Sound Level (dBA)	Ambient L_{90} Sound Level (dBA)	Total Ambient Plus Project (dBA)	Increase over Ambient (dBA)
RES-1	34	28	35	7
RES-2	36	28	36	8
RES-3	35	28	36	8
RES-4	31	28	33	5
RES-5	36	28	37	9

Notes:

1. Only whole numbers are shown; calculations were performed using values with additional precision.

10.2 Incidental Sources

For the incidental noise sources, the modeled sound impact of the specific activity is added to the lowest ambient hour during the time window that the activity can occur. As discussed previously, incidental sources were modeled individually since they are brief in duration and are unlikely to occur simultaneously with the exception of trucking and backup alarms which may occur at the same time and were therefore modeled both separately and together. Because the continuous sources will be operating when incidental sources are operating, each incidental source has been modeled with continuous sources operating for this evaluation.

Similar to the continuous sound levels analysis, it is important to note that the sound levels are logarithmic and thus must be added logarithmically. These new future predicted sound levels are then compared to the ambient sound level to demonstrate that the increase is at or below 10 dBA. The lowest ambient L_{90} sound level across the monitoring period is shown for each hour in Table 6-1 of Section 6.6 of this document. Table 10-2 below show the comparison of each activity to ambient conditions along with the time restriction used for the activity.

Table 10-2 Modeled Sound Levels Compared to Ambient for Continuous Sources Plus Backup Alarm (no time restriction)

Receptor	Activity Only Sound Level (dBA)	Ambient L_{90} Sound Level (dBA)	Total Ambient Plus Project (dBA)	Increase over Ambient (dBA)
RES-1	34	28	35	7
RES-2	36	28	36	9
RES-3	35	28	36	8
RES-4	31	28	33	5
RES-5	36	28	37	9

Notes:

1. Only whole numbers are shown; calculations were performed using values with additional precision.

Table 10-3 Modeled Sound Levels Compared to Ambient for Continuous Sources Plus Idling Locomotive (5:00 AM to 9:00 PM)

Receptor	Activity Only Sound Level (dBA)	Ambient L_{90} Sound Level (dBA)	Total Ambient Plus Project (dBA)	Increase over Ambient (dBA)
RES-1	46	37	47	9
RES-2	46	37	47	10
RES-3	40	37	42	5
RES-4	32	37	38	1
RES-5	47	37	47	10

Notes:

1. Only whole numbers are shown; calculations were performed using values with additional precision.

Table 10-4 Modeled Sound Levels Compared to Ambient for Continuous Sources Plus Railcar Coupling (no time restriction)

Receptor	Activity Only Sound Level (dBA)	Ambient L_{90} Sound Level (dBA)	Total Ambient Plus Project (dBA)	Increase over Ambient (dBA)
RES-1	38	37	41	4
RES-2	40	37	42	5
RES-3	40	37	42	5
RES-4	37	37	40	3
RES-5	40	37	42	5

Notes:

1. Only whole numbers are shown; calculations were performed using values with additional precision.

Table 10-5 Modeled Sound Levels Compared to Ambient for Continuous Sources Plus Truck Inbound and Outbound Operations (5:00 AM to 9:00 PM)

Receptor	Activity Only Sound Level (dBA)	Ambient L_{90} Sound Level (dBA)	Total Ambient Plus Project (dBA)	Increase over Ambient (dBA)
RES-1	36	37	40	3
RES-2	38	37	40	3
RES-3	37	37	40	3
RES-4	31	37	38	1
RES-5	38	37	41	3

Notes:

1. Only whole numbers are shown; calculations were performed using values with additional precision.

Table 10-6 Modeled Sound Levels Compared to Ambient for Continuous Sources Plus Backup Alarm and Truck Inbound and Outbound Operations (5:00 AM to 9:00 PM)

Receptor	Activity Only Sound Level (dBA)	Ambient L_{90} Sound Level (dBA)	Total Ambient Plus Project (dBA)	Increase over Ambient (dBA)
RES-1	36	37	40	3
RES-2	38	37	40	3
RES-3	37	37	40	3
RES-4	31	37	38	1
RES-5	38	37	41	3

Notes:

1. Only whole numbers are shown; calculations were performed using values with additional precision.

11.0 MAXIMUM PRACTICABLE MITIGATION

The proposed Project is designed to avoid noise impacts to residences, and SCR has proposed mitigation measures to minimize sound levels at residences to the extent practicable.

In addition to compliance with MassDEP policy, evaluation of all practicable avoidance, minimization, and mitigation has been assessed as part of this process/assessment. The project has evaluated such measures. Further controls were considered and deemed either unavailable, ineffective, or impracticable. During this sound assessment, South Coast had already identified and mitigated a number of sources that had “stand-out” contributions to overall modeled sound levels at nearby receptors, as discussed in Section 6.6.1. The resulting sound impacts are from a cumulative contribution of many sources. Because sound source contributions are added logarithmically and not arithmetically, reducing total sound impacts any further to achieve an overall net reduction would require a significant reduction in the sound impacts of each and every continuous contributing source. Each intermittent sound source has been analyzed individually, and each has a physical location, and/or time-of-day restriction. Therefore, with the proposed noise controls, the Project has mitigated impacts to the extent practicable.

SCR provided initial conceptual design elements during the sound assessment process. Initial noise impacts, based on the original project design, were modeled and opportunities were identified to implement of a variety of avoidance, minimization, and mitigation measures. SCR has committed to avoid, minimize and mitigate noise impacts to the maximum extent practicable by taking the following measures:

- Selection of an industrially zoned parcel
- Siting of noise generating equipment and material handling routes away from residences
- Specification of an electric, rather than diesel powered, rail car pusher
- Selection of a combination of low noise equipment, silencing equipment, and/or noise reducing insulated walls to achieve lower impacts than required by MassDEP policy for stationary sources
- Use of a speed limit and location of weigh scales on the west side of the property to minimize sound from trucking operations

As detailed design progresses, SCR will review all specified equipment for sound characteristics and ensure the resulting combined impacts from stationary sources will not exceed the currently modeled, best-practices impacts.

11.1 Sound Barrier

The potential use of sound barriers was reviewed in detail. The DEIR and FEIR analyses proposed use of a 325 foot-long 24-foot-tall L-shaped sound barrier around the rail spur between the glass handling building and the biosolids building to mitigate sound generated by to the biofilter stack and fans, railcar coupling, and the idling locomotive. Since then, modifications have been made to the site plan to remove the biosolids building and associated sources including the biofilter stack and fans. Modeling has demonstrated that the previously planned 24-foot-tall barrier will not effectively mitigate rail noise due to the redesign of the site including elimination of the biosolids building and associated sources. Furthermore, the barrier in the original design provided a reduction of 4 dBA at RES-4 and a reduction of less than 2 dBA at the other residential receptors for continuous sources and locomotive noise, so use of a barrier provided an imperceptible reduction in sound level at most residential receptors.

Alternative barrier configurations have been explored for the current site plan. Noise barriers are most effective when placed close to the source of sound, or close to the receptor. Noise barriers close to the locomotive are infeasible because they cannot block the rail spur and could otherwise impede safe access to operations. Noise barriers closer to the residences would not be viable, as they would continually reflect existing noise from Phillip's Road back towards the residences.

The remaining noise barrier option would be a wall at the end of the rail spur, extending to the north at approximately the location of the formerly proposed biosolids building. Although the actual locomotive location will vary from delivery to delivery, it does not travel to all the way to the east end of the rail spur when dropping off and picking up railcars and will therefore always be several hundred feet away from the barrier location which would render the barrier less effective. To substantially reduce locomotive noise, a barrier at this location would need to be at least 30 feet tall (diagnostic modeling confirmed a 25-foot barrier would not significantly reduce impacts). To reduce noise at all the residences along the length of the Phillips Road, the barrier would need to be at least 650 feet long. Based on diagnostic modeling such a noise barrier would reduce locomotive impacts at residential receptors by up to 8 dBA and would also reduce noise due to railcar coupling. However, the option is not a feasible noise reduction measure because, while it would reduce rail yard noise during the very brief periods (daytime hours) when the locomotive is on-site (by reflecting locomotive noise away from the residences) it would increase noise due to sources on the east side of the barrier by reflecting noise towards the residences.

Locomotive activity is expected once per day, during daytime hours, for between fifteen and thirty minutes. Although there will be railcar activity along the rail spur at other times of day, the idling locomotive is the loudest source expected for that area. In contrast the road is used by Eversource trucks at all hours. Since tractor trailer activity to the east of the barrier location and truck traffic (including existing Eversource traffic) is more common than locomotive traffic, the noise barrier would likely serve to increase overall noise impacts at the residences. Modeling results for the locomotive with no barrier are shown in Figure 11-1, results with a 25-foot barrier are shown in Figure 11-2, and results with a 30-foot barrier are shown in Figure 11-3.

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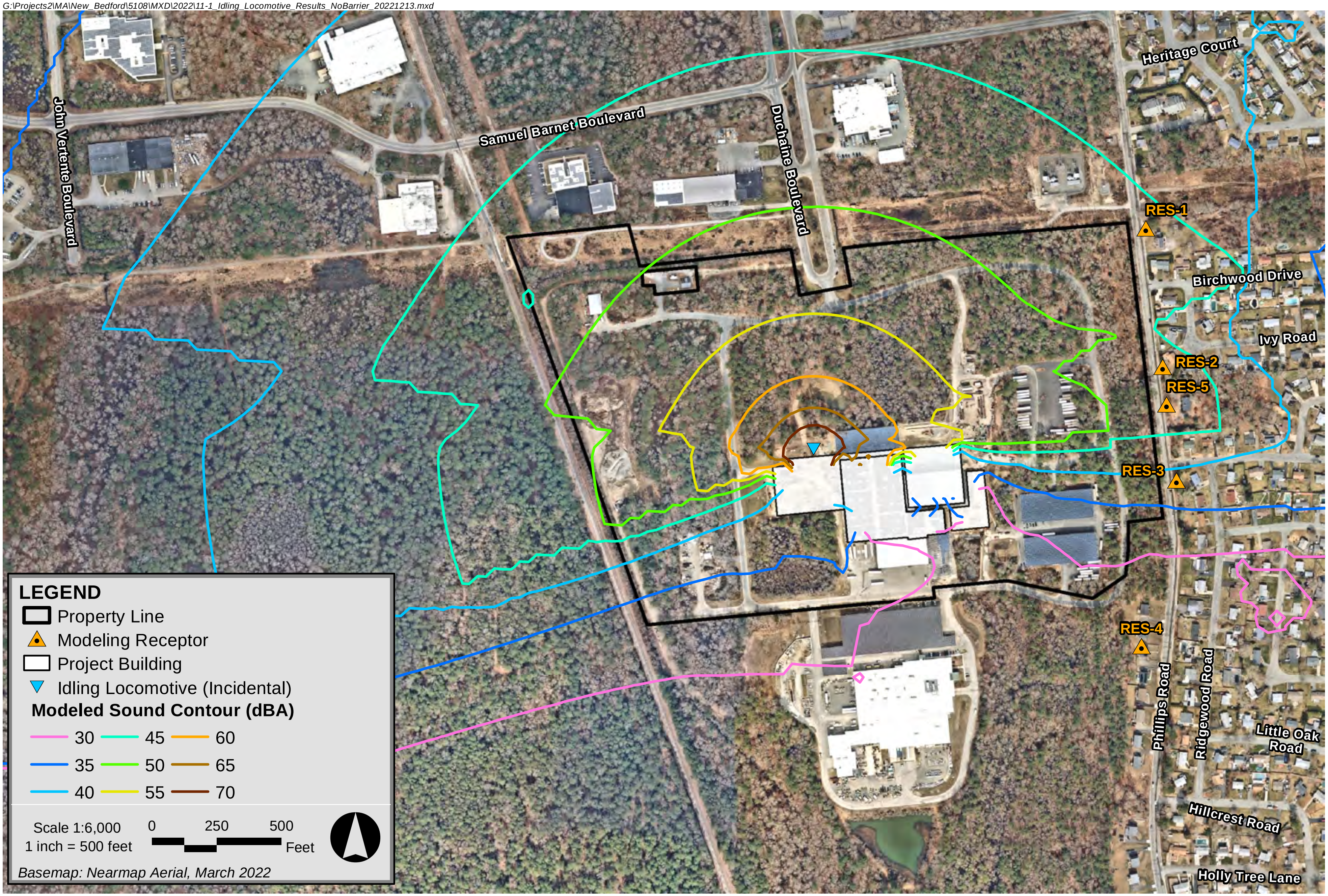

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Figure 11-1

Idling Locomotive Results without Barrier

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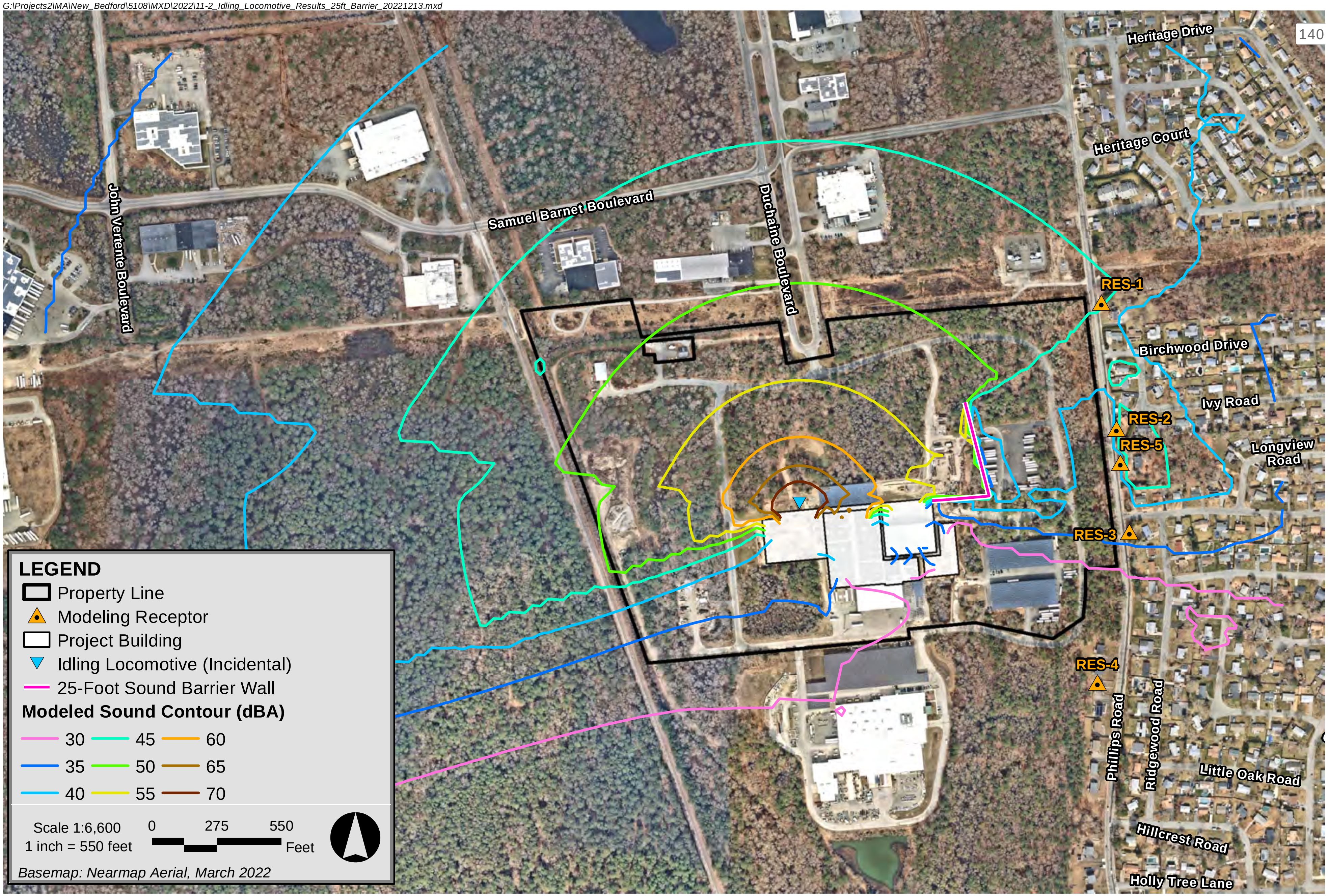

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Figure 11-2

Idling Locomotive Results with 25-Foot-Tall Barrier

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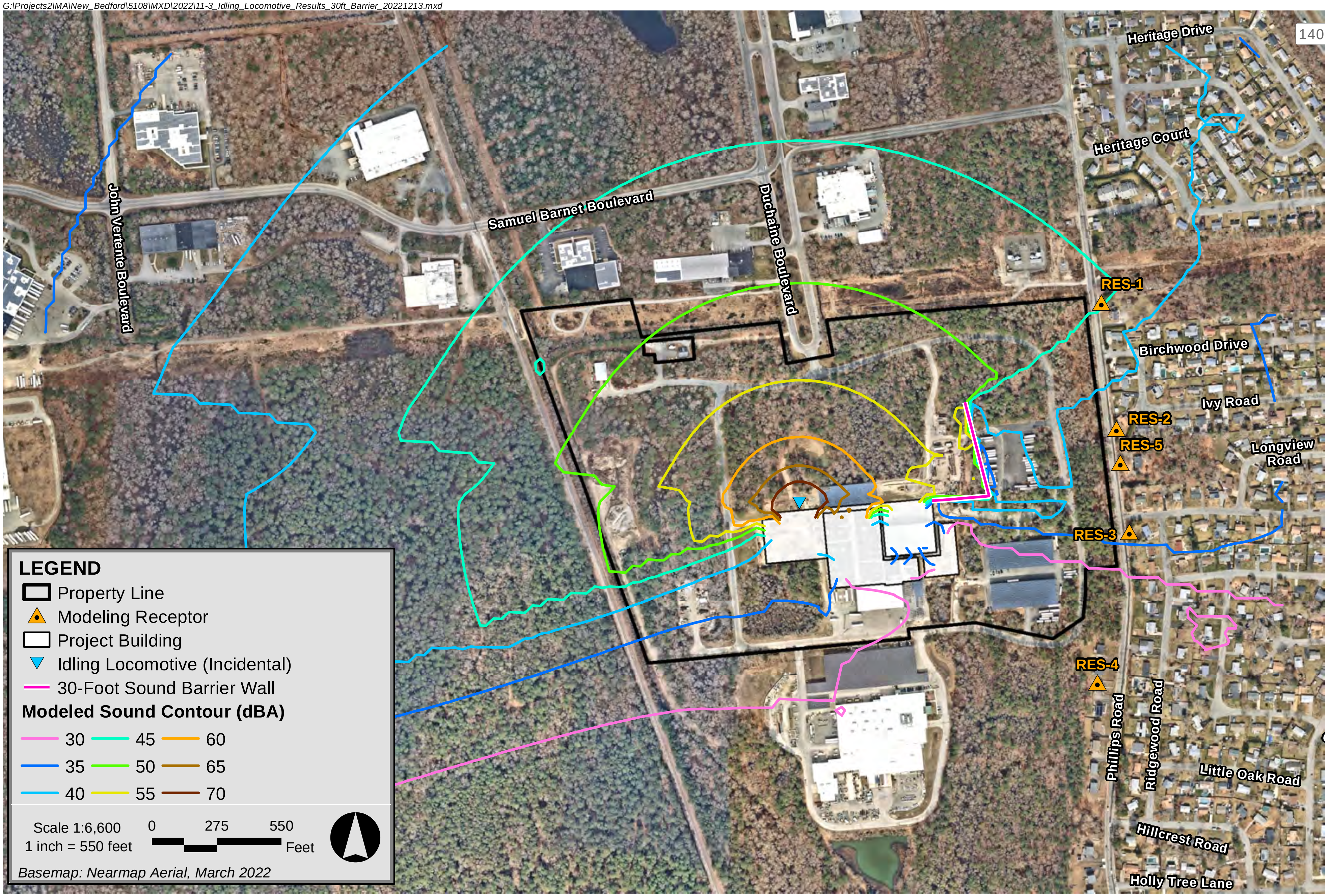

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Figure 11-3

Idling Locomotive Results with 30-Foot-Tall Barrier

11.2 High Speed Roll-Up Doors

The continuous source model includes the assumption that the roll-up doors on the MSW building are always open. Use of high speed roll-up doors on the MSW building could be implemented to minimize the amount of time that the roll-up doors need to be open. The continuous sources were modeled with the sound inside the MSW building mitigated with standard STC-21 roll-up doors closed. The resulting noise levels for this scenario are 0 to 1 dB quieter than the open-door scenario at the receptors, which is not a perceptible reduction to most people. The primary reason is that the roll-up doors are on the west side of the site facing west and the sound emanating from them does not significantly contribute to the sound level at the residential receptors. Therefore, while high speed roll-up doors may be implemented, they will not significantly impact the facility sound level at the residences.

12.0 CONCLUSIONS

A comprehensive sound level modeling assessment was conducted for the SCR Project. In addition, ambient sound levels were measured to characterize the existing background sound levels within the area. Results of the comprehensive sound level assessment demonstrate that sound levels from the Project with the sound mitigation measures described in this report will meet the requirements set forth in the MassDEP Noise Policy at residential locations, and that the Project will not cause a condition of noise pollution.

Sound pressure levels due to the operation of all stationary equipment operating simultaneously at full load were predicted at the five sound level modeling locations. Simultaneous operation at full load is a conservative modeling assumption, which will result in higher predicted sound levels relative to various actual partial-load and intermittent operation of some of the stationary sources. All the future predicted total sound levels documented in Table 10-1 above show compliance with the MassDEP Noise Policy which restricts the increase over ambient sound levels to 10 dBA or less. In addition, operations from the Facility will not create any “pure tones”. Throughout the analysis, SCR has documented that sound impacts will be avoided, minimized, and mitigated to the extent feasible.

A similar analysis was performed for the Project incidental noise sources with the main difference being the use of time restrictions related to the activities, specifically for the idling locomotive and trucking. With the idling locomotive operation and trucking restricted to the hours of 5:00 AM to 9:00 PM, SCR has mitigated Project generated sound from all the incidental noise sources to the maximum extent practicable. In addition, although these sources are regulated by other agencies, they will also meet the ambient-based sound level limit set forth in the MassDEP Noise Policy as documented in Table 10-2, Table 10-3, Table 10-4, Table 10-5, and Table 10-6 above. Therefore, this assessment shows that the impacts from all sounds due to the Project will be mitigated to the extent feasible and will not cause a condition of noise pollution. Additionally, pursuant to 310 CMR, 16.40(4)(g) the facility will not cause a nuisance sound condition which would constitute a danger to the public health, safety, or the environment.

ATTACHMENT 8

MSW PROCESSING EQUIPMENT SPECIFICATIONS

BHS
What's next.

Parallel Products
MSW / C&I System
17-0289 & 50A1DV7
12/3/2020

Key

- - - - - Hand Picks - - - - - ▶
-·-·-·- Pneumatics -·-·-·- ▶
◀◀ Reversing Conveyor ▶▶
Residue ▶
RDF ▶
Commodity
Residue
Optional
Not in BHS Scope of Supply

Design Assumptions

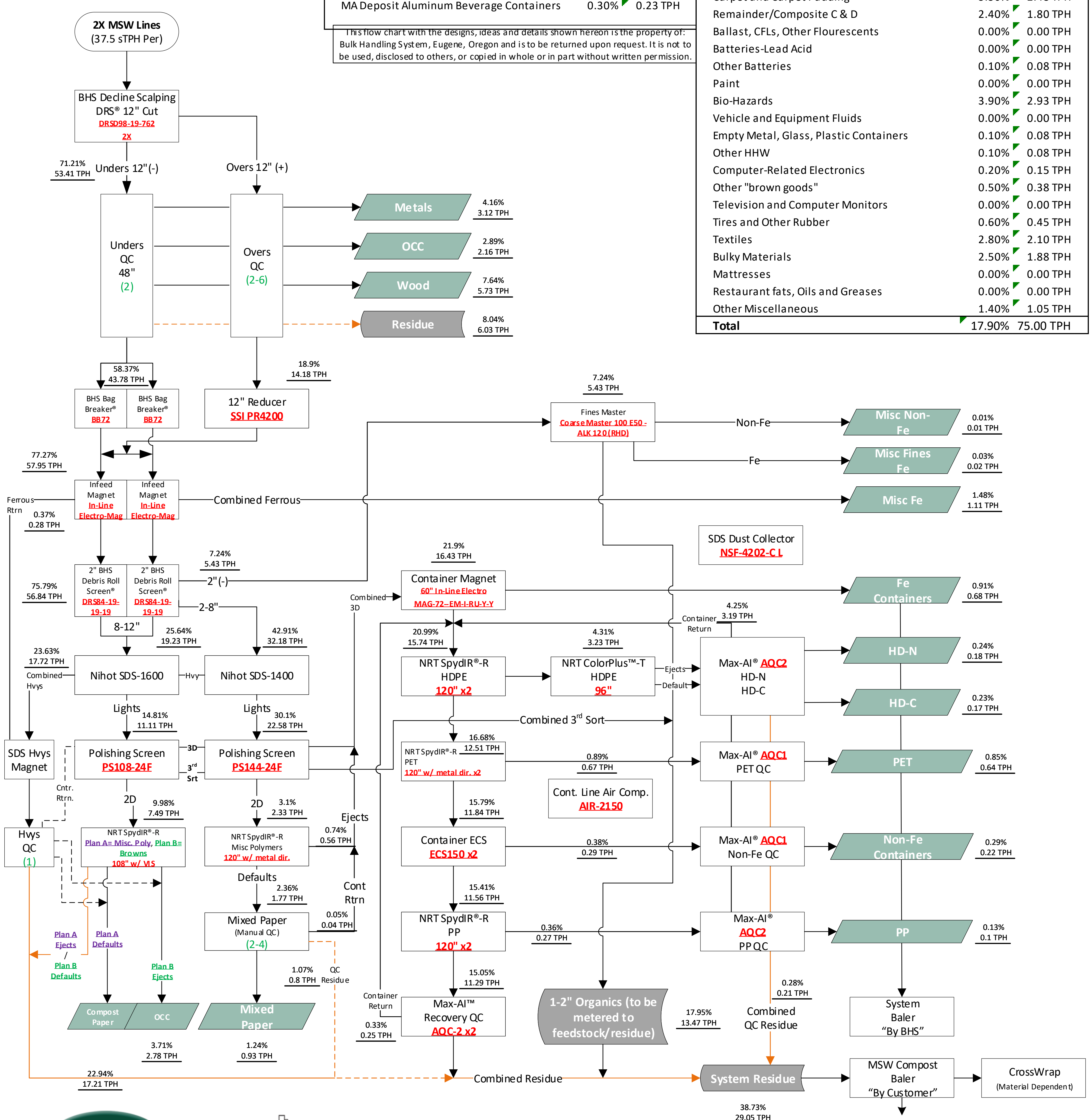
Annual Tonnage	440,000
Throughput	67.16 TPH
Design Through	75.00 TPH
Design Tonnage	491,400
Hours Per Day	21
Days Per Week	6
Weeks Per Year	52
Hours Per Year	6552
Availability	90%

Waste Characterization

Material		*Input*
Uncoated Corrugated Cardboard/Kraft Paper	6.70%	5.03 TPH
Waxed Cardboard	0.20%	0.15 TPH
High Grade Office Paper	0.30%	0.23 TPH
Magazines/Catalogs	0.70%	0.53 TPH
Newsprint	1.10%	0.83 TPH
Other Recyclable Paper	2.90%	2.18 TPH
Compostable Paper	9.90%	7.43 TPH
Remainder/Composite Paper	2.40%	1.80 TPH
#1 PET Beverage Containers(non-deposit)	1.00%	0.75 TPH
PET Containers(other than beverage)	0.40%	0.30 TPH
Plastic MA Deposit Beverage Containers	0.10%	0.08 TPH
#2 HDPE Natural/Colored Bottles	0.40%	0.30 TPH
Injection Molded Plastic Tubs/Lids	0.20%	0.15 TPH
#3-#7 Plastic Containers	1.20%	0.90 TPH
Food Grade Expanded Polystyrene	0.50%	0.38 TPH
Non-Food Grade Expanded Polystyrene	0.10%	0.08 TPH
Bulk Rigid Plastic Items	1.50%	1.13 TPH
Clean Com'l/Ind'l Packaging Film(non-bag)	0.80%	0.60 TPH
Grocery and other merchandise bags	0.50%	0.38 TPH
Other Plastic Film	6.00%	4.50 TPH
Remainder/Composite Plastic	4.10%	3.08 TPH
Non-MA Deposit Aluminum Beverage Contain	0.00%	0.00 TPH
MA Deposit Aluminum Beverage Containers	0.30%	0.23 TPH

Waste Characterization

Material		*Input*
Tin/Steel Containers	0.60%	0.45 TPH
Other Aluminum	0.40%	0.30 TPH
Other Ferrous and non-ferrous scrap	2.00%	1.50 TPH
White Goods	0.00%	0.00 TPH
Remainder/Composite Metal	0.80%	0.60 TPH
Food Waste	18.00%	13.50 TPH
Branches and Stumps	0.00%	0.00 TPH
Prunings, Trimmings, Leaves, Grass	2.80%	2.10 TPH
Manures	0.10%	0.08 TPH
Remainder/Composite Organic	2.50%	1.88 TPH
Non-MA Deposit Glass Beverage Containers	2.20%	1.65 TPH
Non-MA Deposit Deposit Other Glass Containers	0.80%	0.60 TPH
MA Deposit Glass Beverage Containers	0.70%	0.53 TPH
Remainder/Composite Glass	0.60%	0.45 TPH
Asphalt Pavement, Brick, Concrete	0.40%	0.30 TPH
Aggregates, Stones, Rock	0.10%	0.08 TPH
Wood-Treated	6.00%	4.50 TPH
Wood-Untreated	2.00%	1.50 TPH
Asphalt Roofing	0.00%	0.00 TPH
Drywall/Gypsum Board	0.70%	0.53 TPH
Carpet and Carpet Padding	3.30%	2.48 TPH
Remainder/Composite C & D	2.40%	1.80 TPH
Ballast, CFLs, Other Flourescents	0.00%	0.00 TPH
Batteries-Lead Acid	0.00%	0.00 TPH
Other Batteries	0.10%	0.08 TPH
Paint	0.00%	0.00 TPH
Bio-Hazards	3.90%	2.93 TPH
Vehicle and Equipment Fluids	0.00%	0.00 TPH
Empty Metal, Glass, Plastic Containers	0.10%	0.08 TPH
Other HHW	0.10%	0.08 TPH
Computer-Related Electronics	0.20%	0.15 TPH
Other "brown goods"	0.50%	0.38 TPH
Television and Computer Monitors	0.00%	0.00 TPH
Tires and Other Rubber	0.60%	0.45 TPH
Textiles	2.80%	2.10 TPH
Bulky Materials	2.50%	1.88 TPH
Mattresses	0.00%	0.00 TPH
Restaurant fats, Oils and Greases	0.00%	0.00 TPH
Other Miscellaneous	1.40%	1.05 TPH
Total	17.90%	75.00 TPH



BHS NIHOT nrt ZEROWASTE MAX-AI


Parallel Products
New Bedford MA

MSW Processing System
Equipment Detail

Confidential Proposal # 17-0289 DV2
17 July 2018

What's next.

Equipment Detail Diagram

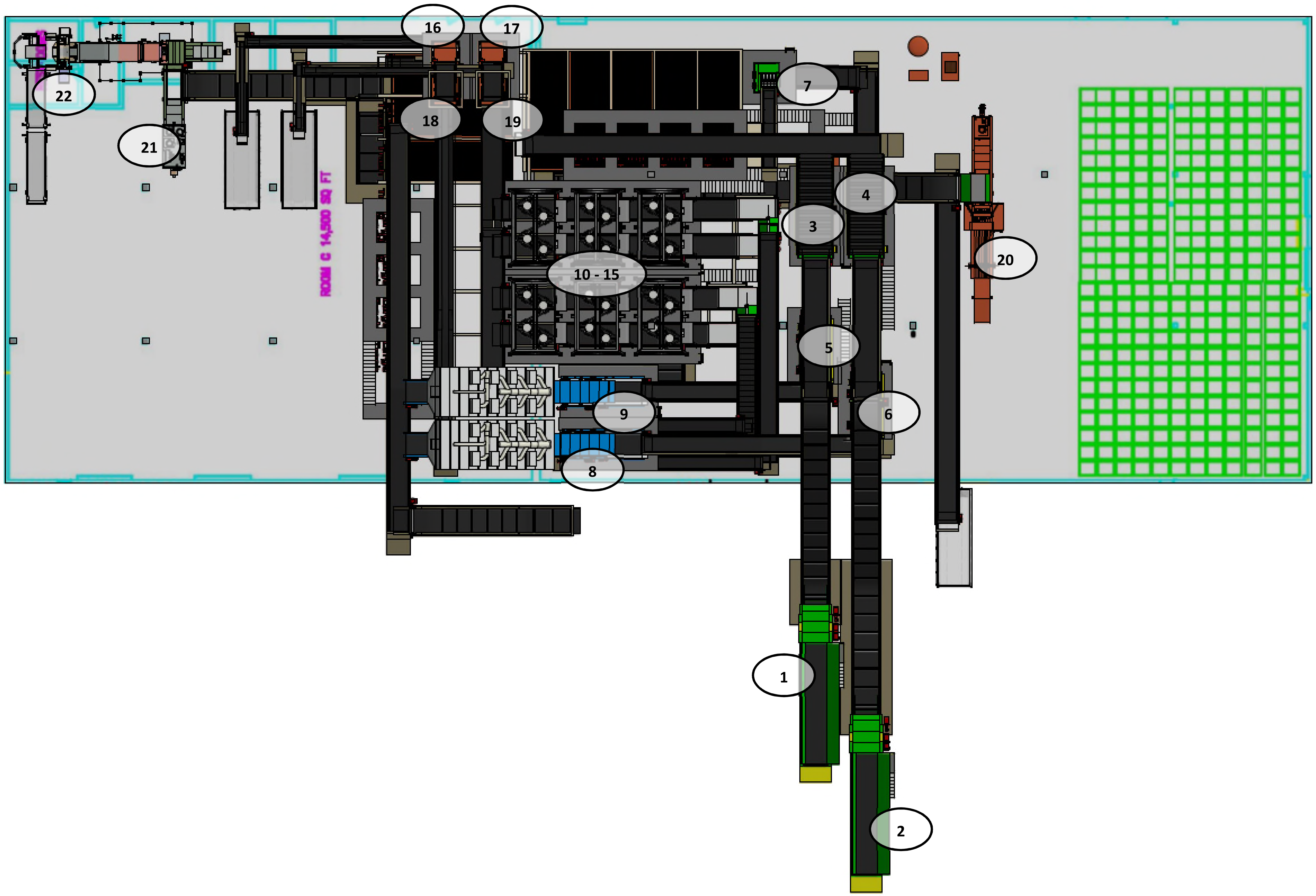


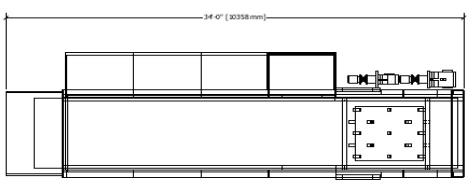
Table of Contents

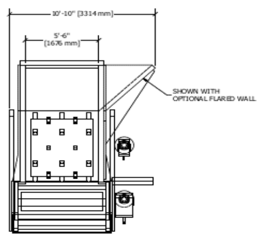
Equipment Detail

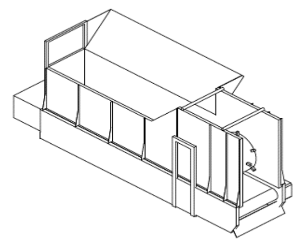
17 July 2018

BHS Metering Bin: Liberator Class

Application:	Liberator Class Metering Bin provides regulated flow of material to the system equiped with ripper teeth to open large bags
Manufacturer:	BHS
Model:	MB-50 L







Width:	Approximately 2.9m [9' 8"]
Length:	Approximately 13.4m [44']
Installed Weight:	Approximately 23,000 kg [51,000 lbs]
Infeed Lip:	10'-4-1/8" (3150 mm) high, sti ened with 8" (203 mm) structural channel
Wall Construction:	Front and rear wall construction is 3/8 formed channel shaped pans
Bearings:	CRS 1045 Dodge S-2000 roller bearing pillow blocks with triple lip seal
Drive Shaft:	CRS 1045 4-7/16" (113 mm) diameter with reducer
Tail Shaft:	CRS 1045 2-7/16" (62 mm) diameter with Dodge S-2000 bearings and take-ups
Chain:	Webster Chain, 9" (229 mm) pitch, RS 932F
Access:	Includes rear door, side door, maintenance platform, flared back wall
Motors:	SEW-EURODRIVE Premium Efficiency Motor: 45 kW [60HP] Drum Drive
Design Speed:	64 RPM, 5.2 FPM
Ship Method	20' HC & 40' HC
Conveyor Type	Steel Chainbelt
Teeth:	36 replaceable tungsten carbide-tipped teeth - Optional ripper teeth to open bags included

BHS Paint Specification

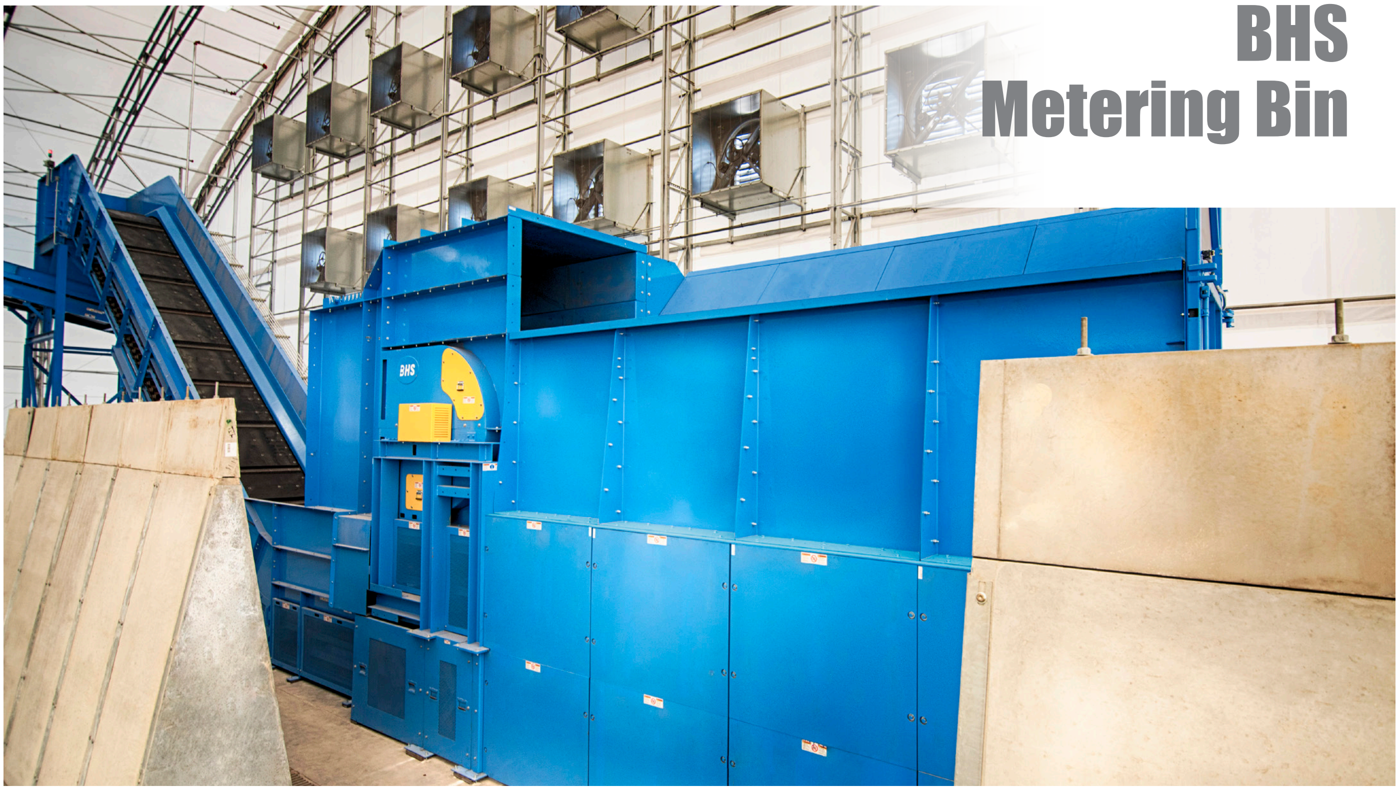
Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

BHS Metering Bin



The new **BHS Metering Bin** and **Metering Bin Liberator Class** provide numerous features that increase performance and decrease maintenance requirements. BHS has developed a strong platform to precisely regulate material flow through the combination of a variable speed conveyor and a counter-rotating drum at the discharge end, eliminating black-belt and keeping your system operating at peak levels. The new design's hallmark is its modularity: the design allows a wide range of mix-and match features which can transform the Metering Bin to match your own operational demands. From base features such as extra thick walls to the steel belt and bag-ripping teeth of the Liberator Class, BHS offers a bin without equal in the market.

FEATURES & BENEFITS

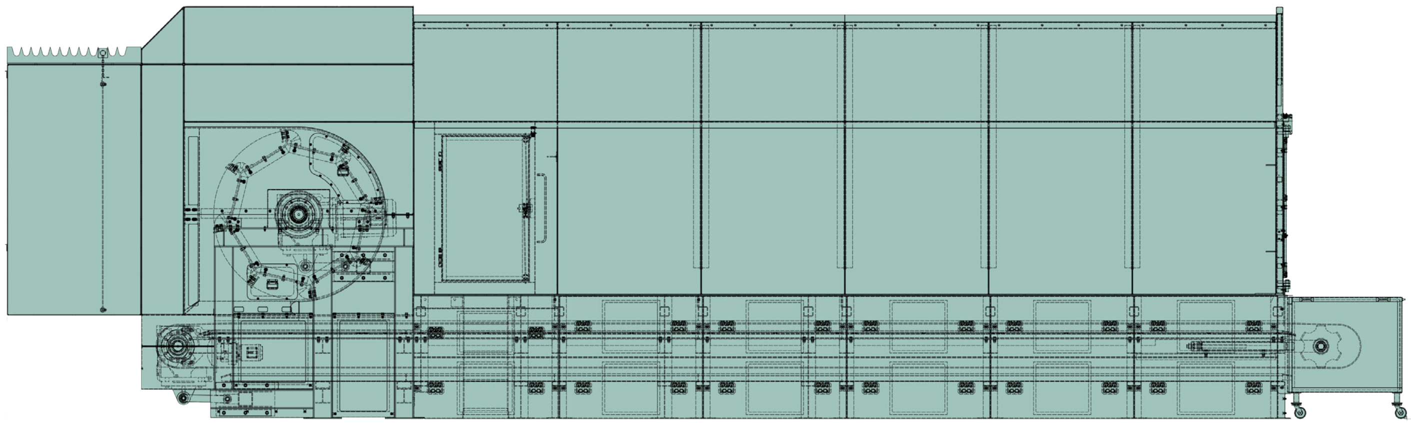
- Increases throughput and system capacity up to 20%
- Eliminates need for costly pits and additional civil work
- Quick, easy retrofit into existing facilities
- Rear door allows for easy removal of bulky items from bin
- New seal design provides protection from material interference
- Available with 60-HP driven drum to power through the toughest loads
- Reinforced load side and flared back walls for ease of loading and durability with minimal spillage

THE MODULAR ADVANTAGE

- Four-week typical lead time on standard design
- Ambidextrous load side and rear door allows for variable loading and access
- Interchangeable belts, drums & teeth
- Reinforced side wall panels
- Can be easily retrofitted to increase capacity
- AR-plated octagonal drum agitates material, opens bags and is easier to clean & repair
- 36 replaceable tungsten carbide-tipped teeth and optional ripper teeth to open bags

What's next.

BHS Metering Bin



Technical Specifications

Model	MB 30	MB 40	MB 50	MB 60
Capacity	30 yd.3 (23 m3)	40 yd.3 (31 m3)	50 yd.3 (38 m3)	60 yd.3 (46 m3)
Dimensions	W 9'- 8" (2.9 m) L 34'-0" (10.4 m) H 14'- 4" (4.3 m)	W 9'- 8" (2.9 m) L 39'-0" (11.9 m) H 14'- 4" (4.3 m)	W 9'- 8" (2.9 m) L 44'-0" (13.4 m) H 14'- 4" (4.3 m)	W 9'- 8" (2.9 m) L 49'-0" (14.9 m) H 14'- 4"(4.3 m)
Installed weight	43,682 lbs (19,814 kg)	44,096 lbs (20,002 kg)	45,842 lbs (20,794 kg)	47,588 lbs (21,586 kg)
Installed weight (Liberator Class)	47,284 lbs (21,448 kg)	48,479 lbs (21,990 kg)	51,006 lbs (23,136 kg)	53,533 lbs (24,282 kg)

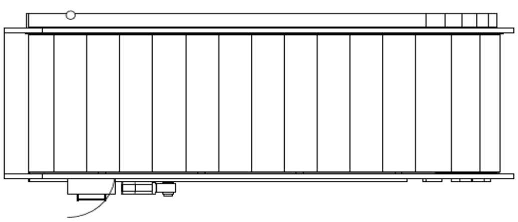
Infeed Lip	10'-4-1/8" (3150 mm) high, stiffened with 8" (203 mm) structural channel
Wall Construction	Front and rear wall construction is 3/8 formed channel shaped pans
Teeth	36 tungsten carbide tipped
Drum	Heavy Duty Abrasion Resistant (AR) plates, replaceable
Bearings	CRS 1045 Dodge S-2000 roller bearing pillow blocks with triple lip seal
Drum Drive	SEW-EURODRIVE Premium Efficiency Motor Horsepower: 25 HP, 40HP, 60HP
Drive Shaft	CRS 1045 4-7/16" (113 mm) diameter with reducer
Tail Shaft	CRS 1045 2-7/16" (62 mm) diameter with Dodge S-2000 bearings and take-ups
Chain	Webster Chain, 9" (229 mm) pitch, RS 932F
Belt	PVC 350, with angle iron flights 3" tall (76 mm) Steel belting also available
Oil	Standard Synthetic
Liberator Package	Steel belt; ripper teeth; 60 HP drum drive

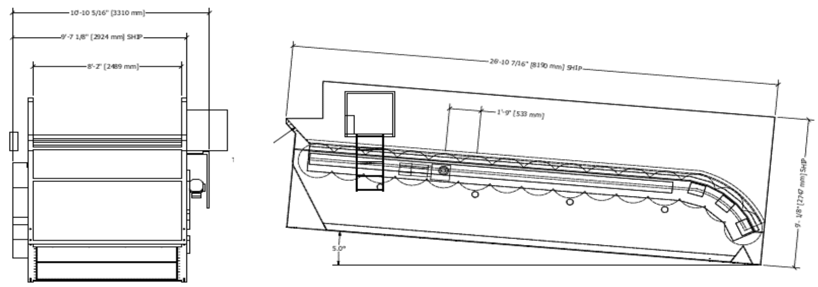
Equipment Detail

17 July 2018

BHS Scalping Screen

Application:	Separate lerge material from waste stream
Manufacturer:	Bulk Handling Systems
Model:	DRS98-15-762





Screen width:	2500mm [98”] wide screening surface
Screen Length:	Approximately 8.19m [26' - 11"] long
Shipping Weight:	Approximately 11,340 kg [25,000 lbs]
Discs:	Patented rubber tri-disc A1-762 on fifteen shafts
IFO:	Variable by fixed increments, suggested openings of 178mm x 254mm [7” x 10”]
Shafts:	Fifteen (15) total shafts on one (1) deck on 533 mm [21”] shaft centers
Bearings:	Pillow block bearings
Sprockets:	Hardened double-single timed sprockets with split taper bushings
Drive Chain:	RC 80
Motors:	One (1) 7.5 kW [10 HP] SEW energy efficient motor directly coupled to gear reducer
Noise:	<85 dB(a)
Reducers:	Shaft mounted reducer
VFD:	Variable frequency drives for operating flexibility are recommended
Drive Guards:	Drive system is enclosed in a solid guard with lift off door for easy removal and replacement. Grease fittings are plumbed to a common point outside guard for convenient bearing maintenance
Angle:	Fixed 5 degree decline
Auto-lube:	Automatic oiler system for the drive chain, which includes: reservoir, solenoid, distribution manifold, flexible tubing and adjustable brush applicators
Chutes	Included

BHS Paint Specification

Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:
- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

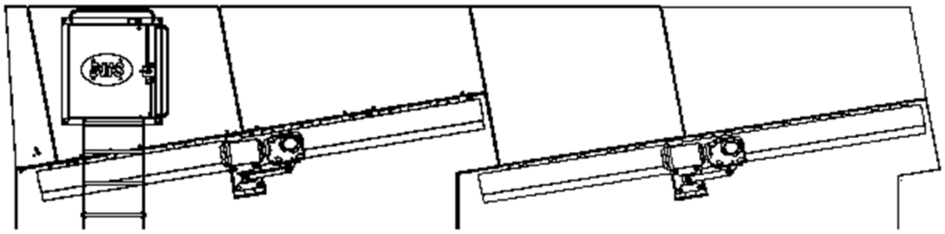
The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

Equipment Detail

17 July 2018

BHS Debris Roll Screen®

Application:	The Inter-Face Opening (IFO) of the DRS is specifically designed to maximize the removal of fines without the loss of valuable single serve containers.
Manufacturer:	Bulk Handling Systems
Model:	DRS84-11-11-236



Screen width:	2130mm [84”] wide screening surface
Screen Length:	Approximately 5.4m [17' 9"] long
Shipping Weight:	Approximately 4000 kg [9000 lbs]
Discs:	BHS patented in-line compound tri-disc design with BHS disc 2-233 / 2-236 on all shafts. Discs hardened to 400+ Brinell for long wear life
IFO:	2-233 / 2-236 with openings of 32mm x 57mm [1 ¼” x 2 ¼”]
Shafts:	Thirty (30) total shafts on two (2) decks with two (2) rollover shafts at the tail section on 222 mm [8 ¾”] shaft centers
Bearings:	Pillow block bearings
Sprockets:	Hardened double-single timed sprockets with split taper bushings
Drive Chain:	RC 80
Motors:	Two (2) 5.5 kW [7.5 HP] SEW energy efficient motor directly coupled to gear reducer
Noise:	<85 dB(a)
Reducers:	Shaft mounted reducer
VFD:	Not Included - Variable frequency drives for operating flexibility are recommended *(By Customer)*
Drive Guards:	Drive system is enclosed in a solid guard with lift off door for easy removal and replacement. Grease fittings are plumbed to a common point outside guard for convenient bearing maintenance
Angle:	Fixed 0 degree incline
Auto-lube:	Automatic oiler system for the drive chain, which includes: reservoir, solenoid, distribution manifold, flexible tubing and adjustable brush applicators
Chutes	Included

BHS Paint Specification

Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

BHS Debris Roll Screen®

The **BHS Debris Roll Screen®** is the industry's flagship disc screen. This proven, patented technology is the premiere sizing tool for Single Stream, Municipal Solid Waste (MSW), Construction and Demolition (C&D) waste, wood waste, compost, green waste, plastics, glass, tires and various other materials.

The unique Tri-Discs™ are in-line from shaft-to-shaft, creating a precise opening for highly-accurate material sizing. Their hardened steel, triangular shape provides superior material agitation and true sizing in a small footprint.

The compound disc design provides precise sizing far superior to other disc or "star" screens. Patented gear timing paired with variable speed drives allows for fine tuning for varying material conditions.

Excellent material agitation and separation

Patented in-line discs provide accurate sizing of material, reducing product loss

Disc and shaft design reduces material wrap, increasing uptime

Heavy-duty discs ensure long disc life and reduced maintenance

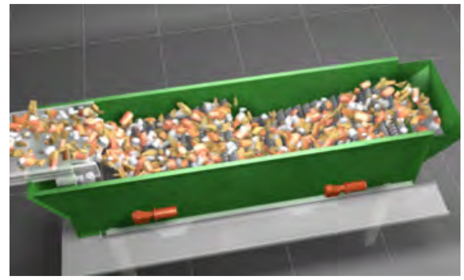
BHS

What's next.

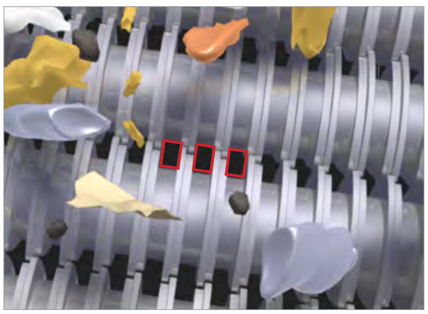
BHS Debris Roll Screen®

The Difference is the Discs

Our patented discs deliver superior sorting efficiency, material quality and throughput rates versus other screens. The BHS Debris Roll Screen® is unmatched in its ability to accurately sort a wide range of material from a variety of applications. The BHS' Tri Disc™ imparts a wavelike action into the material stream, efficiently and precisely sizing material and minimizing wrapping and jamming. Typical disc screens have uneven openings, allowing for inexact sizing and material wrapping and jamming.

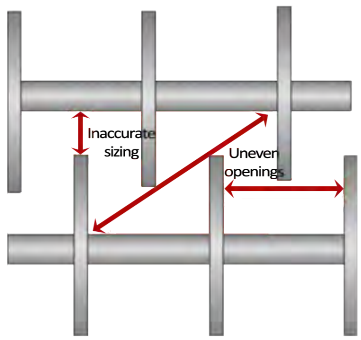


BHS DRS Screen



Precise openings

Conventional Disc Screen



General Specifications

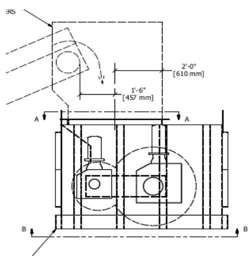
Screen width	Varies according to application
Inter-Face Openings	Varies according to application
Screen Angles	Varies according to application
Motors	SEW-EURODRIVE high efficiency gear motors
Reducers	Shaft mounted
Drive Guards	Drive system is enclosed in a solid guard with lift off door for easy removal and replacement. Grease fittings are plumbed to a common point outside guard for easy bearing maintenance.
Bearings	Dodge SC Tapped Base
Sprockets	80Q17 hardened double-single timed sprockets with split taper bushing.
Drives	RC 80 Chain-driven. Variable frequency drives recommended for operating flexibility, included with controls system.
Auto Lube	Automatic oiler system for the drive chain including reservoir, solenoid, distribution manifold, copper plumbing and adjustable brush applicators; easy sprocket, chain and bearing maintenance.

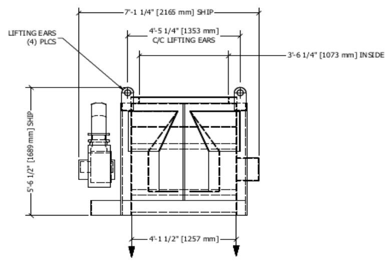
Equipment Detail

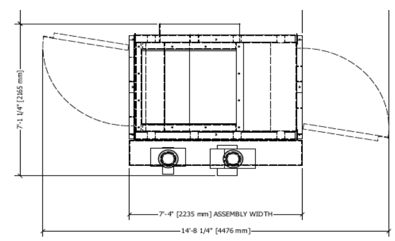
17 July 2018

BHS Bag Breaker®

Application:	The BHS Bag Breaker® is designed to minimize shredding of the bags to allow efficient recovery of film. The majority of the empty bags remain in one to three elongated pieces. The bags exit the machine with the released material.
Manufacturer:	Bulk Handling Systems
Model:	BB48







Width:	1220 mm [48”] wide
Length:	Approximately 2.11m [83”] long
Shipping Weight:	Approximately 3600 kg [8000 lbs]
Shafts:	Two (2) counter-rotating shafts with heavy-duty double row spherical roller bearings
Motors:	One (1) 7.5 kW [10 HP] and one (1) 1.5 kW [1 HP] SEW motor with Class II reducers
Noise:	<85 dB(a)
Controls:	Integrated into BHS System Controls
Access doors:	Two (2) large access doors reinforced with steel bracing with Signal latches
VFD:	Variable frequency drives for operating flexibility
Chutes	Included

BHS Paint Specification

Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

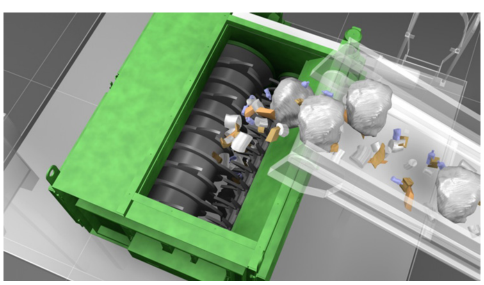
- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

BHS Bag Breaker®

The **BHS Bag Breaker®** opens bags at high volumes without damaging content, ensuring maximum recovery of valuable recyclables. The patented Bag Breaker® uses large, counter-rotating drums to efficiently open the bags and release the contents, discharging them from the bottom of the machine. Bags are torn into large pieces for easy removal.

Bagged material can be fed directly into the BHS Bag Breaker® with an infeed conveyor to achieve an evenly-metered flow rate.



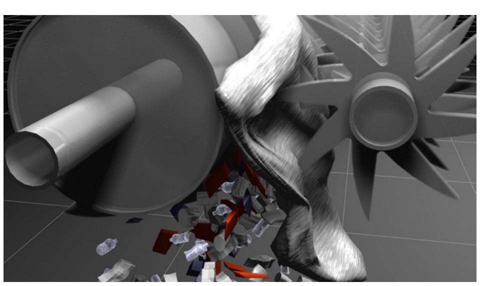
Clean-out doors on two sides for easy access and maintenance

Easy to retrofit into existing facility

Opens bags without damaging valuable recyclables

Bags are torn to large pieces rather than shredded for easy removal

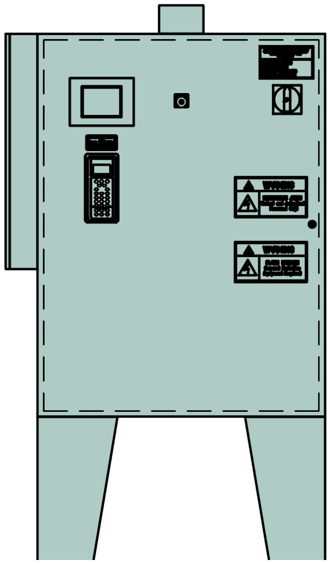
Heavy-duty construction for decreased downtime and long-operating life

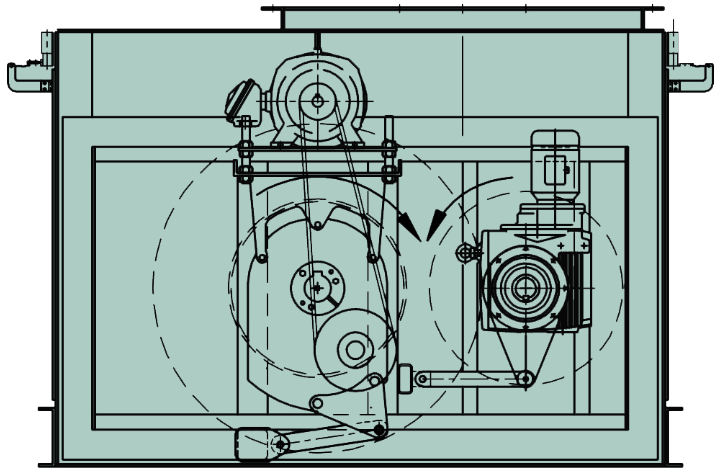


BHS

What's next.

BHS Bag Breaker®

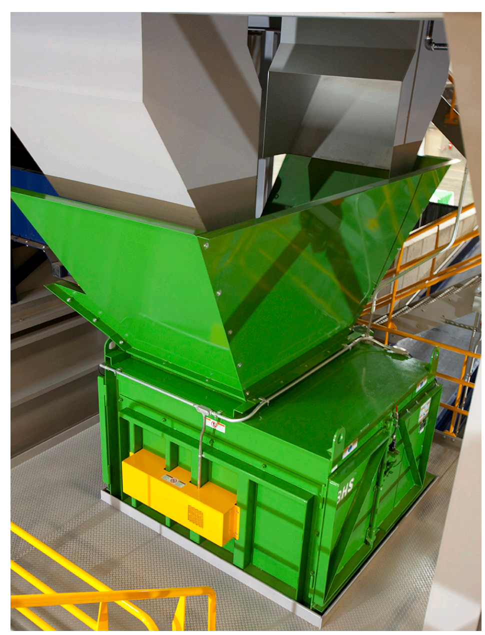




Technical Specifications

Model	BB-60	BB-72	BB-90
Capacity	up to 22 tph	up to 30 tph	up to 35 tph
Motors	10 hp , 1 hp (7.5 kW, 0.75 kW)	20 hp , 3 hp (15 kW, 2.2 kW)	20 hp , 3 hp (15 kW, 2.2 kW)
Access Doors	43"x 36" (1090 mm x 910 mm)	43"x 43" (1090 mm x 1090 mm)	43" x 52" (1090 mm x 1320 mm)
Dimensions	W 7'-7" (2.3 m) L 8'-1" (2.5 m) H 5'-2" (1.6 M)	W 8'- 1" (2.5 m) L 10'- 4" (3.1 m) H 5'-2" (1.6 m)	W 8'- 1" (2.5 m) L 11'-10" (3.6 m) H 5'-2" (1.6 m)
Shipping weight	7,900 lbs. (3,600 kg.)	10,100 lbs. (4,600 kg.)	13,100 lbs. (5,950 kg.)

Motors	Energy efficient motor with Class II gear reducer
Shafts	Two (2) counter-rotating shafts with heavy-duty double row spherical roller bearings; 3-15/16" (100mm)
Drum	Constructed of heavy-duty rolled plate with 3-15/16"(100mm) diameter, C1045 head shaft
Bearings	Dodge Type E
Controls	Control panel in NEMA 12 enclosure
Access Doors	Two (2) large access doors reinforced with steel bracing with signal latches

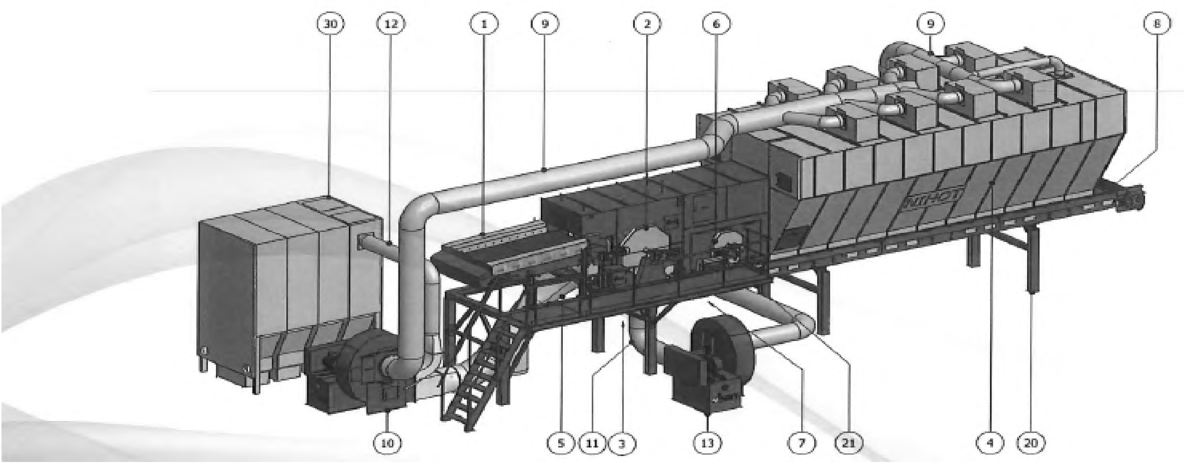


Equipment Detail

17 July 2018

Nihot Double Drum Separator

Application:	Input material is separated into a heavy, mid-heavy and light fraction due to an installed second rotating splitter drum and second fan with blow nozzle.
Manufacturer:	Nihot
Model:	DDS1600



			Installed Power
1.	Product Input Conveyor (PIC)	1600x 2750mm	5.5 kW
2.	First splitter drum		2.2 kW
3.	Discharge heavy fraction		
4.	Expansion Room	3600x 9000mm	
5.	First air inlet		
6.	Second splitter drum		2.2 kW
7.	Discharge mid fraction		
8.	Light Fraction Discharge Conveyor	1600x 11,250mm	9.2 kW
9.	Air return duct		
10.	First recirculation fan	2x RF(I) 60	2x 30 kW
11.	Second air inlet		
12.	Dust duct		
13.	Second recirculation fan	RF 50	18.5 kW
14.	Support construction		
15.	Stairs and maintenance platform		
30.	Filter unit	Included	

Nihot Coating Specification

Nihot equipment is built using blank-stained and galvanized plates. Blank-stained steel plates are degreased with Sigma Thinner 91-80. The layer is treated with Sigma Steel QD which consists of a zinc phosphate primer (1x 40µm).

The finishing layer is 1x Sigma Steel QD Finish and can be applied in any RAL color according to customer specification (1x 40µm).

Drum Separators

Besides the superior separation efficiency, the Nihot Drum Separators are well known for their ability of handling large volumes of light fractions. The robust construction and foolproof functionality guarantee a long lasting and trouble free operation.

SDS: Single Drum Separators

The Single Drum Separator is a highly versatile separator that processes a large variety of waste streams into two fractions; heavy and light. This high capacity separator system is capable of processing e.g.:

- Bad shredded materials
- Waste containing large materials
- A high volume percentage of light materials
- Hard and bulky soft materials

DDS: Double Drum Separators

When a three-way separation is desired or a volume separation is required, the Nihot Double Drum Separator is a good solution. The input material is separated into a heavy, mid-heavy and light fraction due to an installed second rotating splitter drum and second fan with blow nozzle.

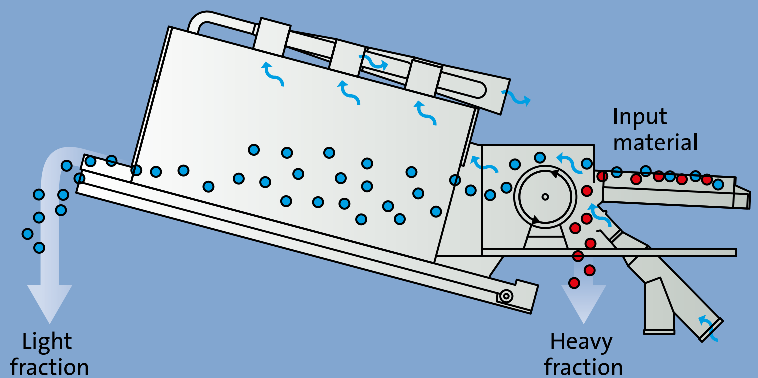
Advantages SDS & DDS

- Versatile – processes many different waste streams, including high moisture content input
- Gives control of the caloric value of the output
- Removes interferants from input, thus protecting the granulators in RDF refinement
- Low maintenance and few wear parts i.e. reduced downtime
- Can handle large fraction sizes (plastics and film)
- Low dust emission

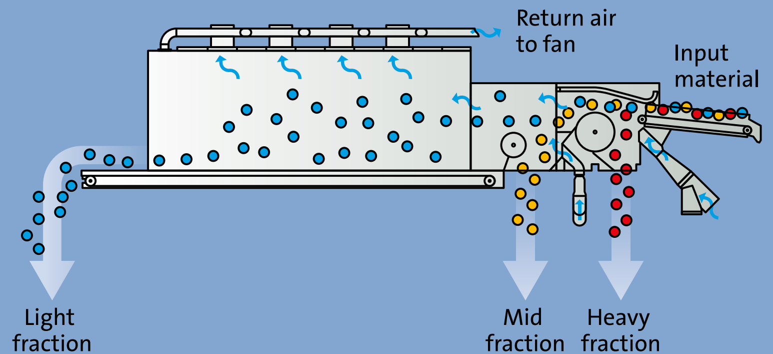
These benefits result in fast return on investment, low operating costs and superior reliability.

The operating principles

SDS: Single Drum Separator



DDS: Double Drum Separator

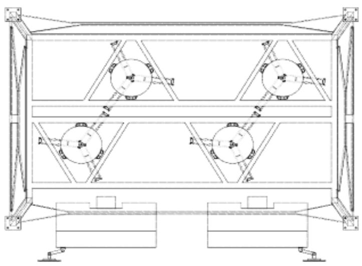


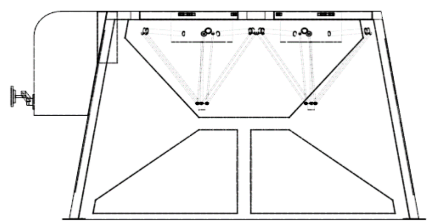
Equipment Detail

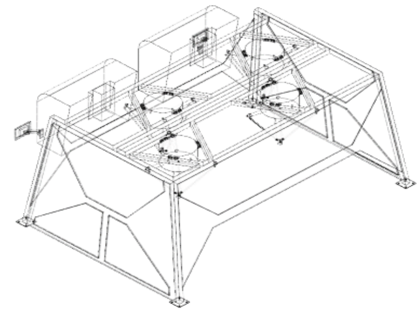
17 July 2018

Max-AI™ Autonomous QC

Application:	Identification and sorting of recyclable containers for recovery. Dual-frame, quad-robot configuration for sorting from two parallel conveyors with common chutes in between.
Manufacturer:	NRT
Model:	AQC-4







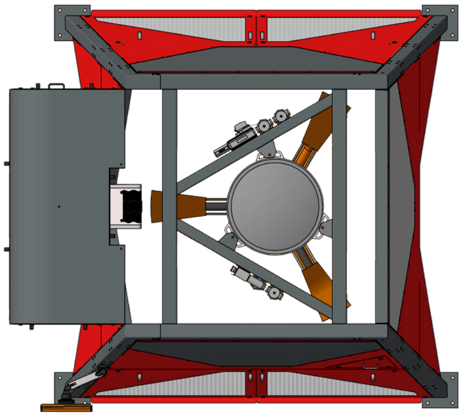
Approx. Dimensions (L x W x H)	10' x 20' x 9' (2.9m x 5.8m x 2.6m)
Machine Weight	Approx. 14,000 lbs. (6,400 kg)
Picking Rate	up to 240 picks/minute
Max Object Weight	1 lb. (0.5 kg)
Coating	powder coated with a textured finish
Structure Color	RAL 7012 (dark gray)
Conveyor Speed	180 ft./min (55 m/min)
Air Supply	160 scfm @100psig (4.5 m³/min @ 6.9 BAR) per arm
Power Supply (By Customer)	40A 230V 50/60Hz
Delta bot robotic sorter	4x Included
UL or CE Certification	Included
Vision system and enclosure	Included
Max-AI™ neural network license	Included
Suction based grasping system	Included

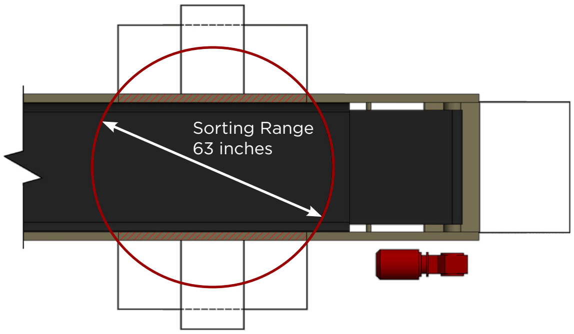
MAX-AI® AUTONOMOUS QC

Max-AI® Autonomous Quality Control (AQC) sorters are the ultimate in post-sort automation. When combined with NRT optical sorters, the container sorting process is 100% autonomous and the need for human contact with waste is eliminated.

The AQC makes multiple sorting decisions autonomously; for example separating thermoform trays, aluminum, 3D fiber and residue from a stream of optically-sorted PET bottles. All of this is done at rates exceeding human capabilities and each pick is prioritized for profitability.

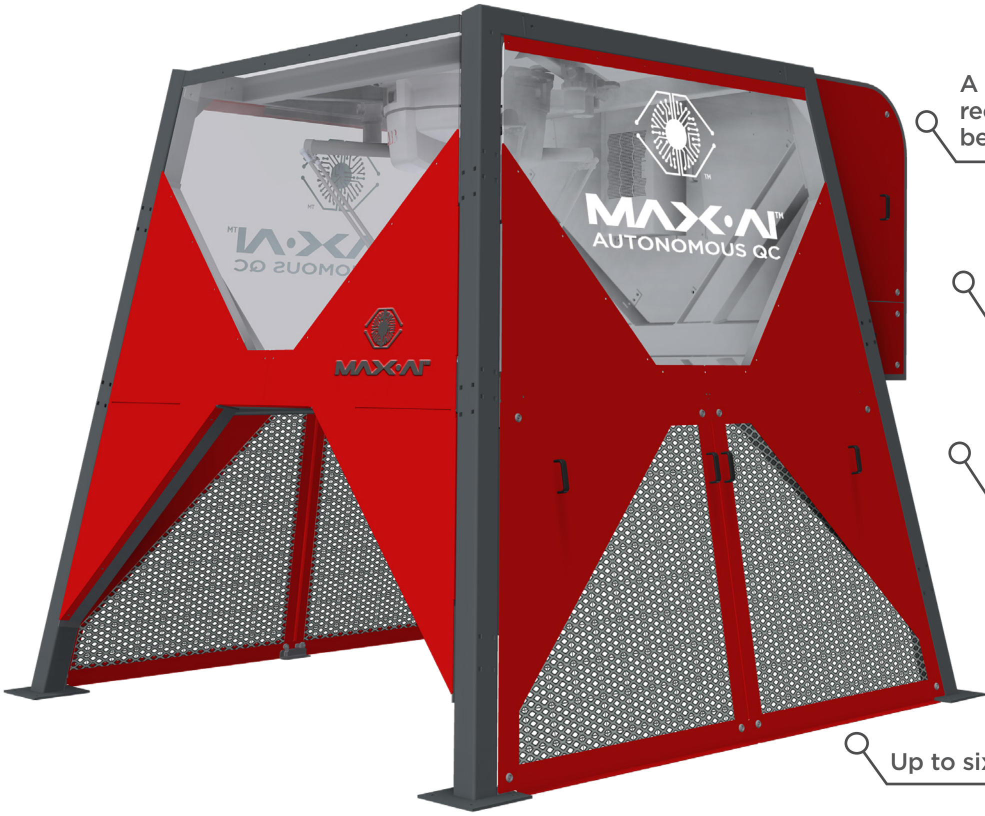
This advanced technology uses a machine vision system to see the material, specialized artificial intelligence to think and identify each item, and a robot to pick targeted items or contamination. Max-AI AQC sorters provide MRF operators with sustained and consistent sorting performance while improving MRF safety, recovery, product quality and operational expenses.





Max Autonomous QC

The Max AQC automates QC positions and positively recovers recyclables



A completely autonomous high-volume recovery solution. Provides additional benefit when paired with NRT sorters.

Advanced neural networks can be retrained to identify new materials as waste streams change.

Exceeds human capabilities in every metric including pick rate, accuracy, & uptime; and sustains those capabilities every minute of the day.

Picks are prioritized by value, weight, or other operator specifications. Priorities are easily adjusted when market conditions change.

Up to six discrete sorts from a single unit.

CONTAINER LINE SORTS

PET BOTTLES
PET TRAYS

HDPE-N
HDPE-C

MIXED PLASTICS

CARDBOARD

ASEPTICS/
CARTONS

ALUMINUM

MIXED PAPER

BLACK PLASTICS

FIBER LINE SORTS AVAILABLE SOON

CONTAINERS

CARDBOARD

RESIDUE

Technische Daten • Technical Data • Fiche technique
EBV NES
18.05.09

STEINERT

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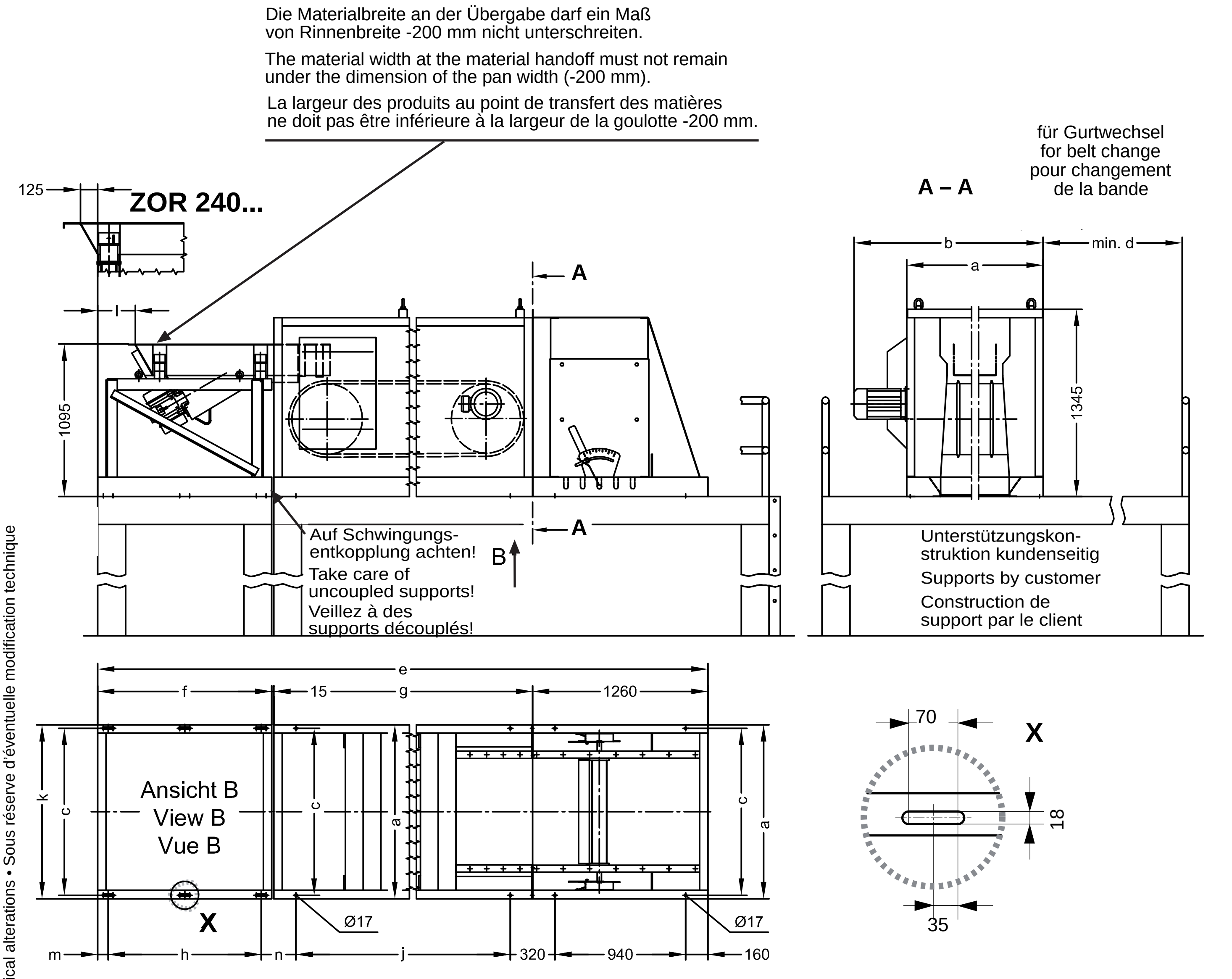
Einbauvorschlag für Nichteisenmetallscheider
Mounting-Proposal for Non-Ferrous Metals Separator
Proposition de montage pour séparateur de métaux non-ferreux

STEINERT Elektromagnetbau GmbH • Widdersdorfer Str. 329-331, D-50933 Köln • Tel.+49 (0) 221 49 84 0 • Fax +49 (0) 221 49 84 102 • sales@steinert.de

Mitgeltende Datenblätter / See additional Technical Data / Voir aussi fiches techniques: **TD ZOR • TD NES • TD ALK**



Typ Type Type	Abmessungen Dimensions Dimensions															Antriebe Drives Entraînement				
		E 36...	E 50...	E 61...												Vibr. Rinne Vibr. feeder couloir vibrant	Band belt courroie	Polsystem Pole system système polaire		
	a	b	b	b	c	d	e	f	g	h	j	k	l	m	n			E 36...	E 50...	E 61...
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kW	kW	kW	kW	kW
NES 50 1.0 E...	1250	-	1560	1622	1200	1000	4625	1250	2100	2x550	2x890	1250				2 x 0,4	2,2	-	4,0	5,5
NES 75 1.0 E...	1380	-	1695	1766	1330	1250						1380				2 x 0,6	2,2	-	4,0	7,5
NES 100 2.0 E...	1630	2083	1944	2078	1580	1500						1630	270	75	250	2 x 0,8	2,2	5,5	4,0	9,2
NES 125 2.0 E...	1880	2333	2060	2328	1830	1750	5675	1500	2900	2x675	3x860	1880				2 x 1,2	2,2	5,5	5,5	9,2
NES 150 2.0 E...	2130	2583	2510	2578	2080	2000						2130				2 x 1,2	3,0	5,5	5,5	9,2
NES 200 2.0 E...	2630	-	3010	3078	2580	2500	6375	2200		3x680		2650	120	80	255	2 x 1,6	3,0	-	5,5	9,2
NES 250 300 E...	3130	-	-	3610	3080	3000	7630	2455	3900	3X765	5X720	3150	-	80	245	2 x 3,0	3,0	-	-	7,5

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Überbandmagnetscheider UME…R
Overband Magnetic Separator UME…R
Séparateur magnétique de type „Overband“ UME…R

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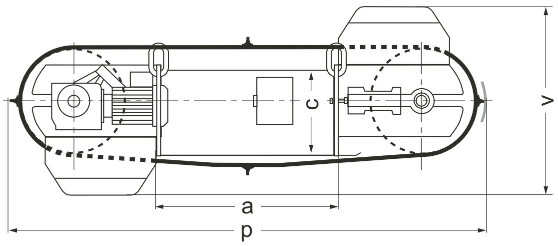
Bild A
picture A
vue A



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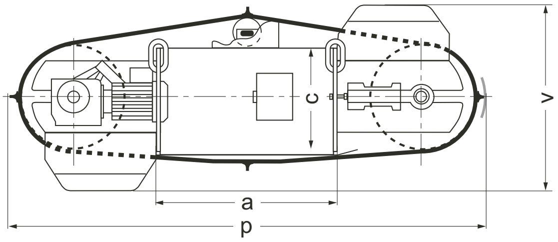

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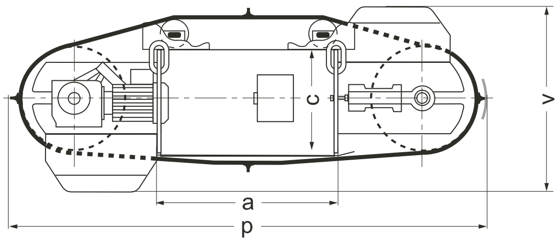

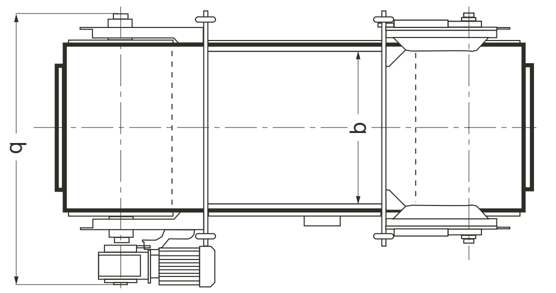

Typ Type Type	Nenn-leistungs-aufnahme Rated power input Puissance nominale	Anschluß-spannung Operating voltage Tension de service	Abstand max. Maximum clearance Distance max. re-coman-dée** x	Anordnung über Förderband* Arrangement over belt width * Disposition au-dessus de la largeur de la bande* quer across trans-versale	längs in-line longitu-dinale	Abmessungen Dimensions Dimensions a	b	c	p	q	v	Bild picture vue	Motor-leistung Motor capacity Puissance du moteur	Austrags-band-geschwin-digkeit Speed of discharge belt Vitesse de la bande de debit	Gewicht ca. Weight approx. Poids env.
	kW	Volt	mm	mm	mm	mm	mm	mm	mm	mm	mm		kW	ca. m/s	kg
UME 75 90 RF	2,7		330	1000	800	915	760	430	2295	1327		A			1550
UME 90 105 RF	3,2	80	360	1200	1000	1060	910	400	2440	1507	910		3	2,1	1850
UME 125 140 RF	5,2		470	1400	1200	1370	1220	435	2744	1807		B			3150
UME 75 90 R	3,1	63	350	1000	800	880	740	415	2290	1322					1600
UME 75 110 R	3,5	75		1200		1080			2490			A			1850
UME 95 110 R	4,1	95	420		1000		940	425		1522	910		3		2250
UME 95 130 R	4,3	105		1400		1280			2690			B		2,1	2700
UME 115 130 R	6,1	95	490		1200		1140	500		1722					3550
UME 115 150 R	6,9	108		1600		1480			2890						4200
UME 135 150 R	7,8	126	560		1400	1500	1350	510	3170	2046	1000				6300
UME 135 170 R	8,3	138		1800		1700			3370		1000	C	4		6900
UME 160 175 R	12,3	208	680		1700	1725	1600	666	3395	2300	1150		5,5	1,7	10 000
UME 180 195 R	14,7	192	730	2000	2000	1950	1800	786	3620	2500	1270				15 500

* Gemuldetes Band nach DIN 22101. / * Belt with throughing angle acc. DIN 22101. / *Bande en auge selon DIN 22101.

Abst. zwischen Polfläche und Oberkante Förderband / **Clear. between pole surface and conveyour belt /Dist. entre surface de pôle et courroie du convoyeur

Technische Änderungen vorbehalten • Subject to technical alterations • Sous réserve d'éventuelle modification technique

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Überbandmagnetscheider UME…R
Overband Magnetic Separator UME…R
Séparateur magnétique de type „Overband“ UME…R

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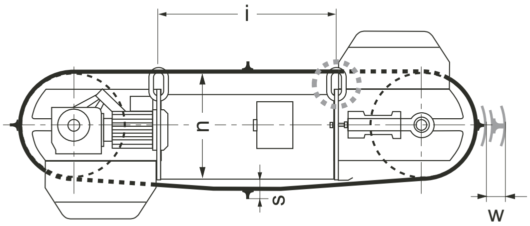

Bild B
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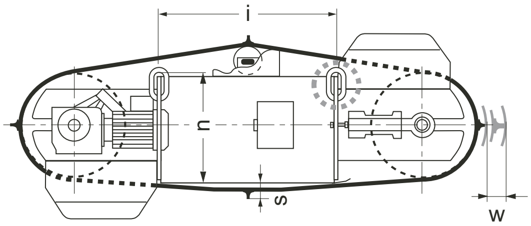

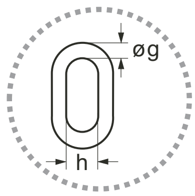

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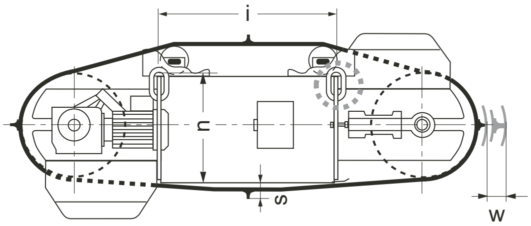
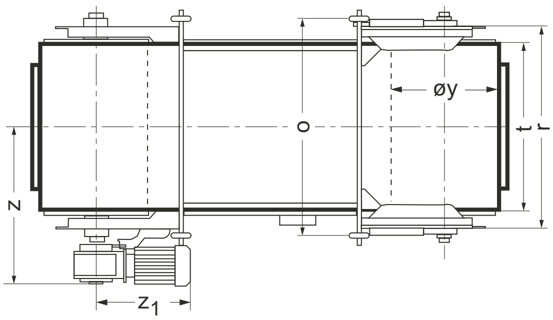




Typ Type Type	Abmessungen Dimensions Dimensions												Bild picture vue
	g	h	i	n	o	r	s	t	w	y	z	z_1	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
UME 75 90 RF			900		1100	970	84	800			753		A
UME 90 105 RF	22	50	1045	520	1280	1150		950	50	506	843	454	
UME 125 140 RF			1350		1530	1450	124	1250			993		B
UME 75 90 R			860		1050	970	80	800			764		
UME 75 110 R			1060				85		50				A
UME 95 110 R	22	50		524	1250	1170		1000			864	454	
UME 95 130 R			1260				95						B
UME 115 130 R					1450	1370		1200		506	964		
UME 115 150 R			1460	639			100						
UME 135 150 R	22	50	1480	524	1760	1630		1400	80		1139	509	
UME 135 170 R			1680										C
UME 160 175 R	26	100	1685	814	2000	1880	110	1600			1266		
UME 180 195 R			1910	934	2200	2080		1800			1366		

PAAL Konti™ Baler

275 H to 425 H Series

Kadant PAAL's Konti H channel baler features high throughput and bale weights with low energy consumption.

Features of the PAAL Konti H channel baler

- Optimized knife, stamper, and channel design
- Modern axial piston pumps with low drive power
- Advanced positional ram measurement system
- Large door at rear section of baler
- PLC offering remote access and service as well as high resolution operator panel

Benefits of the PAAL Konti H channel baler

- High throughput and bale weights
- Low energy consumption
- Easy access to tying unit via optional ladder to three-sided platform
- Simple operation and maintenance
- Low total cost of ownership

Kadant PAAL was founded in 1854 in Osnabrück, Germany. Since its introduction of the first continuously operated horizontal baler in 1960, PAAL has delivered more than 30,000 machines and today is the #1 channel baler manufacturer in Europe.

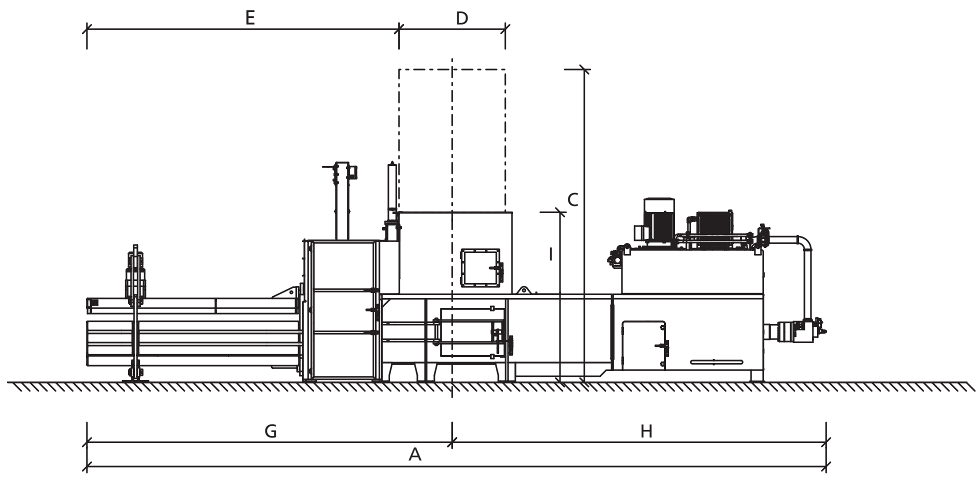
KADANT

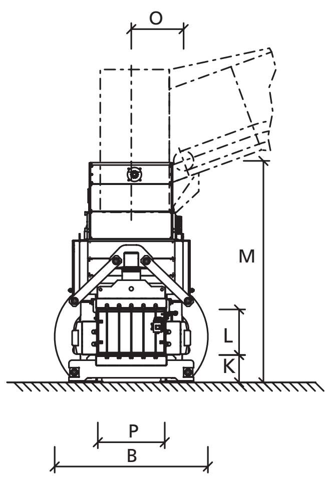
PAAL KONTI BALER 275 H TO 425 H SERIES

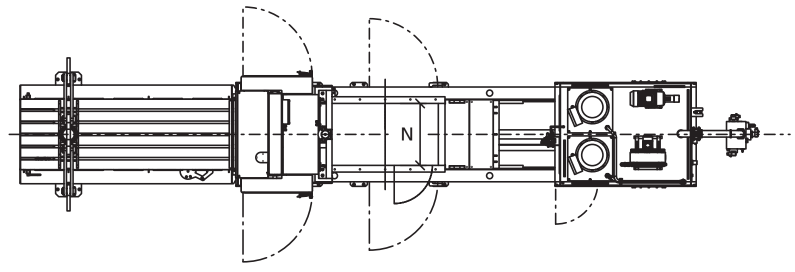
Technical data and measurements

PAAL KONTI H SERIES		275 H			325 H				425 H				
Pressing force	US tons	90			111				134				
Spec. pressing force	psi	141			174				210				
Tunnel cross section	inch	30 x 44			30 x 44				30 x 44				
Hopper opening	inch	63 x 41			69 x 41				79 x 41				
Feeding volume	yd³	2.62			2.81				3.10				
Number of wires	pieces	5			5				5				
Driving power	HP	50	74	2x 50	50	74	2x 50	2x 74	60	74	2x 50	2x 74	3x 74
Press output (ideal)	max. yd³/h	543	798	942	458	680	811	1,151	386	589	706	1,027	1,373
Press output (under load)	max. yd³/h	327	477	589	275	405	504	713	262	360	451	647	876
Press capacity (weight)													
• 59 lb/yd³ (e.g., flattened OCC)	US t/h	9.4	13.8	17.1	8.3	12.1	14.9	20.9	7.7	10.5	13.2	18.7	25.9
• 101 lb/yd³ (e.g., mixed paper)	US t/h	16.0	23.1	28.1	13.2	19.8	24.3	33.6	12.7	17.6	21.5	30.9	41.9
• 169 lb/yd³ (e.g., newspaper, magazines)	US t/h	23.7	33.6	40.8	19.8	28.7	35.3	48.0	19.8	25.9	32.5	44.6	58.4
Baler weight	US tons	28			31				39				

Dimensions are in inches.





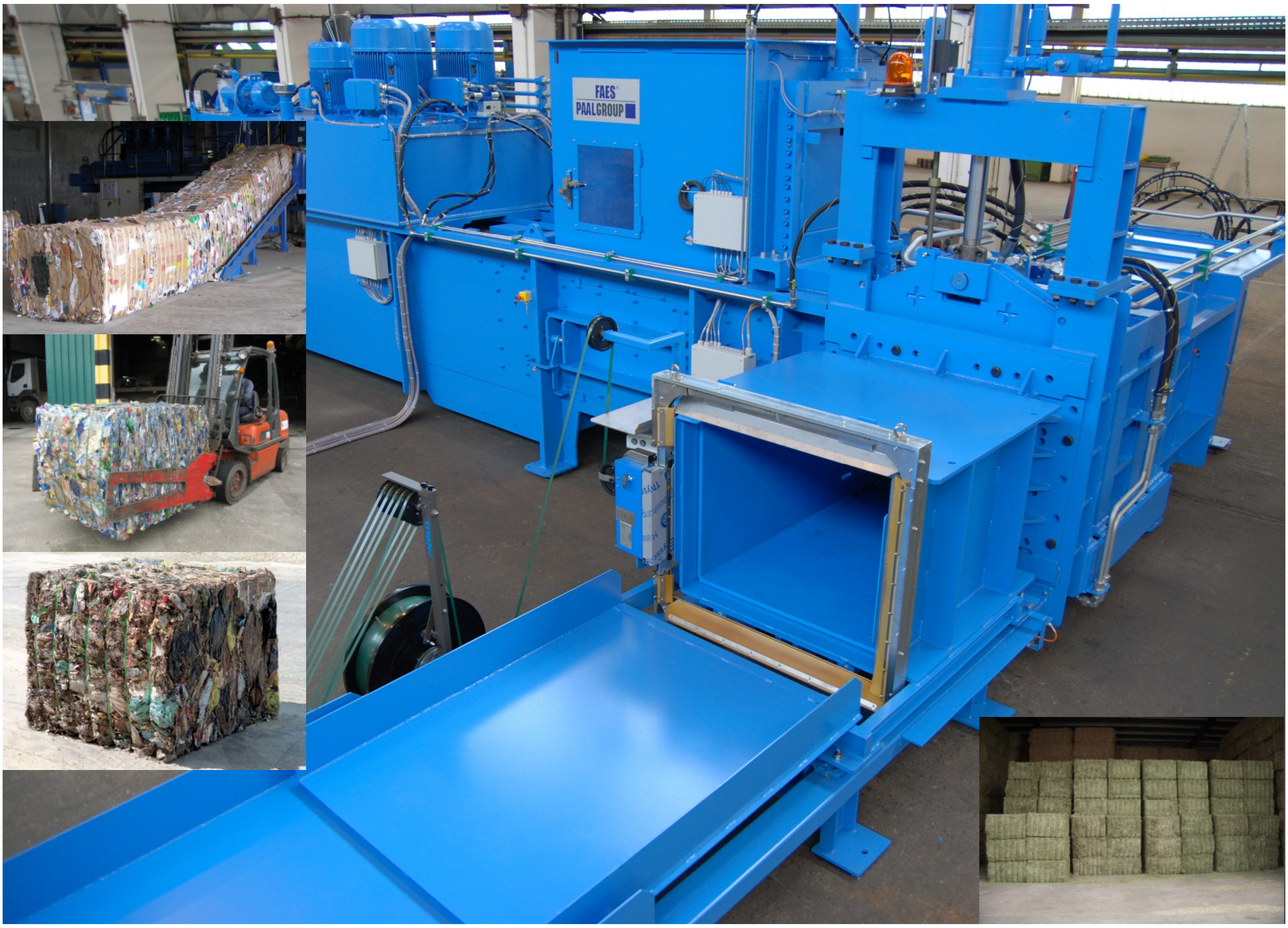


	A*	B	C	D	E	G	H*	I	K	L	M	N	O	P
KONTI 275 H	433.5	87.8	202.8	63.0	174.7	206.2	227.3	110.2	17.7	29.5	144.5	40.2	33.9	43.3
KONTI 325 H	476.0	99.6	202.8	68.9	202.2	236.7	239.3	110.2	17.7	29.5	144.5	40.2	33.9	43.3
KONTI 425 H	523.4	104.3	202.8	78.7	225.9	265.2	258.2	110.2	17.7	29.5	144.5	40.2	33.9	43.3

**Maximum length for specified hopper opening*

Dimensions are in inches.

PAAL Konti Baler 275 H to 425 H Series-1000 (BHS US) 04/2017



HTR-B

NEW

HIGH COMPRESSION TWO-RAM BALER
WITH PLASTIC TYING SYSTEM

KĀDANT

PAAL®

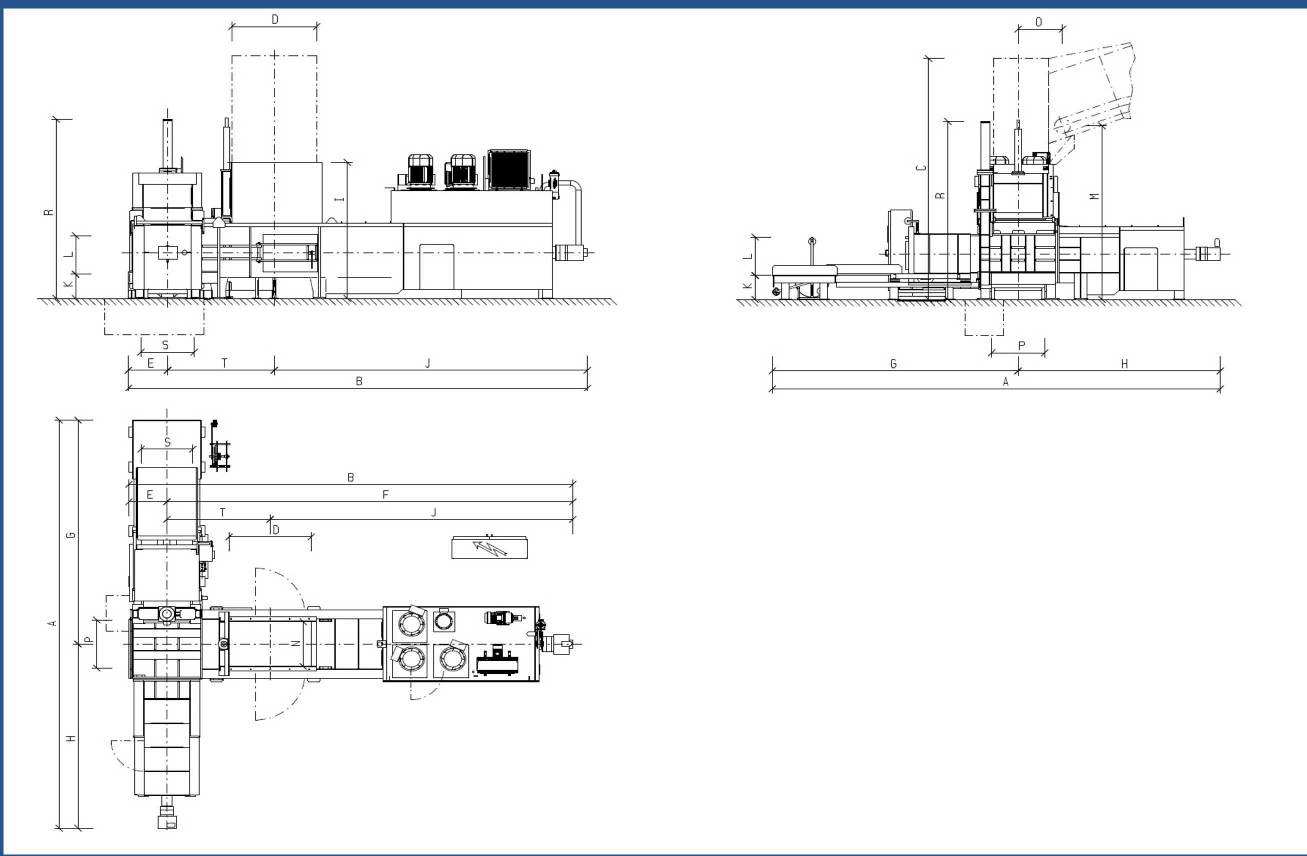
Technical data and measurements

HTR		425			700	
pressing force	t (kN)	122 (1197)			198 (1940)	
spec. pressing force	N/cm²	136			160	
press box dimension	cm	80 x 110 x 94			110 x 110 x 94	
hopper opening	cm	175 x 102			200 x 102	
number of tyings	pieces	6 or more			6 or more	
driving power	kW	55	2x 55	3x 55	2x 55	3x 55
press output (at input density of 80 kg/m^3)	max. m³/h	170	255	295	280	345
press output (at input density of 150 kg/m^3)	max. m³/h	145	225	270	235	300
press output (at input density of 200 kg/m^3)	max. m³/h	135	205	245	220	275
press capacity (weight)						
• 80 kg/m^3 e.g. alfalfa or grass	ca. t/h	14	20	24	22	27
• 150 kg/m^3 e.g. RDF	ca. t/h	22	34	40	35	45
• 200 kg/m^3 e.g. MSW	ca. t/h	27	41	49	44	55
baler weight (according to equipment)	ca. t	40			50	

Dimenssions in mm	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T
HTR 425	9239	9459	5360	1750	808	8651	5100	4139	3010	6451	535	800	3835	1020	920	1100	3963	940	2200
HTR 700	9423	10211	5640	2000	908	9303	5205	4218	3290	6813	535	1080	4115	1020	920	1100	4908	940	2490

Special FEATURES of the new HTR two-ram baler:

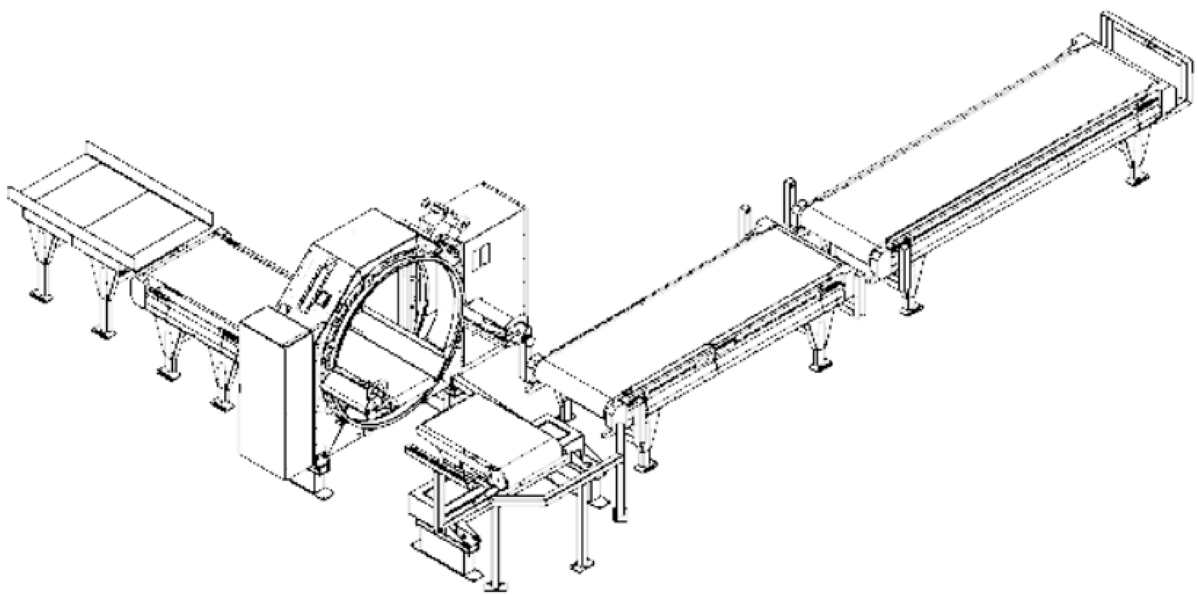
- Multipurpose baler for compacting municipal solid waste (MSW), refuse derived fuel (RDF), recyclable material like plastic, carton, paper, etc. and agriculture material like alfalfa, grass, straw, etc. into high density bales
- Automatic binding with polyester straps incorporated on the telescopic tunnel
- Reduces operating cost: lower transportation (high bale density) and lower consumables (binding with polyester straps)
- Bales tied with polyester straps are ideal for incineration because plastic does not damage the incineration equipment as it is burned during the process
- Binding process is carried out during compaction process of next bale
- Easy operation by a new multi-functional 9” Touch-Panel with recipe management and comprehensive display of functions and data including data transfer



www.kadantpaal.com

CW 2200-SW-750-1-5 wrapping line

Front conveyor (L=1900 mm)	1 pc
Wrapping unit	1 pc
Rear conveyor (L=4900 mm)	1 pc
Standard safety fences	1 set
Remote access device for a 3G/4G/network cable/WLAN connection	1 pc
Hydraulic system	1 pc
Electric system	1 pc
Control system	1 pc
Oil cooler	1 pc
Operation manual in English	2 pc on paper, 1 CD



TECHNICAL INFORMATION

Features

Capacity

Wrapping cycle speed is ca. 60 seconds per bale

Baler	HTR 700
Bale dimensions	
Width:	1200 mm
Height:	1200 mm
Lengths (min-max):	1300 mm
Weight max:	2000 kg
Weight min:	400 kg
Baled material:	RDF/MSW

Wrapping film

Cross Wrap recommends stretch film 25 micron, width 750 mm, max Ø 240 mm, weight max 25 kg.

Wrapping process description

* The wrapping line recognises a bale when it is coming to the first conveyor after the baler.
* The wrapping line measures the length of the bales and starts wrapping them automatically.
* After wrapping, the wrapped bale waits for the next bale on the rotation table. When the new bale has reached a certain place, the wrapped bale moves forward to the store conveyor and the new bale is wrapped vertically at the same time. Wrapping film is transferred to the next bale automatically, no manual operations are needed.
* The automatic wrapping process is optimized so that extra film is only wrapped where strongest protection is needed. The number of layers can be modified.
* When the bale has been wrapped, it can be lifted from the store conveyor with a forklift equipped with a bale clamp.
* Wrapping cycle speed is approximately 60 seconds per bale when using 5 layers of film per bale (does not include film roll change or downtime).
* The machine is designed to handle bales consisting of waste material.
* If the shape of the waste bale is not optimal, the system needs an operator to control the wrapping process.

What's next.

BHS WORLD HEADQUARTERS | **Eugene, Oregon USA** | **866-688-2066** | **sales@bhsequip.eu** | bulkhandlingsystems.com

BHS EUROPE | **Amsterdam, The Netherlands** | **+31 (0) 20 58 220 30** | **info@bhsequip.eu** | bulkhandlingsystems.com

ATTACHMENT 9

MASS COASTAL RAILROAD COMMUNICATIONS

Operations
Maintenance of Way
Signal and Communications

Parallel Products
100 Duchaine Boulevard
New Bedford, MA 02745
Attention: Mr. Timothy Cusson

July 22nd, 2019

Project Description: Proposed Recycled Glass and MSW Railcar Loading Tracks

Project Location: New Bedford, MA

Tim,

I have reviewed the Rail Movement Study that was prepared by Green Seal Environmental dated 5/14/19. Mass Coastal (MC) takes no exception to the proposed "inter-plant" switching of railcars to facilitate loading. Please take note that the Track Mobile that is owned by Parallel Products is not permitted to operate past the split-rail derail that will be located past the clearance point of the mainline turnout.

MC currently operates MC-4 to New Bedford Tuesdays and Thursdays but is prepared to service the facility up to 6 days per week once traffic levels demand it. The train operates to New Bedford and is on duty 7AM to 7PM. Parallel Products would typically serviced between 10-11AM.

As you are aware, the South Coast Rail Project is underway, and frankly one bi-product will be increased speeds. Consequently, MC may be able to serve Parallel daily.

MC works with it's Class I partner, CSX Transportation for its connection to the National Rail Network. MC will work with the CSX startup team to assure that their train schedules are prepared for the traffic demand.

Should you have any further questions please contact me directly.

P. Christopher Podgurski

President & COO

cpodgurski@masscoastal.com
Tel: 508-291-7116

ATTACHMENT 10

EJ ANALYSIS REPORT

Massachusetts Environmental Policy Act
Environmental Justice Analysis

Parallel Products of New England
New Bedford, Massachusetts

Submitted to:
PARALLEL PRODUCTS OF NEW ENGLAND, INC.
100 Duchaine Boulevard
New Bedford, MA 02745

PARALLEL PRODUCTS

Submitted by:
EPSILON ASSOCIATES, INC.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

Epsilon ASSOCIATES INC.

September 20, 2019

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1.0 EXECUTIVE SUMMARY

Executive Summary

Parallel Products of New England, Inc. (PPNE) has commissioned this Environmental Justice (EJ) analysis to document that the facility proposed for 100 Duchaine Boulevard in New Bedford, Massachusetts uses all feasible measures to avoid, minimize, and reduce potential air-related impacts on EJ populations within one-mile of the proposed solid waste facility. The proposed PPNE facility exceeds the Massachusetts Environmental Policy Act (MEPA) threshold for new solid waste processing capacity of 150 or more tons per day (TPD), and the wastewater mandatory threshold of 150 or more TPD of sewage sludge, triggering the requirement for filing of an Environmental Notification Form (ENF) and a mandatory Environmental Impact Report (EIR). Any project that exceeds the ENF thresholds for solid waste or wastewater and involves a project site located within one mile of an EJ population will be required to implement enhanced public participation under MEPA.

The project submitted an Expanded Environmental Notification Form (EENF) on February 20th, 2019 and was granted a Phase 1 Waiver for the Glass Processing operation in the EENF Certificate on April 12th, 2019. Phases 2 and 3 of the Project are required to submit a Draft Environmental Impact Report (DEIR). As part of the EENF Certificate the Project must continue to provide enhanced public outreach of the DEIR to EJ populations in New Bedford. The enhanced public participation requirements as described in the EENF certificate are listed below and PPNE's proposed implementation of each requirement is discussed.

Enhanced Public Participation Under MEPA:

1. *Preparation and Distribution of a fact sheet that provides a summary of the project, environmental impacts (including air quality), and public comment opportunities. The fact sheet should include photos of similar facilities (or direct individuals to a website to view renderings).*

   The fact sheet is currently in a draft form and includes a summary of the project, environmental impacts (including air quality) and a description of the public comment opportunities. Once finalized the Project fact sheet will be provided to the public library, City Hall as well as included on the Project website; and provided upon request by residents. The project website includes renderings of the proposed project.

2. *Prior to submitting the DEIR, the Project should contact the Toxics Action Center, EJ groups identified above (Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village), and the City's Planning Department for input on alternative media outlets and information repositories in which to provide notice of the DEIR.*

   The Proponent reached out to the groups identified above for input on alternative media outlets and information repositories to provide notice of the DEIR on July 15th, 2019.

3. *The Proponent should consult with the MassDEP and/or EEA's Environmental Justice Director during preparation of the DEIR regarding the proposed circulation and participation plan to ensure compliance with the EJ Policy.*

   As part of the EENF the Project consulted with MassDEP and the MEPA Office regarding the enhanced outreach requirements. The Project is intending to provide the following organizations with a copy of the DEIR: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River, Toxics Action Center, and Old Bedford Village as well as publish Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times in addition to the New Bedford Standard Times.

4. *The DEIR should provide a detailed update that describes all of the proponent's enhanced public outreach efforts and meetings that have occurred since the EENF was submitted.*

   The Proponent held a public meeting on April 29th, 2019 at Pulaski School.

5. *Translation of materials or interpretation services prior to and during public meetings:* The project will continue to provide translators at the public hearing in Portuguese and Spanish

6. *Consider that when scheduling public meetings that the time of day, availability of public transportation and whether the location is child-friendly and culturally appropriate:* The project will consider these details when scheduling public meetings.

Any project that exceeds the mandatory EIR threshold for solid waste and involves a project site located within one mile of an EJ population will be required to conduct an enhanced analysis of impacts and mitigation under MEPA.

The remainder of this report will focus on details surrounding the enhanced analysis of impacts and mitigation and responding to EJ comments in the MEPA EENF Certificate.

Enhanced Analysis of Impacts

As described in the 2017 Environmental Justice (EJ) Policy a project exceeding a mandatory EIR threshold for solid waste or wastewater must conduct an enhanced analysis of impacts:

An enhanced analysis of impacts and mitigation may include analysis of multiple air impacts; data on baseline public health conditions within the affected EJ population; analysis of technological, site planning, and operational alternatives to reduce impacts; and proposed on-site and off-site mitigation measures to reduce multiple impacts and increase environmental and energy benefits for the affected EJ population.

The adjacent EJ population is described in Section 2.2. The baseline public health conditions within the identified EJ population are described in Section 3. An analysis of multiple air impacts is described in Section 4. Mitigation measures designed to reduce impacts are described in Section 5. Responses to specific EJ comments received from the EENF are discussed in Section 6.

Impacts

Parallel Products proposes a facility that avoids, minimizes, and mitigates potential EJ air-related impacts as follows:

Avoided impacts: Parallel Products has selected an industrially-zoned setting to avoid impacts to the public and is re-using significant existing infrastructure to avoid impacts associated with new construction. Material handling in enclosed areas, using best industry practices, avoids off-site impacts of air emissions and odors. Because the proposed facility will serve existing needs for material handling at a location that is closer to the sources of the materials, the project avoids transportation-related impacts currently associated with sending the materials farther by truck. The project has revised truck traffic routes to avoid impacts to residences on Phillips Road.

Minimized impacts: The project team evaluated and modeled dozens of potential equipment and exhaust vent/stack configurations to identify the proposed conceptual design which minimizes off-site air and odor concentrations. The proposed design optimizes the flow of material through the site, and the reuse of existing facilities, while minimizing offsite impacts in general and residential area offsite impacts in particular. Material handling loaders will be USEPA Tier 4 certified to minimize emissions.

Mitigated impacts: Parallel Products is selecting to control odors from biosolids handling processes using either a biofilter with carbon polishing, or a regenerative thermal oxidizer, or equal, and ionization. These odor and air pollution control devices provide an enhanced degree of mitigation.

Comparison to Standards

The analysis shows that, under maximum expected operating conditions which include the stationary sources as well as the mobile on-site and off-site (i.e. traffic) sources and using conservative assumptions, that the project's air impacts will comply with all applicable health-protective standards. Specifically:

- The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per EPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.[1]"

- MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air.[2]" The Massachusetts AALs and TELs will not be exceeded off property. In some cases, MassDEP had not developed an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System

1 https://www.epa.gov/criteria-air-pollutants/naaqs-table

2 https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines

(IRIS) was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations.

In Massachusetts, odor is regulated under 310 CMR 7.09 such that operations that emit odors shall not permit their emissions to "cause a condition of air pollution". To determine that the project is not a nuisance source of odors, the study evaluated for maximum 5-minute-averaged odor concentrations and determined that, for all locations off-site and given evaluated weather conditions, the odor concentration to be at or below 5 dilution-to-threshold (D/T). Thus, the project meets the criterion published in the MassDEP draft policy for odor from composting facilities.

2.0 INTRODUCTION

This report documents the enhanced analysis of impacts for the proposed Parallel Products of New England (PPNE) solid waste facility to be located at 100 Duchaine Boulevard in New Bedford, Massachusetts.

2.1 Site Description

The site is an industrially zoned, approximately 71-acre parcel, located within the New Bedford Business Park. The site location and property boundaries are shown in **Figure 1** using an aerial view. The site was previously developed by Polaroid and already includes access roads, parking areas, and various buildings. Much of the existing infrastructure will be used in developing the proposed project. New buildings will be constructed for glass processing, municipal solid waste (MSW) and construction and demolition (C&D) waste tipping, and biosolids drying. The conceptual layout of the future and existing buildings is shown in **Figure 2** which presents a plan view.

The site is bounded on the west by undevelopable wetlands, to the north by several commercial or industrial operations unrelated to PPNE's project, to the east by residential neighborhoods, and to the south by a utility operations and maintenance facility.

2.2 Project Description

PPNE plans to operate several solid waste and recycling related processes at the site:

(1) Phase 1 – Processing of redemption and recovered glass to cullet for rail haul to out-of-state recycling facilities [300 tons per day (TPD) glass handling capacity, 75,000 tons per year (TPY) throughput];

(2) Phase 2 – Processing of MSW to recover approximately 20 percent recyclables and to bale and rail haul the post-reclamation MSW, with C&D waste, to out-of-state waste disposal facilities (1,500 TPD MSW and C&D waste handling capacity, 450,000 TPY throughput);

(3) Phase 3 – Receipt of biosolids liquid sludge for dewatering to cake and receipt of biosolids cake, with drying of the cake to 93 percent solids for rail haul to out-of-state disposal facilities [50 dry TPD (DTPD) biosolids capacity, 15,000 dry TPY (DTPY) throughput].

While the goal is to rail haul most of the products and residuals off-site, the air emissions estimates, and related ambient impacts have been based on use of trucks to haul materials on and off-site. This will overstate the air impacts when compared to future, predominate use of rail haul.

2.3 Environmental Justice Populations

EJ populations are those segments of the population that the Executive Office of Environmental Affairs (EEA) has determined to be most at risk of being unaware of or unable to participate in environmental decision-making or to gain access to state environmental resources, or are especially vulnerable. They are defined as neighborhoods (U.S. Census Bureau census block group data for minority criteria, and American Community Survey (ACS) data for state median income and English isolation criteria) that meet *one or more* of the following:

- 25 percent of households within the census block group have a median annual household income at or below 65 percent of the statewide median income for Massachusetts; or

- 25 percent or more of the residents are minority; or

- 25 percent or more of the residents have English isolation.

EEA has designated specific areas of the state that meet one or more of the criteria above as EJ areas. Within one mile of the proposed site, there is an area designated as an EJ area for minority populations (in other words, 25 percent or more of the residents that reside in this are minority). The location of the site and areas designated as EJ areas are shown in **Figure 3**.

3.0 BASELINE HEALTH

This section describes the baseline health of the areas within one-mile of the proposed site which includes the communities of Acushnet, Dartmouth and New Bedford. The baseline health background is based on the data contained within the Massachusetts Environmental Public Health Tracking (MA EPHT) website. This website summarizes health outcomes based on data collected by the Massachusetts Division of Health Care Finance and data collected from the Massachusetts Department of Public Health (MassDPH) disease surveillance programs.

The MA EPHT website[3] contains data on a number of different health outcomes, including information on asthma hospitalizations and emergency room visits, the prevalence of asthma among school aged children, the hospitalization rate of acute myocardial infarctions, hospitalization and emergency room visits for Chronic Obstructive Pulmonary Disease (COPD), and incidence of various cancers. Each of these datasets are available at different geographies and data availability for recent years is limited. Table 3-1 describes the data reviewed for this project, the years available for review, and the geographic resolution of the health outcomes of interest. Each of these health outcomes is described further in the subsequent sections.

Table 3-1 Baseline Health Outcomes Reviewed for the Project

Health Outcome	Indicator Description	Years Available	Geographic Resolution
Asthma Hospitalizations	Age-Adjusted Rate of Asthma Hospitalizations	2000-2015	Community
Asthma Emergency Department Visits	Age-Adjusted Rate of Emergency Department Visits for Asthma	2000-2015	Community
Cancer	Standardized Incidence Ratio Summarized by Cancer Type	2000-2013 (results reported in 5-year blocks due to small numbers)	Census Tracts by Community
COPD Hospitalizations	Age Adjusted COPD Hospitalization Admission Rate	2000-2015	Community
COPD Emergency Department Visits	Age Adjusted COPD Emergency Department Visit Rate	2000-2015	Community
Acute Myocardial Infarction (AMI) Hospitalizations	Age-Adjusted Rate of AMI Hospitalizations	2000-2015	Community
Pediatric Asthma Prevalence	Prevalence of Asthma	2009-2017	By School

[3] https://matracking.ehs.state.ma.us/

3.1 Asthma Baseline Health

As described on the MA EPHT website[4], asthma is an illness that impacts the respiratory tract and airways that carry oxygen into and out of the lungs. During an asthma attack, the airways constrict resulting in wheezing and difficulty breathing. Causes of asthma are unknown. However, episodes of asthma (asthma attacks) can be triggered by certain environmental factors such as air pollution, mold, pets/pet dander, and dust mites. Asthma is a common chronic disease that continues to increase in prevalence. It is the most common chronic disease in children. Massachusetts has an elevated rate of asthma compared to the national prevalence rate.

MassDPH tracks asthma in several different ways: asthma hospitalizations, emergency room visits and school health records. A statewide surveillance program for elementary and middle-aged school children administered is through school health records.

3.1.1 Asthma Hospitalizations

Asthma hospitalizations occur when an individual is admitted (i.e. stays overnight as an inpatient) to the hospital and receives treatment for asthma while hospitalized. Typically, an individual would enter the hospital through the emergency department and be admitted to the hospital as an inpatient. These individuals would be included in both the emergency department and asthma hospitalization datasets.

Data for asthma hospitalizations is only available on a community basis, and are tied to where an individual lives and not necessarily the location where the asthma attack occurred.

Rates of asthma hospitalizations are reported several ways, for this analysis the age-adjusted asthma hospitalization rate was compared to the statewide age-adjusted hospitalization rate in order to determine if the rate of asthma hospitalizations in the communities of Acushnet, Dartmouth and New Bedford were statistically-significantly-elevated compared to the statewide rate of asthma hospitalizations. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted asthma hospitalization rates for each of these communities appears in Table 3-2 below, rates of asthma hospitalizations for Acushnet and Dartmouth are similar to the statewide rate of asthma hospitalizations. New Bedford's asthma hospitalization rates are statistically-significantly-elevated when compared to the statewide rate of asthma, but the rate of asthma hospitalization has been declining over time.

[4] https://matracking.ehs.state.ma.us/Health-Data/Asthma/index.html

Table 3-2 Age-Adjusted Rate of Asthma Hospitalization Admissions Compared to the Statewide Rate

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Acushnet	2011	13.7	6.8 - 20.6	Similar to statewide rate
	2012	14.9	7.8 - 21.9	Similar to statewide rate
	2013	Not Shown[2]	Not Shown[2]	Not Shown[3]
	2014	12.6	5.2 - 20.1	Similar to statewide rate
	2015	Not Shown[2]	Not Shown[2]	Not Shown[3]
Dartmouth	2011	15.9	11.8 - 20.1	Similar to statewide rate
	2012	11.3	7.8 - 14.8	Similar to statewide rate
	2013	9.8	6.4 - 13.3	Similar to statewide rate
	2014	9.3	6.2 - 12.4	Similar to statewide rate
	2015	10.7	7.0-14.4	Similar to statewide rate
New Bedford	2011	39.2	35.2 - 43.1	Statistically significantly higher than the statewide rate
	2012	34.3	30.6 - 38	Statistically significantly higher than the statewide rate
	2013	28.5	25.1 - 31.9	Statistically significantly higher than the statewide rate
	2014	29.9	26.4 - 33.3	Statistically significantly higher than the statewide rate
	2015	23.4	20.2-26.3	Statistically significantly higher than the statewide rate
Statewide	2011	15.1	14.8-15.4	Not Applicable
	2012	13.3	13.0-13.6	
	2013	11.8	11.5-12.1	
	2014	12.0	11.8-12.3	
	2015	10.7	10.5-11.0	

[1] To determine if a community's asthma hospitalization rate is significantly different from the state rate or if the difference may be due solely to chance, a 95% confidence interval (CI) is calculated for each rate. A 95% CI assesses the magnitude and stability of a measure. Specifically, a 95% CI is the range of estimated values that has a 95% probability of including the true rate for the population.
[2] Not shown due to small numbers due to patient confidentiality considerations.

3.1.2 Asthma Emergency Department (ED) Visits

Asthma-related emergency department (ED) visits occur when an individual receives treatment in the ED for asthma. In some instances, an individual may be treated and released. In other situations, an individual may be admitted to the hospital for further monitoring or treatment. These individuals would be included in both the ED and asthma hospitalization datasets.

Data for asthma-related ED visits is only available on a community basis, and are tied to where an individual lives and not necessarily the location where the asthma attack occurred.

Rates of asthma-related ED visits are reported several ways, for this analysis the age-adjusted rate was used as it allows for a comparison to be made to the statewide ED rate for asthma. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted asthma ED rates for each of these communities appears in Table 3-3 below, rates of asthma ED visits for Acushnet and Dartmouth are lower than the statewide rate of ED visits. New Bedford's asthma ED visits are statistically-significantly-elevated when compared to the statewide rate of asthma and have remained relatively unchanged in recent years.

Table 3-3 Age-Adjusted Rate of Asthma-Related ED Visits Compared to Statewide Rate

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Acushnet	2011	41.8	28.7 - 54.9	Statistically significantly lower than the statewide rate
	2012	49.8	35.9 - 63.7	Statistically significantly lower than the statewide rate
	2013	37.9	25.5 - 50.3	Statistically significantly lower than the statewide rate
	2014	51.6	36.5 - 66.6	Statistically significantly lower than the statewide rate
	2015	36.8	24.8-48.8	Statistically significantly lower than the statewide rate
Dartmouth	2011	44.7	37.3 - 52.2	Statistically significantly lower than the statewide rate
	2012	43.7	36.1 - 51.2	Statistically significantly lower than the statewide rate
	2013	44.6	37.1 - 52.2	Statistically significantly lower than the statewide rate
	2014	51.9	43.4 - 60.4	Statistically significantly lower than the statewide rate
	2015	43.4	35.9-50.8	Statistically significantly lower than the statewide rate
New Bedford	2011	123.7	116.5 - 130.9	Statistically significantly higher than the statewide rate
	2012	138.1	130.5 - 145.7	Statistically significantly higher than the statewide rate
	2013	127.8	120.5 - 135.1	Statistically significantly higher than the statewide rate
	2014	136.0	128.5 - 143.5	Statistically significantly higher than the statewide rate
	2015	119.2	112.2-126.2	Statistically significantly higher than the statewide rate
Statewide	2011	71.7	71.0-72.4	Not Applicable
	2012	72.9	72.2-73.5	
	2013	68.7	68.1-69.4	
	2014	70.9	70.2-71.5	
	2015	66.5	65.9-67.1	

[1] To determine if a community's asthma rate is significantly different from the state rate or if the difference may be due solely to chance, a 95% confidence interval (CI) is calculated for each rate. A 95% CI assesses the magnitude and stability of a measure. Specifically, a 95% CI is the range of estimated values that has a 95% probability of including the true rate for the population

3.1.3 *Pediatric Asthma*

MassDPH tracks asthma in children who are enrolled in public and private schools in order to learn how much asthma exists and which communities may have more asthma than others. MassDPH reports the prevalence of asthma by school and community. Prevalence is a measure of the percentage of students reported to have asthma during a school year.

Prevalence of pediatric asthma is reported several ways, for this analysis public schools serving populations within one-mile of the project site were compared to the statewide prevalence for asthma. The 5-year period of 2012-2017 (the most recent data available) was examined for this analysis. The prevalence of pediatric asthma for these schools appear in Table 3-4 below, the prevalence of pediatric asthma at the elementary schools is generally statistically significantly lower than the statewide prevalence. The pediatric prevalence at the middle school is generally statistically significantly higher than the statewide prevalence.

Table 3-4 Prevalence of Pediatric Asthma by School Compared to the Statewide Rate

Town	School Year	Prevalence	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Prevalence
Casmir Pulaski School	2012-2013	6.2	4.1-8.3	Statistically significantly lower than the statewide prevalence of pediatric asthma
	2013-2014	15.2	12-18.4	Similar to the statewide prevalence
	2014-2015	5.5	3.6-7.4	Statistically significantly lower than the statewide prevalence of pediatric asthma
	2015-2016	7.7	4.9-9.1	Statistically significantly lower than the statewide prevalence of pediatric asthma
	2016-2017	8.9	6.5-11.3	Statistically significantly lower than the statewide prevalence of pediatric asthma
Campbell School	2012-2013	2.7	0.5-4.9	Statistically significantly lower than the statewide prevalence of pediatric asthma
	2013-2014	Not Shown	Not Shown	Not Shown
	2014-2015	4.8	1.8-7.8	Statistically significantly lower than the statewide prevalence of pediatric asthma
	2015-2016	8.3	4.4-12.2	Statistically significantly lower than the statewide prevalence of pediatric asthma
	2016-2017	11.9	7.4-16.4	Similar to statewide prevalence of pediatric asthma
Normandin Middle School	2012-2013	19.7	17.0-22.4	Statistically significantly higher than the statewide prevalence of pediatric asthma
	2013-2014	20.3	17.6-23.0	Statistically significantly higher than the statewide prevalence of pediatric asthma
	2014-2015	19.6	16.9-22.3	Statistically significantly higher than the statewide prevalence of pediatric asthma
	2015-2016	21.2	18.5-23.9	Statistically significantly higher than the statewide prevalence of pediatric asthma
	2016-2017	21.2	18.5-23.9	Statistically significantly higher than the statewide prevalence of pediatric asthma

Table 3-4 Prevalence of Pediatric Asthma by School Compared to the Statewide Rate (Continued)

Town	School Year	Prevalence	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Prevalence
Statewide	2012-2013	12.1	12.0-12.2	Not Applicable
	2013-2014	12.4	12.3-12.5	
	2014-2015	12.2	12.1-12.3	
	2015-2016	12.4	12.3-12.5	
	2016-2017	12.1	12.0-12.2	

[1] To determine if a school's asthma pediatric prevalence is significantly different from the state rate or if the difference may be due solely to chance, a 95% confidence interval (CI) is calculated for each prevalence. A 95% CI assesses the magnitude and stability of a measure. Specifically, a 95% CI is the range of estimated values that has a 95% probability of including the true prevalence for the population

3.2 Cancer

As described on the MA EPHT website[5] cancer is a group of over 100 different types of diseases each with different risk factors. A risk factor is anything that increases a person's chance of developing cancer and may include hereditary conditions, medical conditions or treatments, lifestyle factors or environmental exposures. Cancer may be caused by several factors acting together over time. The World Health Organization (WHO) estimates that as much of 30% of cancer is preventable, mainly by not using tobacco, having a healthy diet, being physically active and preventing infections that may cause cancer. In general, many cancers have a long period of development.

The MA EPHT tracks cancer of more than 25 different types based on data obtained from the Massachusetts Cancer Registry. The MA EPHT website presents cancer data using two different types of statistics direct incidence ratio and a standardized incidence ratio For the purposes of this analysis the Standardized Incidence Ratio (SIR) is utilized as the direct incidence ratio is not appropriate for small populations (due to instability of small population numbers). The SIR allows for the comparison of cancer incidence in each community or census tract as a whole to the Massachusetts statewide incidence.

The SIR is the ratio of the observed number of cancer diagnoses in an area to the expected number of diagnoses multiplied by 100. An SIR of 100 indicates that the number of cancer diagnoses observed in the area of interest is equal to the number of cancer diagnoses expected in the comparison population. An SIR greater than 100 indicates that more cancer diagnoses occurred than expected, and an SIR less the 100 indicates that less cancer diagnoses occurred than expected. An SIR is accompanied by a 95% confidence interval to determine whether the SIR is statistically significant or could be due solely to chance. If the

[5] https://matracking.ehs.state.ma.us/Health-Data/Cancer/index.html

95% confidence interval does not include 100, there is less than a 5% percent chance that the observed difference in the SIR is the result of random fluctuation in the number of observed cancer diagnoses.

Although MA EPHT data is typically reported at the census tract (i.e. neighborhood geography), the entire community of New Bedford was selected for this analysis for several reasons. The proposed facility is located in New Bedford, and, due to the limited number of observed cases of cancer, information at the census tract level was suppressed (i.e. not calculated due to patient confidentiality concerns). Results from this analysis are reported in Table 3-5 below. In general the rates of most types of cancer in New Bedford were similar or statistically significantly lower than the rates of cancer on a statewide basis. However, the rates of five types of cancer are statistically elevated compared to the statewide rates. These five cancer types are: laryngeal, liver and bile duct, lung and bronchus, pancreatic, and stomach.

Table 3-5 Incidence of Different Cancer in New Bedford Compared to the Statewide Incidence

Cancer Type	Time Period	Observed Cases	Expected Cases	Cancer SIR[1]	95% Confidence Interval	Statistical Significance Compared to Statewide Rate
Childhood Brain & Central Nervous System Cancers	2009-2013	4	4.6	88	24-225	Similar to Statewide Rate
Childhood Hodgkin Lymphomas	2009-2013	2	1.4	141	16-510	Similar to Statewide Rate
Childhood Leukemia(s)	2009-2013	2	5.7	35	4-126	Similar to Statewide Rate
Childhood Non-Hodgkin Lymphomas	2009-2013	0	1.4	Not Calculated	Not Calculated	Not Calculated
All Other Types	2009-2013	225	208.8	108	94-123	Similar to Statewide Rate
Bladder Cancer	2009-2013	44	63.9	69	50-92	Statistically significantly lower than Statewide Rate
Brain and Other Nervous System Cancers	2009-2013	32	35.4	90	62-128	Similar to Statewide Rate
Breast Cancer	2009-2013	348	389.7	89	80-99	Statistically significantly lower than Statewide Rate
Colorectal Cancer	2009-2013	229	218.5	105	92-119	Similar to Statewide Rate
Esophagus Cancer	2009-2013	42	32.4	130	93-175	Similar to Statewide Rate
Hodgkin Lymphoma	2009-2013	13	14.5	90	48-153	Similar to Statewide Rate
Kidney and Renal Pelvis Cancer	2009-2013	100	83.3	120	98-146	Similar to Statewide Rate
Laryngeal Cancer	2009-2013	39	19.1	205	145-280	Statistically significantly greater than Statewide Rate
Leukemia	2009-2013	63	70.7	75	56-98	Statistically significantly lower than Statewide Rate

Table 3-5 Incidence of Different Cancer in New Bedford Compared to the Statewide Incidence (Continued)

Cancer Type	Time Period	Observed Cases	Expected Cases	Cancer SIR[1]	95% Confidence Interval	Statistical Significance Compared to Statewide Rate
Liver and Intrahepatic Bile Duct	2009-2013	75	43.9	171	134-214	Statistically significantly greater than Statewide Rate
Lung and Bronchus Cancers	2009-2013	456	364.7	125	114-137	Statistically significantly greater than Statewide Rate
Melanoma of the Skin	2009-2013	47	114.1	41	30-55	Statistically significantly lower than Statewide Rate
Mesothelioma	2009-2013	6	6.8	88	32-192	Similar to Statewide Rate
Multiple Myeloma	2009-2013	34	36.2	94	65-131	Similar to Statewide Rate
Non-Hodgkin Lymphoma	2009-2013	92	108.5	85	68-104	Similar to Statewide Rate
Oral and Pharyngeal Cancers	2009-2013	81	64.4	126	100-156	Similar to Statewide Rate
Pancreatic Cancers	2009-2013	95	72.1	132	107-161	Statistically significantly greater than Statewide Rate
Stomach Cancer	2009-2013	65	37.7	173	133-220	Statistically significantly greater than Statewide Rate
Thyroid Cancer	2009-2013	97	96.7	100	81-122	Similar to Statewide Rate
Uterine Cancer	2009-2013	89	86.5	103	83.127	Similar to Statewide Rate

[1] The standardized incidence ratio (SIR) is the ratio of the observed number of cancer diagnoses in an area to the expected number of diagnoses multiplied by 100.

3.3 Chronic Obstructive Pulmonary Disease (COPD)

As described on the MA EPHT website[6], chronic obstructive pulmonary disease (COPD) refers to a group of diseases including emphysema and chronic bronchitis, which block airflow and can cause difficulty breathing. COPD is considered a chronic health condition that typically worsens over time. Risk factors for COPD include smoking, and long-term exposure to air pollution, secondhand smoke, dust, fumes or chemicals.

MassDPH tracks COPD in two different ways: COPD hospitalizations and emergency room visits.

[6] https://matracking.ehs.state.ma.us/Health-Data/copd.html

3.3.1 COPD Hospitalizations

COPD hospitalizations occur when an individual is admitted (i.e. stays overnight as an inpatient) to the hospital and receives treatment for COPD while hospitalized. Typically, an individual would enter the hospital through the emergency department and be admitted to the hospital as an inpatient. These individuals would be included in both the emergency department and COPD hospitalization datasets.

Rates of COPD hospitalizations are reported several ways, for this analysis the age-adjusted COPD hospitalization rate was compared to the statewide age-adjusted hospitalization rate in order to determine if the rate of COPD hospitalizations in the communities of Acushnet, Dartmouth and New Bedford were statistically-significantly-elevated compared to the statewide rate of COPD hospitalizations. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted COPD hospitalization rates for each of these communities appears in Table 3-6 below, rates of COPD hospitalizations for Acushnet and Dartmouth are generally and most recently similar to the statewide rate of COPD hospitalizations. New Bedford's COPD hospitalization rates are statistically-significantly-elevated when compared to the statewide rate of COPD, but this rate has been declining over time.

Table 3-6 Age-Adjusted Rate of COPD Hospitalization Admissions Compared to the Statewide Rate

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Acushnet	2011	45.4	31.5 - 59.3	Similar to statewide rate
	2012	21.4	11.8 - 31	Similar to statewide rate
	2013	21.9	12.3 - 31.5	Similar to statewide rate
	2014	28.1	17.3 - 38.9	Similar to statewide rate
	2015	22.7	13.2-32.2	Similar to statewide rate
Dartmouth	2011	44	36.3 - 51.6	Statistically significantly higher than the statewide rate
	2012	28.6	22.6 - 34.6	Similar to statewide rate
	2013	29.1	23.2 - 35.1	Similar to statewide rate
	2014	22	16.7 - 27.3	Similar to statewide rate
	2015	28.4	22.6-34.2	Similar to statewide rate
New Bedford	2011	97.8	90.4 - 105.2	Statistically significantly higher than the statewide rate
	2012	78.8	72.3 - 85.3	Statistically significantly higher than the statewide rate
	2013	68.1	62.1 - 74.1	Statistically significantly higher than the statewide rate
	2014	50.4	45.2 - 55.6	Statistically significantly higher than the statewide rate
	2015	59.3	53.7-64.8	Statistically significantly higher than the statewide rate

Table 3-6 Age-Adjusted Rate of COPD Hospitalization Admissions Compared to the Statewide Rate (Continued)

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Statewide	2011	33.7	33.2-34.2	Not Applicable
	2012	29.9	29.4-30.4	
	2013	27.0	26.6-27.4	
	2014	25.0	24.6-25.5	
	2015	26.3	25.9-26.7	

[1] To determine if a community's COPD hospitalization rate is significantly different from the state rate or if the difference may be due solely to chance, a 95% confidence interval (CI) is calculated for each rate. A 95% CI assesses the magnitude and stability of a measure. Specifically, a 95% CI is the range of estimated values that has a 95% probability of including the true rate for the population.

3.3.2 COPD Emergency Department (ED) Visits

COPD-related ED visits occur when an individual receives treatment in the ED for COPD. In some instances an individual may be treated and released. In other situations an individual may be admitted to the hospital for further monitoring or treatment these individuals would be included in both the ED visits and COPD hospitalization datasets.

Rates of COPD-related ED visits are reported several ways, for this analysis the age-adjusted rate was used as it allows for a comparison to be made to the statewide ED rate for COPD. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted COPD ED rates for each of these communities appears in Table 3-7 below, rates of COPD ED visits for Acushnet and Dartmouth are lower than the statewide rate of ED visits. New Bedford's COPD ED visits are statistically-significantly-elevated when compared to the statewide rate of COPD and the rate of COPD ED visits has remained relatively unchanged over the 5-year period examined.

Table 3-7 Age-Adjusted Rate of COPD-Related ED Visits Compared to Statewide Rate

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Acushnet	2011	70.9	53 - 88.9	Similar to statewide rate
	2012	42.2	28.4 - 55.9	Statistically significantly lower than statewide rate
	2013	51	35.4 - 66.6	Similar to statewide rate
	2014	69.3	51.6 - 87	Similar to statewide rate
	2015	58.8	42.5-75.2	Similar to statewide rate

Table 3-7 Age-Adjusted Rate of COPD-Related ED Visits Compared to Statewide Rate (Continued)

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Dartmouth	2011	77.9	67.1 - 88.8	Similar to statewide rate
	2012	56.8	47.7 - 66	Statistically significantly lower than statewide rate
	2013	60.6	51.3 - 69.9	Similar to statewide rate
	2014	56.6	47.4 - 65.8	Similar to statewide rate
	2015	71.2	61.2-81.2	Similar to statewide rate
New Bedford	2011	184.2	173.8 - 194.7	Statistically significantly higher than statewide rate
	2012	162.4	152.7 - 172.1	Statistically significantly higher than statewide rate
	2013	147.1	138 - 156.2	Statistically significantly higher than statewide rate
	2014	150.9	141.6 - 160.1	Statistically significantly higher than statewide rate
	2015	171.2	161.5-181.0	Statistically significantly higher than statewide rate
Statewide	2011	71.4	70.7-72.2	Not Applicable
	2012	69.8	69.1-70.6	
	2013	64.7	64.0-65.4	
	2014	62.3	61.6-63.0	
	2015	63.4	62.7-64.1	

[1] To determine if a community's COPD ED rate is significantly different from the state rate or if the difference may be due solely to chance, a 95% confidence interval (CI) is calculated for each rate. A 95% CI assesses the magnitude and stability of a measure. Specifically, a 95% CI is the range of estimated values that has a 95% probability of including the true rate for the population

3.4 Acute Myocardial Infarction (AMI)

As described on the MA EPHT website[7], an acute myocardial infarction (AMI), is also known as a heart attack. AMI, along with stroke, and other heart and blood vessel diseases are responsible for approximately 35% of all deaths in Massachusetts. There are a number of risk factors associated with AMI, including health, life style and environmental factors. Environmental factors include exposure to certain air pollutants.

MassDPH tracks AMI through hospitalizations, as nearly every AMI results in an inpatient admission.

3.4.1 AMI Hospitalizations

AMI hospitalizations occur when an individual is admitted (i.e. stays overnight as an inpatient) to the hospital and receives treatment for a heart attack while hospitalized. Typically, an individual would enter the hospital through the emergency department and be admitted to the hospital as an inpatient. These individuals would be included in both the

[7] https://matracking.ehs.state.ma.us/Health-Data/Heart_Attack_Hospitalization.html

AMI emergency department visit and AMI hospitalization datasets. However, as most AMI emergency department visits result in an admission to the hospital, MassDPH only tracks AMI hospitalizations.

Rates of AMI hospitalizations are reported several ways, for this analysis the age-adjusted AMI hospitalization rate was compared to the statewide age-adjusted hospitalization rate in order to determine if the rate of AMI hospitalizations in the communities of Acushnet, Dartmouth and New Bedford were statistically-significantly-elevated compared to the statewide rate of AMI hospitalizations. The age-adjusted rate for AMI considers individuals 35 years of age and older and allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted AMI hospitalization rates for each of the communities of interest appears in Table 3-8 below, rates of AMI hospitalizations for Acushnet and Dartmouth are generally similar to the statewide rate of AMI hospitalizations for most years. New Bedford's MI hospitalization rates are statistically-significantly-elevated when compared to the statewide rate of MI and have remained relatively flat over the 5-year period.

Table 3-8 Age-Adjusted Rate of Acute Myocardial Infarction Hospitalization Admissions Compared to the Statewide Rate

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Acushnet	2011	18.8	9 - 28.7	Statistically significantly lower than the statewide rate.
	2012	26.1	14.6 - 37.5	Similar to the statewide rate
	2013	39.5	24.9 - 54.2	Similar to the statewide rate
	2014	40.9	26 - 55.8	Statistically significantly higher than the statewide rate.
	2015	30.8	18.5-43.2	Similar to the statewide rate
Dartmouth	2011	37	28.9 - 45	Similar to the statewide rate
	2012	35.2	27.4 - 42.9	Similar to the statewide rate
	2013	27.9	21.1 - 34.7	Similar to the statewide rate
	2014	29.8	23 - 36.5	Similar to the statewide rate
	2015	32.6	25.7-39.6	Similar to the statewide rate
New Bedford	2011	47.3	41.7 - 52.9	Statistically significantly higher than the statewide rate.
	2012	51.9	46 - 57.8	Statistically significantly higher than the statewide rate.
	2013	41.2	35.9 - 46.4	Statistically significantly higher than the statewide rate.
	2014	39.2	34.1 - 44.3	Statistically significantly higher than the statewide rate.
	2015	47.7	42.1-53.2	Statistically significantly higher than the statewide rate.

Table 3-8 Age-Adjusted Rate of Acute Myocardial Infarction Hospitalization Admissions Compared to the Statewide Rate (Continued)

Town	Year	Age-Adjusted Rate (per 10,000 people)	95% Confidence Interval[1]	Statistical Significance Compared to Statewide Rate
Statewide	2011	30.8	30.2-31.3	Not Applicable
	2012	30.1	29.5-30.6	
	2013	26.7	26.2-27.2	
	2014	24.9	24.4-25.3	
	2015	26.8	26.3-27.3	

[1] To determine if a community's AMI hospitalization rate is significantly different from the state rate or if the difference may be due solely to chance, a 95% confidence interval (CI) is calculated for each rate. A 95% CI assesses the magnitude and stability of a measure. Specifically, a 95% CI is the range of estimated values that has a 95% probability of including the true rate for the population.

3.5 Baseline Health Considerations

As indicated on the MassEPHT website[8] chronic diseases are the leading cause of illness and death both nationally and in Massachusetts. Many of these diseases are believed to result from the interaction of both genes and environmental factors. Environmental factors include infectious agents (i.e. viruses and bacteria), environmental contaminants, and diet and lifestyle choices. However, the extent at which each of these individual factors contribute to the development of chronic disease is not known. The health data presented are intended to provide a basic level of understanding of the disease burden in Massachusetts communities.

[8] https://matracking.ehs.state.ma.us/Health-Data/index.html

4.0 MULTI-POLLUTANT ANALYSIS

As described in the air and odor analysis report, an analysis was conducted that accounted for the air emissions from the proposed facility. The air emissions were modeled using an air dispersion model to determine ambient air concentration impacts from the facility. The air modeling performed included evaluation of criteria pollutants and air toxics, terrain features, local meteorology and buildings. The air modeling has been described previously in the air and odor analysis report and was relied upon for this EJ analysis. Other pathways of exposure (i.e. water, soil) were not evaluated as the dominant exposure pathway is expected to be the air pathway and the MEPA EJ policy specifically requires evaluation of the air-related impacts of the facility.

4.1 Emissions

Emission units at the proposed facility are categorized as stationary and mobile sources and include the following broad categories: Biosolids Dryers and Building Heat Boiler, Biosolids Process Sources, Biosolids Cooling Tower, Municipal Solid Waste (MSW) Solid Waste Tipping and Processing, Glass Processing (including Building Space Heaters), Paved Roads, and Onsite and Off-site Mobile Sources. Mass emission rates from each of these categories of sources were conservatively modeled assuming they generally occur simultaneously at the maximum anticipated rate. The air emissions considered and the methodologies used for calculating the emission rates are described further in the air and odor analysis report.

4.2 Air Dispersion Modeling

As described in the air and odor analysis report, the AERMOD model [the United States Environmental Protection Agency (USEPA) preferred model] was utilized to generate concentrations of air pollutants outside the property boundary of the proposed project. AERMOD incorporates information including emissions, local meteorological data, orientation of buildings, stack configurations, and terrain data in order to predict concentrations of air pollutants outside the property boundary of the proposed project. Further details are described in the air and odor analysis report. Results from this analysis were used for comparison to relevant health-based standards which are described further below.

4.3 Criteria Air Pollutants

Criteria air pollutants are regulated by the USEPA through National Ambient Air Quality Standards (NAAQS). The EPA has established NAAQS standards for pollutants considered to be harmful to the public health and the environment. These standards can be further broken down into primary and secondary standards. Primary standards are intended to protect human health, including the health of "sensitive" populations such as asthmatics, children and the elderly. The secondary standards are intended to provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

USEPA has established NAAQS for the following pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), ozone (O_3), and lead (Pb). Air pollutants included in the air and odor analysis, for which NAAQS are published, are CO, NO_2 , PM_{10}, $PM_{2.5}$, and SO_2. Lead is included in the air toxics analysis, and air toxics criteria for lead are more stringent than the NAAQS for lead.

To address the NAAQS, mass emission rates for each of the included criteria air pollutants (ozone is not typically modeled for a source of this size) were estimated for both stationary and mobile sources at the proposed facility, ambient concentrations from all sources were modeled, and the maximum modeled concentrations were compared to the NAAQS to ensure there are no off-site exceedances.

4.4 Air Toxics

Air toxic compounds, including lead, were selected for emissions estimation based on the MassDEP Ambient Air Toxics Guidelines. In general, chemicals for which MassDEP has published allowable ambient limits (AALs) and threshold effect exposure limits (TELs), and for which specific emission factors were available, are included in the analysis.

MassDEP determines the AALs and TELS through an analysis of health effects. The first step in developing an AAL and TEL is to look at the carcinogenic and non-carcinogenic health effects of the chemicals.

Known or suspected carcinogenic health effects make up the basis of the Non-Threshold Effects Exposure Limits (NTELs) which are associated with a one in a million excess cancer risk over a lifetime of continuous exposure to the chemical.

The TEL addresses the non-cancer health effects and is intended to protect the general population from adverse health effects over a lifetime of exposure to the chemical. The TEL includes impacts on sensitive populations such as children and takes into account other pathways for exposure to the chemical than just ambient air. These other pathways that are evaluated in the TEL determination include indoor air, food, soil, and water.

MassDEP then compares the NTEL and TEL and assigns whichever concentration is lower as the AAL to make sure both cancer and non-cancer health impacts are mitigated to the fullest extent possible. For most carcinogenic compounds, AALs are typically based on the NTELs since the NTEL tends to be lower than the TEL for these compounds. For non-carcinogenic compounds, the AAL will be based on the TEL which results in the published AAL and TEL values being identical. It is important to note that exposure above an AAL or TEL does not necessarily mean there will be adverse health impacts, but rather that the risk of these adverse effects increases with the frequency of exposure above these levels.

In some cases, MassDEP did not have an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations.

To address the air toxics guidelines, air toxic mass emission rates were estimated for both stationary and mobile sources at the proposed facility, ambient concentrations from all sources were modeled, and the maximum modeled concentrations were compared to the AAL (on an annual average basis) and TEL (on a short-term basis) or RFC to ensure there are no exceedances offsite.

4.5 Ambient Air Analysis Conclusions

As described above an ambient air impacts analysis was conducted to understand the impacts from the proposed facility from multiple air pollutants (two important criteria pollutants and a number of air toxics). Impacts for all pollutants were below health protective levels of concern at all offsite locations based on the peak predicted level of operation of the proposed facility. Operation of this facility will not cause or contribute to any health-protective exceedances of air quality concentrations. Results are reported in the air and odor report, along with the location of the predicted maximum concentration.

5.0 MITIGATION

As part of the enhanced environmental justice analysis mitigation of on-site and off-site activities must be considered. This section describes the mitigation steps that have been taken to minimize impacts on the surrounding residences.

The analysis in Section 4.0 shows that, under maximum expected operating conditions which include the stationary sources as well as the mobile on-site and off-site (i.e. traffic) sources and using conservative assumptions, that the project's air impacts will comply with all applicable health-protective standards. Specifically:

- The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per EPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.[9]"
- MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air.[10]" The Massachusetts AALs and TELs will not be exceeded offsite.
- If MassDEP had not developed a specific AAL or TEL for a given chemical, the EPA Integrated Risk Information System was reviewed to determine if the EPA had developed a Reference Concentration.[11] The EPA reference concentrations will not be exceeded offsite.

In Massachusetts, odor is regulated under 310 CMR 7.09 such that operations that emit odors shall not permit their emissions to "cause a condition of air pollution". To determine that the project is not a nuisance source of odors, the study evaluated for maximum 5-minute-averaged odor concentrations and determined that, for all locations on-site and off-site and given evaluated weather conditions, the odor concentration to be at or below 5 dilution-to-threshold (D/T). Thus the project meets the criterion published in the MassDEP draft policy for odor from composting facilities.

9 https://www.epa.gov/criteria-air-pollutants/naaqs-table

10 https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines

11 https://www.epa.gov/iris/basic-information-about-integrated-risk-information-system

5.1 Mitigation Opportunities

Vegetated Buffers and Other Plantings

As described in the air and odor modeling report, emissions from the proposed project are relatively minor in magnitude and may not require an air permit from MassDEP. However, current renderings for the site leave much of the existing tree line located along the property lines intact. This will serve as a visual buffer to the site during non-winter months and act as a vegetative and physical barrier which may reduce concentrations (vegetative barriers are not accounted for in the air dispersion modeling). Although the effectiveness of a barrier on reducing air pollution is a function of the spacing of the barrier, thickness of the barrier, and height of the barrier.

One of the mitigation measures implemented is to restrict truck traffic from traveling north and south on Phillips Road; the majority of truck traffic is instead routed through a predominantly industrialized area. This project change effectively creates a buffer for the residences on Phillips Road from the majority of the truck traffic traveling to and from the Project site.

Climate Change

The impacts from Climate Change on the northeast were recently captured in the Fourth National Climate Assessment.[12] The impacts in urban areas are anticipated to include: extreme temperature events, episodes of poor air quality, recurrent waterfront and coastal flooding, and intense precipitation events that can lead to increased flooding; however the report acknowledges that our understanding of the extent of impacts from climate change is incomplete.

In order to better understand the severity of the impacts of extreme temperature events, the Massachusetts EPHT[13] database was examined in order to determine if the rate of heat related illness hospitalizations and emergency department visits was statistically elevated when compared statewide levels (from 2011-2015). Heat related illness hospitalizations were not elevated either at the community or county levels and heat related emergency department visits were not elevated at the community level. Heat related illness emergency departments were only elevated at the county level for 2012 with the rest of the years being statistically similar to the statewide rate.

In terms of episodes of poor air quality, the number of air stagnation watches or warnings issued by the National Weather Service (NWS), the weather forecasting agency for the National Oceanic and Atmospheric Administration (NOAA); was examined in order to

12 https://nca2018.globalchange.gov/chapter/18/

13 http://matracking.ehs.state.ma.us/Health-Data/heat-stress-hospitalization.html#MyPopup

determine if watches/warnings were being issued at a higher rate more recently. Data on watches and warnings were retrieved from 1986 to 2018 for Bristol County, MA.[14] Review of the data did not find a single instance where the NWS issued a watch or warning for an air stagnation event.

Air Quality

The facility does plan to monitor emissions on a monthly basis, per MassDEP requirements, for the purpose of documenting its de minimis status relative to air permitting, or, if a plan approval is required, for the purpose of documenting compliance with the permitted air emission limits. In addition, the Project has begun preparation of a system to log and track odor, noise and dust complaints and will share this system with MassDEP and the City's Health Agent once it's finalized for their input.

5.2 Conclusions

Parallel Products proposes a facility that avoids, minimizes, and mitigates potential EJ air-related impacts as follows:

<u>Avoided impacts</u>: Parallel Products has selected an industrially-zoned setting to avoid impacts to the public and is re-using significant existing infrastructure to avoid impacts associated with new construction. Material handling in enclosed areas, using best industry practices, avoids off-site impacts of air emissions and odors. Because the proposed facility will serve existing needs for material handling at a location that is closer to the sources of the materials, the project avoids transportation-related impacts currently associated with sending the materials farther by truck. The project has revised truck traffic routes to avoid impacts to residences on Phillips Road.

<u>Minimized impacts</u>: The project team evaluated and modeled dozens of potential equipment and exhaust vent/stack configurations to identify the proposed conceptual design which minimizes off-site air and odor concentrations. The proposed design optimizes the flow of material through the site, and the reuse of existing facilities, while minimizing offsite impacts in general and residential area offsite impacts in particular. Material handling loaders will be USEPA Tier 4 certified to minimize emissions. The project will track air emissions on a monthly basis and is developed a system to log and track odor, noise and dust complaints.

<u>Mitigated impacts</u>: Parallel Products is selecting to control odors from biosolids handling processes using either a biofilter with carbon polishing, or a regenerative thermal oxidizer, or equal, and ionization. These odor and air pollution control devices provide an enhanced degree of mitigation.

[14] https://mesonet.agron.iastate.edu/vtec/search.php

Figures

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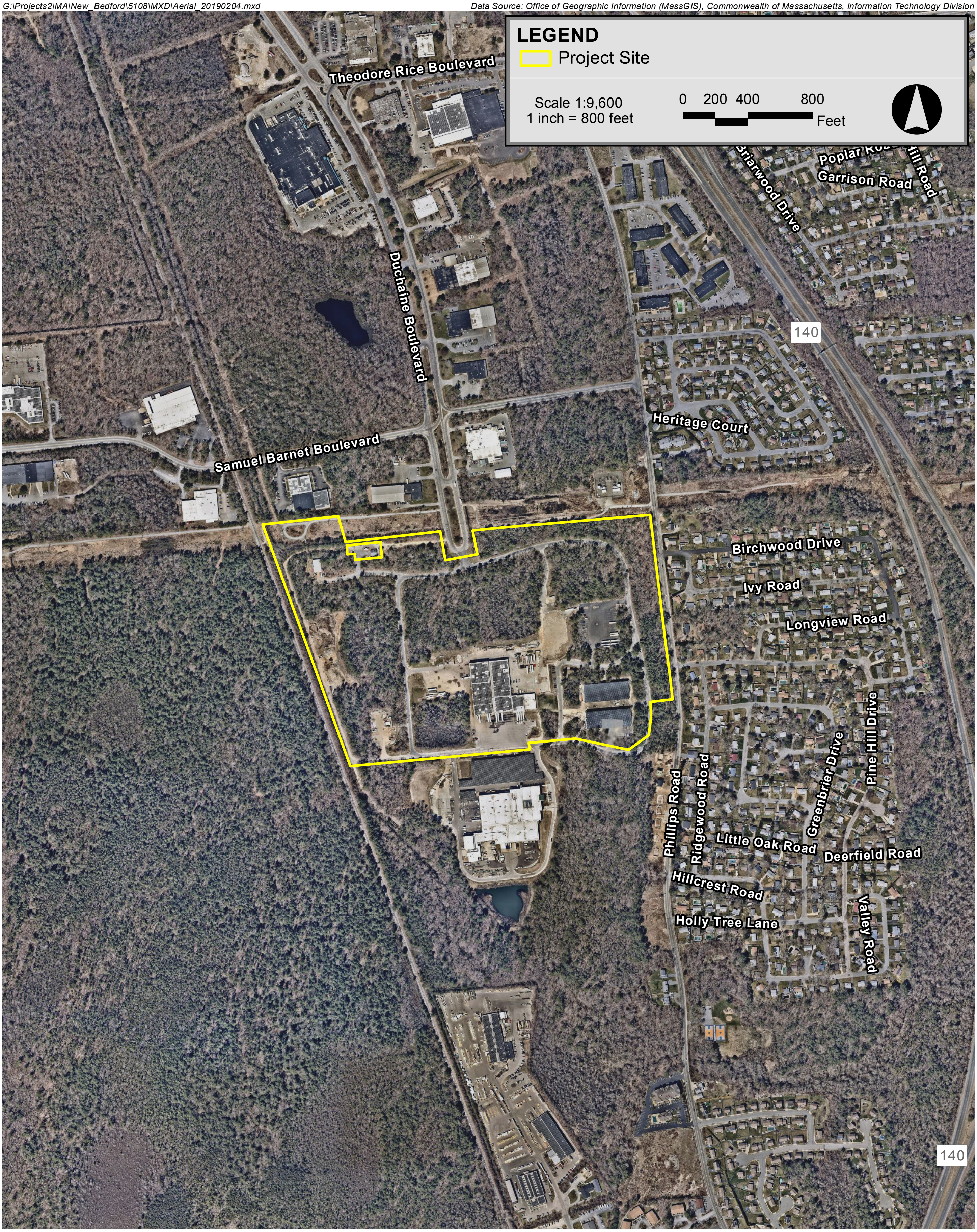
Data Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division

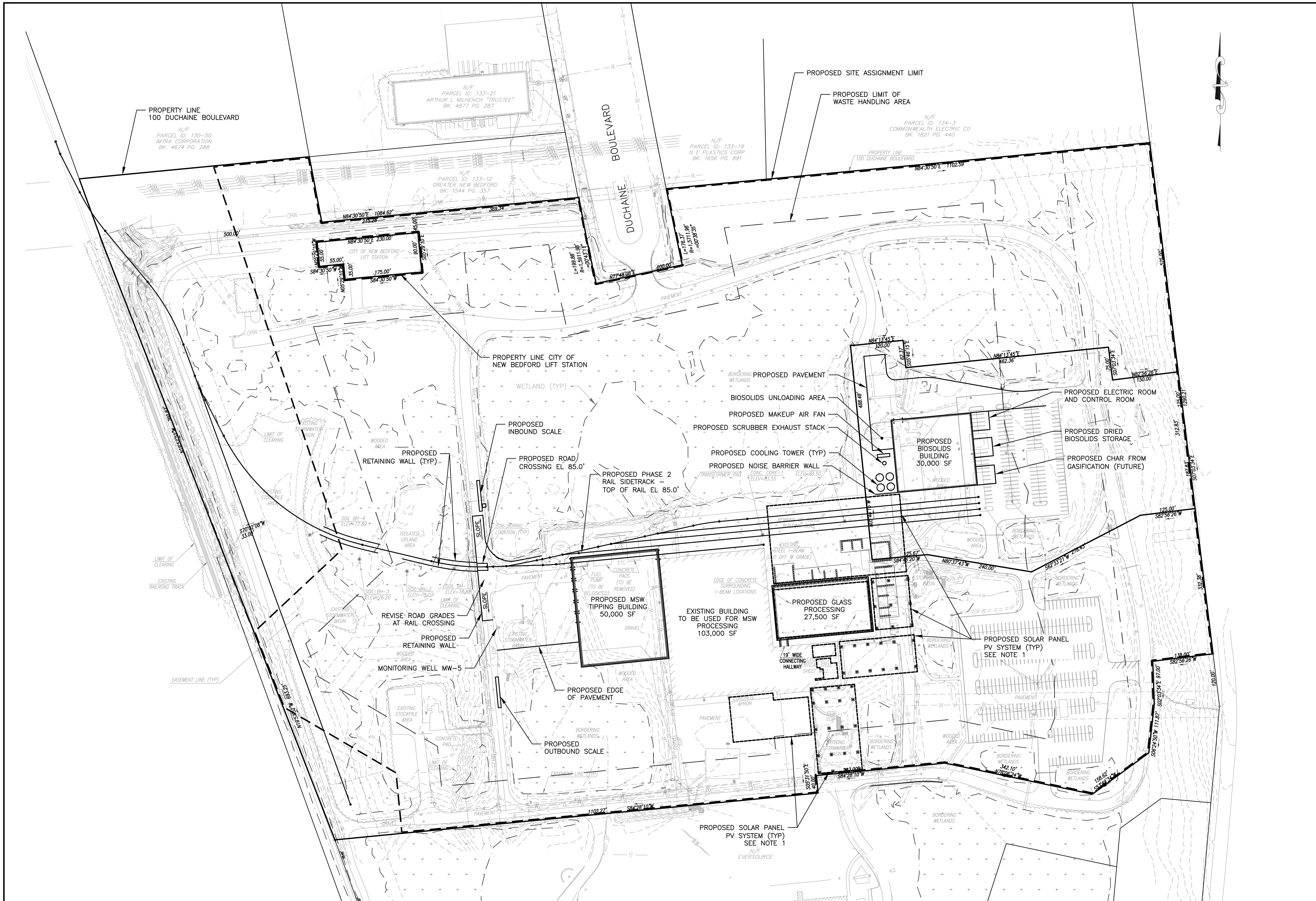


Parallel Products **New Bedford, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 1

Aerial Locus Map



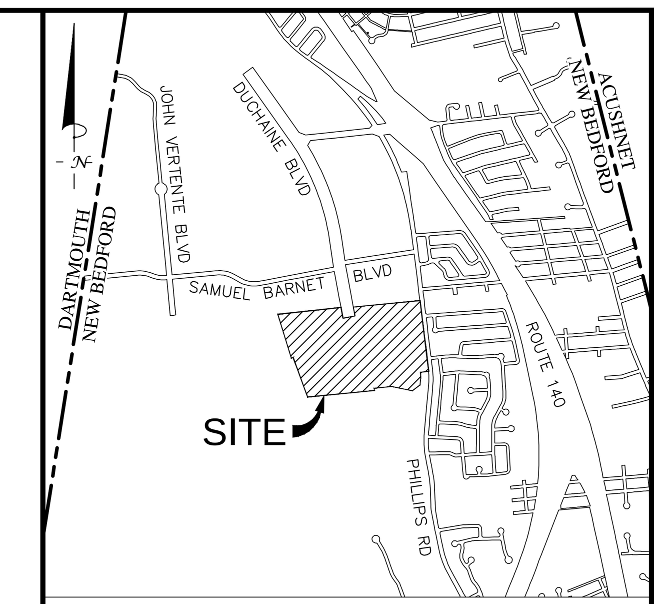
LEGEND

EXISTING FEATURES
PROPOSED FEATURES
SITE ASSIGNMENT LIMIT
LIMIT OF WASTE HANDLING AREA

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

NOTES:

1. ONLY THE OUTLINE OF THE PROPOSED SOLAR PANEL PV SYSTEM IS SHOWN FOR CLARITY. THE PROPOSED SOLAR PANELS ARE TO BE LOCATED ON AN ELEVATED CANOPY ABOVE EXISTING AND PROPOSED SITE FEATURES.



LOCUS MAP NOT TO SCALE

□reen Seal Environmental□Inc□
114 State Road□Buildin□B
Sa□amore Beach□MA 02562
Tel□508□888-6034
□a□□508□888-1506
□□□□seenv□com

REVISIONS

NO.	DATE	COMMENT
A	2/4/2019	ISSUED FOR PERMITTING

PURPOSE:

PERMITTING

LOCUS:

100 DUCHAINE BOULEVARD
NEW BEDFORD,
MASSACHUSETTS

PREPARED FOR:

PARALLEL PRODUCTS, LLC

DRAWING TITLE:

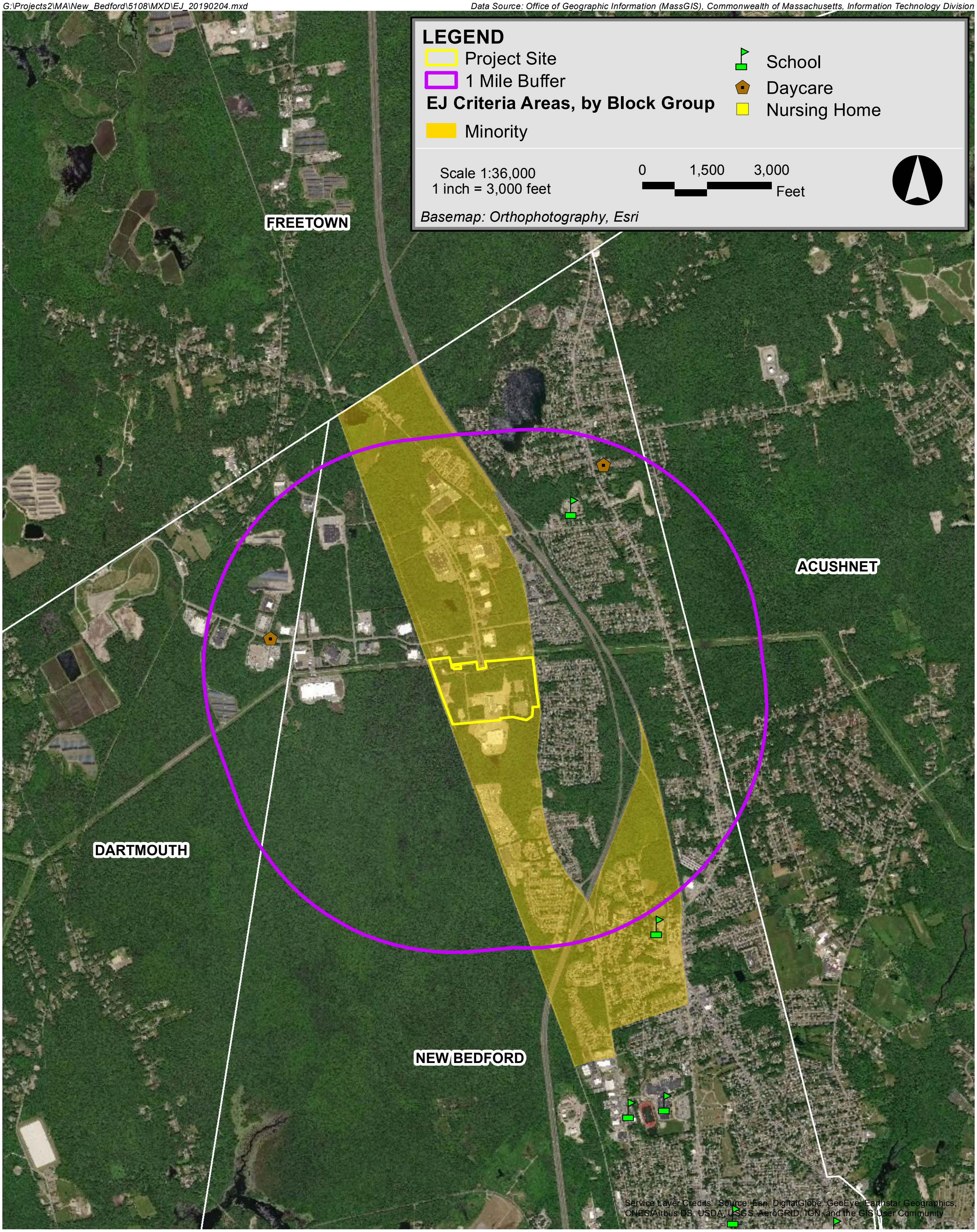
PHASE 2 SITE PLAN

CAD TECH:	CHECKED BY:
T. JANICKI	
ENGINEER:	DATE:
W. HALL	2/1/2019

SCALE:
1"=100'

SHEET:
C-2A

Figure 2
Conceptual Layout / Phase 2 Site Plan
(Green Seal Environmental, Inc.)



Parallel Products **New Bedford, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 3

Environmental Justice Areas Criteria by Block Group

ATTACHMENT 11

GREENHOUSE GAS ANALYSIS

Massachusetts Environmental Policy Act

Greenhouse Gas Analysis

Parallel Products of New England

New Bedford, Massachusetts

Submitted to:

PARALLEL PRODUCTS OF NEW ENGLAND, INC.
100 Duchaine Boulevard
New Bedford, MA 02745

Submitted by:

EPSILON ASSOCIATES, INC.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

September 20, 2019

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GREENHOUSE GAS (GHG) ANALYSIS

An initial GHG analysis was presented in the EENF. This analysis addressed the GHG emissions that would be generated by operation of the Project and associated traffic, and options that may reduce those emissions in accordance with the MEPA GHG Policy. The GHG analysis focused on emissions of carbon dioxide (CO_2). As noted in the GHG Policy, although there are other GHGs, CO_2 is the predominant contributor to global warming. Furthermore, CO_2 is by far the predominant GHG emitted from the types of sources related to this Project, and CO_2 emissions can be calculated for these source types with readily available data.

GHG emissions sources can be categorized into two groups: (1) stationary sources, or emissions related to structures and equipment that are stationary on the site; and (2) mobile sources, or emissions related to transportation. Stationary sources can be further broken down into direct sources and indirect sources; direct sources include GHG emissions from on-site fuel combustion, and indirect sources include GHG emissions associated with electricity and other forms of energy that are imported from off-site power plants via the regional electrical grid for use on-site.

The GHG analysis presented in the EENF detailed building energy modeling for the planned Project. The ENF Certificate included comments from the Department of Energy Resources (DOER). As the building designs have advanced somewhat since the filing of the EENF, design decisions have been informed through careful modeling and cost analysis. In this continuation of the GHG analysis, Project details are updated, and DOER and MEPA comments are addressed.

1.0 Project Update

As detailed in the EENF, the proposed overall project includes a solar PV initiative and is a combination of three industrial processes: recycled glass handling, municipal solid waste (MSW) processing and construction and demolition (C&D) handling, and biosolids processing. The project will be implemented in sequential phases. The glass handling is being implemented as Phase 1, the MSW processing will be implemented as Phase 2, and biosolids processing will be implemented as Phase 3.

Since the submittal of the EENF, the glass handling building design has been added as a conditioned space. Like the biosolids building, the glass handling building will be minimally heated in the winter to maintain 50 degrees Fahrenheit. The glass handling building received a Phase 1 waver and is under construction.

Additionally, mobile source emissions have been updated to reflect operational changes that have been determined.

2.0 DOER Comments

The majority of the DEIR scope centers on the comments and recommendation made by DOER in their comment letter on the EENF. They are:

- Clarification of the planned code pathway;

- Building construction of biosolids building;
- Envelope information for both roof and walls of biosolids building;
- Space heating output per area for biosolids building;
- Evaluation of reduced lighting power density to 20%;
- Evaluation of using cold-climate heat pumps for space heating; and
- Schedule for installation of solar PV system.

2.1 Clarification of the Planned Code Pathway

The planned code pathway was clarified and presented in a memorandum to DOER from WSP on August 29, 2019, included in the GHG Appendix. The key points of the clarifications in that memo are discussed below.

Three buildings will be heated and are considered "conditioned spaces". They are:

- The Glass Processing Building, Glass Processing Section
- The Glass Processing Building, Bunker Building Section
- Bio-solids Building

The Project will follow ASHRAE 90.1-2013 with Massachusetts Amendments per Chapter 13 of 780 CMR code compliant pathway. As such, the project will comply with the mandatory and prescriptive requirements of ASHRAE 90.1-2013 and all conditioned buildings will comply with two of the six C406.1 measures. These two measures are reduced lighting power density by a minimum of 10% and the use of on-site renewable energy supply in the form of an approximately 1.9 MW photovoltaic (PV) array installed on adjacent canopies within the site. Because of their size, the buildings are not subject to stretch code.

The conditioned buildings will meet the mandatory and prescriptive requirements of the energy code. These three buildings will comply with Sections 5.1, 5.4, 5.8, as well as Section 5.5 – Prescriptive Building Envelope Option (which is allowed when fenestration area does not exceed the maximum allowed by Section 5.5.4.2.").

Note that roof of the Glass Handling Building (under construction) is designed with the R=19 insulation but without the R=11 liner system prescribed by ASHRAE 90.1-2013. PPNE is evaluating final design options; the FEIR will commit to retrofit of the R=11 liner system or will provide documentation that the additional heating energy consumption (and incremental GHG impact) due to the code deviation does not warrant the retrofit.

Otherwise, these buildings will have insulation that meets the requirements of Sections 5.8.1.1 through 5.8.1.10. The conditioned spaces will meet the Section 5.4.3.1 requirements for a continuous air barrier.

2.2 Conditioned Building Information

2.2.1 Glass Handling Building

The glass handling building (glass processing and bunker sections) will be a pre-engineered metal building with an eave height of 24'-0" and a peak height of 50'-0". The use is for the processing and sorting glass products for recycling. The exterior sides of the building will be 26 gage corrugated metal panel. The roof panels are standard "Double-Lok" metal roof panels. The envelope will be designed with R=19 roof and wall insulation (and the roof insulation design is under review).

The expected space heating output per area for the glass handling building is expected to be approximately 15 to 16 Btu/hr/sf.

2.2.2 Biosolids Building

The biosolids building will be a pre-engineered metal building with a roof low point of 52'-3" and a high point of 57'-2". The use is for processing bio-solids. The base of the exterior walls of the building will have 15' of exposed concrete with added inboard insulation to reach R-19 below 26 gage corrugated metal panel. The roof panels are standard "Double-Lok" metal roof panels. There will be a small office & restroom in the building. The Bio-Solids building will have roof insulation of R=19 + R=11 Ls (linear system) & R=19 wall insulation.

The space heating output per area for the biosolids building is expected to be approximately 144 Btu/hr/sf.

2.3 Reduced Lighting Power Density Evaluation

LED lighting will be employed throughout the project. After careful consideration, the lighting power density of the Project buildings can be reduced to at least 20% below code. Please refer to the GHG Appendix for a preliminary lighting calculation.

2.4 Cold-Climate Heat Pump Evaluation for Space Heating

Heat Pumps were evaluated as an alternative system to the proposed design of gas heating. Please refer to the GHG Appendix for a detailed heat pump analysis performed by WSP.

The analysis indicates that a heat pump system could reduce building GHG emissions by approximately 39% to 42%. This reduction is significant and warranted a detailed cost analysis. The cost analysis indicated that the incremental first cost minus MassSave incentives ranged between $23,800 to $255,600. In all cases, the heat pump systems cost more to operate, from $4,600 to $48,700 annually. The results of this analysis are summarized in Tables 1 through 3, below.

Table 1 Annual Heating Energy Consumption Comparison, Glass Processing

Glass Processing Building	GHG Savings (%)	Incremental first cost minus MassSave Incentives ($)	Incremental operating cost savings minus State AEC Incentives ($)	Simple Payback Period (years)
Baseline – Gas Heating 80% Efficient	-	-	-	-
Proposed Design – Gas Heating 82% Efficient	2.2%	718	187	3.8%
Proposed Alternative – Heat Pump Heating:	39.4%	23,818	-4,602	Does not pay back

Table 2 Annual Heating Energy Consumption Comparison, Glass Processing Bunker Building

Glass Processing Building	GHG Savings (%)	Incremental first cost minus MassSave Incentives ($)	Incremental operating cost savings minus State AEC Incentives ($)	Simple Payback Period (years)
Baseline – Gas Heating 80% Efficient	-	-	-	-
Proposed Design – Gas Heating 82% Efficient	2.2%	654	170	3.8%
Proposed Alternative – Heat Pump Heating:	39.4%	23,938	-4,192	Does not pay back

Table 3 Annual Heating Energy Consumption Comparison, Biosolids Building

Glass Processing Building	GHG Savings (%)	Incremental first cost minus MassSave Incentives ($)	Incremental operating cost savings minus State AEC Incentives ($)	Simple Payback Period (years)
Baseline – Gas Heating 80% Efficient	-	-	-	-
Proposed Design – Gas Heating 82% Efficient	2.4%	7,610	1,980	3.8%
Proposed Alternative – Heat Pump Heating:	42.7%	255,653	-48,760	Does not pay back

As demonstrated in the tables above, the heat pump systems would reduce building GHG emissions, however they would also increase both first costs and operating costs. For this reason, the use of heat pumps is financially infeasible to the project.

2.5 Solar PV Installation Schedule

The Proponent anticipates receiving the Order of Conditions for the canopy PV construction in September, 2019. Construction will begin following receipt of order of conditions. Construction will continue until completion, with a January 1st 2020 target completion date.

3.0 MEPA Comments

3.1 VFDs and Advanced Vacuum Technology

The Proponent will incorporate variable frequency drives (VFDs) into the biosolids building ventilation. VFDs allow the building's ventilation system to operate at optimum efficiency, saving energy. The process equipment has not yet been designed. It is anticipated that the process equipment will incorporate VFDs, but process loads are unknown at this time.

Specific biosolids process equipment has yet to be designed. The decision to employ advanced vacuum technology will be made further in the design process, after market conditions have been evaluated.

The addition of advanced (vacuum) drying technology to the biosolids process could further reduce biosolids process natural gas usage by 30%, according to vendor representations. However, PPNE cannot guarantee these savings due to lack of a vendor guarantee and/or supporting data.

4.0 GHG Calculations

4.1 MSW Building

As detailed in the EENF, for purposes of this analysis, GHG impacts of the MSW handling process will be limited to the energy use associated with the building. Specifically, the lighting demands for the building will be quantified and the associated GHG emissions will be included in project totals. While VFDs will be incorporated in to the project, their energy reduction impacts are unknown at this time. For that reason, proposed case ventilation demands will not differ from the baseline, so this aspect is not quantified. There will be no heat supplied in the tipping or processing areas. The building will be unconditioned.

Please refer to Table 4 for an estimate of MSW tipping and processing and C&D handling emissions.

Table 4 Energy Use and GHG Emissions, MSW Tipping and Processing and C&D Handling

MSW Tipping and Processing				
Building Size		87,000	sf	
			Baseline	**Proposed**
DIRECT (NATURAL GAS)			MMBtu/yr	MMBtu/yr
	Space Heating		0	0
		subtotal	0	0
INDIRECT (ELECTRICITY)			MWh/yr	MWh/yr
	Space Heating		0	0
	Internal Lighting		937	750
		subtotal	937	750
ENERGY USE INDEX			kBtu/sf/yr	kBtu/sf/yr
			36.7	29.4
	(compared to baseline)			**-20%**
GHG EMISSIONS			tons/yr	tons/yr
	Direct	Gas-burning	0	0
	Indirect	Electricity	333	266
		Total	333	266
		Diff, tpy		**-66**
	Diff, % (compared to baseline)			**-20.0%**
	CO_2 Emission Factors:			
	Electricity [1]	710	lb/MWh	
	Natural Gas [2]	117	lb/MMBtu	
	[1] 2016 ISO New England Electric Generator Air Emissions Report			
	[2] EIA Fuel Emissions Factors, Weighted National Average (1029 Btu/scf)			

4.2 Glass Handling Building

As detailed in the EENF, The GHG impacts of the biosolids processing facility have been quantified and the process energy loads have been estimated. This process is industry standard and does not have a GHG reduction associated with it. Therefore, GHG reduction opportunities will be limited to the energy use associated with the building. Specifically, the lighting, ventilation, and heating demands for the building have been quantified and the associated GHG emissions reductions have been included in project totals. Please refer to the GHG Appendix for lighting and heating demand calculations.

Please refer to Table 5 for an estimate of glass handling emissions.

Table 5 Energy Use and GHG Emissions, Glass Processing and Bunker Building Combined

Glass Handling (Processing and Bunker)				
Glass Processing		27,500	sf	
Bunker Building		23,320	sf	
Total		50,820	sf	
			Baseline	**Proposed**
DIRECT (NATURAL GAS)			MMBtu/yr	MMBtu/yr
	Space Heating		1,220	1,191
		subtotal	1,220	1,191
INDIRECT (ELECTRICITY)			MWh/yr	MWh/yr
	Space Heating		20	20
	Internal Lighting		765	612
		subtotal	785	632
ENERGY USE INDEX			kBtu/sf/yr	kBtu/sf/yr
			76.7	65.8
	(compared to baseline)			**-14%**
GHG EMISSIONS			tons/yr	tons/yr
	Direct	Gas-burning	71	70
	Indirect	Electricity	268	215
		Total	339	285
		Diff, tpy		**-54**
	Diff, % (compared to baseline)			**-15.9%**
	CO_2 Emission Factors:			
	Electricity [1]	682	lb/MWh	
	Natural Gas [2]	117	lb/MMBtu	
	[1] 2017 ISO New England Electric Generator Air Emissions Report			
	[2] EIA Fuel Emissions Factors, Weighted National Average (1029 Btu/scf)			

4.3 Biosolids Building

As detailed in the EENF, The GHG impacts of the biosolids processing facility have been quantified and the process energy loads have been estimated. This process is industry standard and does not have a GHG reduction associated with it. Therefore, GHG reduction opportunities will be limited to the energy use associated with the building. Specifically, the lighting, ventilation, and heating demands for the building have been quantified and the associated GHG emissions reductions have been included in project totals. Please refer to the GHG Appendix for lighting and heating demand calculations.

Please refer to Table 6 for an estimate of biosolids processing emissions.

Table 6 Energy Use and GHG Emissions, Biosolids Building

Biosolids Processing				
Building Size		30,000	sf	
			Baseline	**Proposed**
DIRECT (NATURAL GAS)			MMBtu/yr	MMBtu/yr
	Dryer Heating Load		136,365	136,365
	Space Heating		6,766	6,601
		subtotal	143,131	142,966
INDIRECT (ELECTRICITY)			MWh/yr	MWh/yr
	Process Electricity		4,844	4,844
	Ventilation		1,435	1,435
	Space Heating		14	14
	Internal Lighting		323	259
		subtotal	6,616	6,552
ENERGY USE INDEX			kBtu/sf/yr	kBtu/sf/yr
			5,524	5,511
	(compared to baseline)			**0%**
GHG EMISSIONS			tons/yr	tons/yr
	Direct	Gas-burning	8,373	8,364
	Indirect	Electricity	2,349	2,326
		Total	10,722	10,690
		Diff, tpy		**-32**
	Diff, % (compared to baseline)			**-0.3%**
	CO_2 Emission Factors:			
	Electricity [1]	710	lb/MWh	
	Natural Gas [2]	117	lb/MMBtu	
	[1] 2016 ISO New England Electric Generator Air Emissions Report			
	[2] EIA Fuel Emissions Factors, Weighted National Average (1029 Btu/scf)			

5.0 Mobile Source Update

5.1 Mobile Source emissions revisions

Several changes have been made to the mobile source emission calculation following the EENF. Initially, vehicle emissions while in motion assumed 90% of site traffic would travel 3.0 miles round-trip north to Route 140 via Theodore Rice Boulevard and Braley Road while the other 10% would travel 4.5 miles round-trip south to Route 140 via Samuel Barnet Boulevard and Phillips Road. It has been clarified that all truck traffic will go north via Theodore Rice Boulevard and Braley Road.

Front end loader rates have been adjusted slightly to reflect operational refinement. Additionally, a load factor from the EPA has been included. The revised mobile source emissions summary is detailed in Table 7.

Table 7 Mobile Source GHG Emissions Analysis Summary

Pollutant	CO_2e (lbs/day)	CO_2e (tons/yr)
Front-End Loader Emissions	2804	512
Truck-Generated Emissions	6307	1150
Employee Vehicle-Generated Emissions	324	59
Total	**9,435**	**1721**

5.2 Rail versus Truck Comparison

The project is expected to reduce GHG by using freight rail to haul residuals from the processing of MSW, C&D waste, dried biosolids, and glass to various facilities in the Eastern and Midwestern United States. The MSW residuals, C&D waste, and dried biosolids will be moved by rail to landfills in Ohio (New Lexington or Fostoria locations). Alternative trucked locations for these wastes include the same landfills in Ohio and nearer landfills in New York State and New Hampshire. The processed glass materials will be sent to one or more of the following three locations: Henderson, North Carolina, Winchester, Indiana, and Toano, Virginia.

As requested by MEPA, the following analysis compares rail versus trucking using the most common landfill for the wastes and the closest destination for the glass. This analysis is based on the assumption that the wastes destination will be New Lexington, Ohio and the glass destination will be Toano, Virginia.

5.2.1 Trucks

Emissions from on-road long haul trucks were calculated using the U.S. EPA's Motor Vehicle Emissions Simulator (MOVES2014b). The vehicle mix was set to output emission factors for vehicle "type 62" which corresponds to "combination long-haul trucks". Emission factors for "rural restricted" roadways at speeds from 0 mph to 80 mph were requested. "Rural restricted" roads are the best classification resembling the majority of the highway roads along the selected routes. Other MOVES inputs (age distribution, inspection and maintenance program information, etc.) were obtained from the MassDEP for Bristol County year 2025. It was assumed that trucks have local registrations are subject to local motor vehicle regulations.

Moving vehicle emissions were calculated by multiplying the number of daily trucks by the route distance (in miles) and the 65 mph emission factor (in grams per vehicle-mile traveled) to get mass emissions per day from moving vehicles.

For idling emissions from these trucks, it was estimated that the trips from New Bedford to Virginia and Ohio would take roughly 10 to 12 hours, respectively. Since the trip times exceeded 8 hours, a mandatory 30 minute break for the driver was required. It was also assumed that 5% of the entire travel time was spent idling for various reasons (traffic, tolls, refueling, etc). Idling emissions were calculated by multiplying the number of daily trucks by the estimated idling time (in hours) and the 0 mph emission factor (in grams per hour) to get mass emissions per day from idling vehicles.

For MSW/C&D/Biosolids that are hauled by truck from the New Bedford area to Tunnel Hill in New Lexington, Ohio, the truck trip is roughly 723 miles and the time spent idling is estimated at just over an hour. It is estimated that 58 trucks per day will take this haul route. This translates to about 154,426 lb/day of CO2e or 28,183 tpy (assuming 365 days of operation).

For glass that is hauled by truck from New Bedford to Toano, Virgina, the truck trip is roughly 584 miles and the time spent idling is estimated at an hour. It is estimated that 9 trucks per day will take this haul route. This translates to about 19,289 lb/day of CO2e or 3,520 tpy (assuming 365 days of operation).

5.2.2 Rail

Emissions from rail haul were calculated using emission factors provided by U.S. EPA.[1] emission factors for "large line haul" and "large switch" for 2025 in grams per gallon of fuel used. A diesel fuel density of 3255.45 g/gallon (860 kg/m3 at 15°C) and a carbon content of 87% by mass were used to obtain the CO2 emissions from locomotives.

Since the amount of fuel used per haul trip was unavailable, the g/gal emission factors were converted to g/ton-mile factors using the suggested value of moving 400 tons of freight one mile consumes 1 gallon of fuel. Thus, dividing g/gal emission rates by 400 ton-miles/gal gives approximate g/ton-mile emission rates.

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[1] U.S. EPA, Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.

For the rail haul, it was assumed that during the entire trip, the locomotive spent 92.6% of the time in “haul mode” and the remaining 7.4% of the time in “switch” mode, based on fuel consumption by service category data provided by U.S. EPA.

Rail haul emissions were calculated by multiplying the daily tons of freight hauled by the route mileage (haul or switching) and by the appropriate emission factor (in g/ton-mile). For MSW/C&D/Biosolids that are hauled by rail from the New Bedford area to Tunnel Hill in New Lexington, Ohio, the rail trip is roughly 850 miles. Given the haul/switch breakdown and the estimated 1300 tons per day of waste, it is estimated that about 63,247 lb/day of CO2e or 11,543 tpy (assuming 365 days of operation) is generated.

For glass that is hauled by rail from the New Bedford area to Toano, Virginia, the rail trip is roughly 650 miles. Given the haul/switch breakdown and the estimated 200 tons per day of waste, it is estimated that about 7,441 lb/day of CO2e or 1,358 tpy (assuming 365 days of operation) is generated.

5.2.3 Comparison Results

Overall, transport via rail results in a reduction of approximately 60% of GHG versus using on-road long haul trucks. A summary of the results is shown in Table 8.

Table 8 GHG Comparison of Rail Haul vs. On road Haul

	MSW/Biosolids		Glass	
	Truck	Rail	Truck	Rail
GHG (lb/day)	154,426	63,247	19,289	7,441
GHG (tpy)	28,183	11,543	3,520	1,358
Difference (tpy)	-	-16,640	-	-2,162
Difference (%)	-	-59%	-	-61%

6.0 Summary and Mitigation Commitments

6.1 Project GHG Summary

Table 9 below presents a composite of project GHG emissions profiles of the Baseline and Proposed cases.

Table 9 Project GHG Emissions Summary

	Project GHG Emissions Summary			
	Baseline	Proposed	Difference	
	tons/yr			%
Glass Handling	339	285	54	-15.9
MSW	333	266	66	-20.0
Biosolids	10,722	10,690	32	-0.3
Mobile Sources	1,721	1,721	-	-
On-site renewable energy		-1,649		

6.2 Proponent's Commitments to GHG Reduction

PPNE has detailed their commitments to mitigate project GHG emissions. Additional mitigation measures have not been quantified, primarily because the degree of accuracy or the reliability of the quantification method is uncertain.

PPNE is committed to environmental stewardship. As design develops further, the company expects that additional technologies described previously, or possibly new technologies developed in the interim period, may be adopted that will further decrease GHG emissions, but these are not yet ripe for selection. The proponent will encourage the continued evaluation of energy efficiency and renewable energy measures throughout the life of the project.

PPNE is committed to the following mitigation elements for the project:

- The installation of 1.9 MW of canopy solar PV to increase the site's overall PV capacity to 3.5 MW.
- A 20% reduction over Code in lighting installations electricity use in the new buildings (glass handling, MSW tipping, and biosolids processing) and in the MSW processing area of the existing building
- High-efficiency mechanical equipment;
- VFDs where appropriate;
- High-performance building envelopes;
- PV-Ready new construction;
- Construction waste recycling.

The proponent has included in the design of the project, all feasible GHG emissions mitigation to avoid, reduce, minimize, or mitigate damage to the environment.

The proponent is committed to implementing the energy efficiency and GHG emission reduction measures presented in this analysis but must retain an amount of design flexibility to allow for changes that will inevitably occur as design progresses. If, during project design, a specific combination of design strategies proves more advantageous from an engineering, economic, or space utilization perspective, the design of the project may vary from what has been described herein. Energy performance minima and associated GHG emission reductions will be adhered to.

Upon completion of the project, PPNE will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the project and will illustrate the degree of GHG reductions from a baseline case, as baseline is defined herein, and how such reductions are achieved.

Greenhouse Gas Appendix

MEMORANDUM

TO: Massachusetts Dept. of Energy Resources

FROM: WSP

SUBJECT: **Parallel Products / New Bedford, MA – Energy Compliance Path**

DATE: **August 9, 2019**

The following identifies our proposed code compliant pathway & its requirements:

The engineering team has proposed to follow the following code compliant path:

- ASHRAE 90.1-2013 with Massachusetts Amendments per Chapter 13 of 780 CMR

The project will comply with the mandatory and prescriptive requirements of ASHRAE 90.1-2013. In addition, all conditioned buildings will comply with two of the six C406.1 measures as follows:

- Reduced lighting power density in accordance with Section C406.3
    - All buildings will achieve minimum 10% lighting power density reduction.
- On-site supply of renewable energy in accordance with Section C406.4
    - Approximately 1.9-MW of photovoltaic array will be installed on adjacent canopies within the site.

Project Summary:

The project consists of the construction of 7 different structures on the site:

1. Glass Building (for processing glass recyclables), which has 3 separate components:
    a. Glass Processing Section – a conditioned space per ASHRAE due to the heating load calculations (19 Btu/hr./s.f.). Mechanical systems to maintain space at approximately 50 degrees F.
    b. Bunker Building Section – a conditioned space per ASHRAE due to the anticipated heating load.Mechanical systems to maintain space at approximately 50 degrees F.
    c. Rear Photovoltaic Canopy #2 – an open-sided roof extension above rail tracks.
2. Side Bunker Building – an unconditioned space.
3. Rear Photovoltaic Canopy #1 – an open-sided, trellis type structure for PV panels.
4. Front Photovoltaic Canopy #1 – an open-sided roofed shed above loading dock approaches for PV panel installation.
5. Front Photovoltaic Canopy #2 – an open-sided, trellis type structure for PV panel installation.

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Suite 210
88 Black Falcon Avenue
Boston, MA 02210

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Fax: +1 617 210-1800
wsp.com

6. Municipal Solid Waste Addition – an unconditioned space.
7. Bio-Solids Building – a conditioned space per ASHRAE due to the anticipated heating load. Processing floor to be maintained at 50 degrees F and approximately 1,500 sf of office/restroom suite to be maintained at approximately 70 degrees F with both heat & A/C.

Following are the requirements of this selected Code Compliant Path for Climate Zone 5A for the various elements of the project required to be energy code compliant:

Section 5 – Building Envelope:

The following (3) conditioned buildings will meet the mandatory and prescriptive requirements of the energy code:

1a: Glass Processing Section

1b: Bunker Building Section

7: Bio-solids Building

5.2 – Compliance Paths

5.2.1 – Compliance to be per Section 5.1, Section 5.4, Section 5.7, Section 5.8 and Section 5.5 – Prescriptive Building Envelope Option (as allowed since "fenestration area does not exceed the maximum allowed by Section 5.5.4.2." – which is meet per the proposed design.

5.4 – Mandatory Provisions

5.4.1 – Insulation / As prescribed & applicable, the buildings shall comply with the insulation requirements of Sections 5.8.1.1 through 5.8.1.10.

5.4.3.1 – Continuous Air Barrier / Only the conditioned space of the Glass Building will be required to comply with Section 5.4.3.1, all other buildings are unconditioned.

5.5 – Prescriptive Building Envelope Option

5.5.2 – As applicable, buildings will comply with the requirements for conditioned space in Table 5.5-5.

<u>Table 5.5-5 – Building Envelope Requirements for Climate Zone 5 (A, B, & C):</u>

<u>Roofs</u>

Metal Building R-19 + R-11 Ls (U-0.037)

<u>Walls, Above Grade</u>

Metal Building R-0 + R-19 c.i. (U-0.050)

<u>Slab on Grade / Unheated</u>

R-15 for 24 in. (F-0.52)

<u>Opaque Doors</u>

Swinging U-0.500

Nonswinging U-0.500

Vertical Fenestration

Metal Framing, Fixed	U-0.42
Metal Framing, Operable	U-0.50
Metal Framing, Ent. Door	U-0.77

Notes: "c.i."=Continuous Insulation / Ls = Linear System / NR = No (Insulation) Required.

Sections 6 through 9 – HVAC, Service Water Heating, Electrical Power and Lighting

The (3) conditioned buildings will meet the mandatory and prescriptive requirements of these sections, as applicable.

Mechanical:

The conditioned buildings will be heated by gas-fired heating and ventilating units to maintain 50 degrees F within the space. These heaters will have a minimum efficiency of 82%.

Within the Bio-solids building there will be 1,500 sf of office/restroom suite to be maintained at approximately 70 degrees F with gas-fired heating and air-cooled DX cooling.

Lighting:

Lighting power density will be reduced by at least 10% from ASHRAE 90.1-2013 to comply with Section C406.1 of the MA Energy Code.

-END-

New Lighting Requirements and Reduction

I. Estimate New Lighting Requirements

A. Glass Handling, Low Bay (<25' floor to ceiling height)

Proposed glass processing building	27,500	SF
Proposed Glass Bunker Building	23,320	SF
Proposed Side Bunker Buildings	22,592	SF
TOTAL Glass Handling Low Bay Area	73,412	SF
Low Bay Lighting Density	1.19	W/SF
Low Bay Lighting Requirement	87,360	W
	8,760	annual operating hours
	765	**MWh/yr baseline**
	153	**MWh/yr 20% reduction commitment**
	612	**MWh/yr proposed**

B. MSW and Tipping Buildings, High Bay (25' - 50' floor to ceiling height)

Existing building	103,000	SF*
Less non-MSW-processing in existing building will use existing lighting	-66,000	SF*
Proposed MSW tipping building	50,000	SF
TOTAL MSW and Tipping High Bay Area	87,000	SF
High Bay Lighting Density	1.23	W/SF
High Bay Lighting Requirement	107,010	W
	8,760	annual operating hours
	937	**MWh/yr baseline**
	187	**MWh/yr 20% reduction commitment**
	750	**MWh/yr proposed**

C. Biosolids Buildings, High Bay (25' - 50' floor to ceiling height)

TOTAL Biosolids High Bay Area	30,000	SF
High Bay Lighting Density	1.23	W/SF
High Bay Lighting Requirement	36,900	W
	8,760	annual operating hours
	323	**MWh/yr baseline**
	65	**MWh/yr 20% reduction commitment**
	259	**MWh/yr proposed**

HEAT PUMP ANALYSIS

TO: Massachusetts Dept. of Energy Resources

FROM: WSP

SUBJECT: **Parallel Products / New Bedford, MA – Heat Pump Analysis DRAFT**

DATE: **August 23, 2019**

Project Overview

The purpose of this analysis is to evaluate gas and electric heating systems at Parallel Product's new proposed recycling facility located in New Bedford, MA. The project will consist of multiple structures, including (3) conditioned buildings as follows:

1. Glass Processing Building, Glass Processing Section (27,200 SF) – a conditioned space per ASHRAE due to the anticipated heating load calculations (15 Btu/hr/sf). Mechanical systems to maintain space at approximately 50 degrees F.
   - Estimated Heating Load – 410,000 Btu/hr
2. Glass Processing Building, Bunker Building Section (23,320 SF) – a conditioned space per ASHRAE due to the anticipated heating load (16 Btu/hr/sf). Mechanical systems to maintain space at approximately 50 degrees F.
   - Estimated Heating Load – 375,000 Btu/hr
3. Bio-Solids Building (30,000 SF) – a conditioned space per ASHRAE due to the anticipated heating load (144 Btu/hr/sf). Processing floor to be maintained at 50 degrees F and approximately 1,500 sf of office/restroom suite to be maintained at approximately 70 degrees F with both heat & A/C.
   - Estimated Heating Load – 425,000 Btu/hr for space heating, 3,900,000 Btu/hr process ventilation

HVAC System Options

The code-compliant baseline heating system is assumed to be an 80% efficient gas-fired packaged heating unit. This unit will heat the space to 50°F in the winter and will also provide minimum code-required ventilation year-round. No cooling will be provided to the space, except for a small 1,500 SF office area within the Bio-solids building. The proposed design options are as follows

- Proposed Design = Gas-fired Furnace Heating and Ventilating Unit with 82% Efficiency
- Proposed Alternate Design = Electric Packaged Heat Pump Unit with 3.4 COP at 47°F OA

WSP USA
Suite 210
88 Black Falcon Avenue
Boston, MA 02210

Tel.: +1 617 210-1600
Fax: +1 617 210-1800
wsp.com

Heating Energy Analysis

For each option, WSP estimated the annual energy consumption, greenhouse gas (GHG) emissions, and energy cost using spreadsheet calculations based on weather bin data. The results of this analysis are shown in the tables below:

Table 1: Annual Heating Energy Consumption

Glass Processing Building	Annual Energy Consumption				GHG Emissons		Annual Energy Cost	
	Electricity (kWh)	Natural Gas (therm)	Total Energy (MMBtu)	Energy Savings (%)	GHG Emissions (tons/year)	GHG Savings (%)	Energy Cost ($)	Energy Cost Savings ($)
Baseline - Gas Heating 80% Efficient:	10,261	6,387	674	-	41	-	$9,922	-
Proposed Design - Gas Heating 82% Efficient:	10,261	6,231	658	2.3%	40	2.2%	$9,735	$187
Proposed Alternative - Heat Pump Heating:	70,018	0	239	64.5%	25	39.4%	$15,404	-$5,482

Glass Bunker Building	Annual Energy Consumption				GHG Emissons		Annual Energy Cost	
	Electricity (kWh)	Natural Gas (therm)	Total Energy (MMBtu)	Energy Savings (%)	GHG Emissions (tons/year)	GHG Savings (%)	Energy Cost ($)	Energy Cost Savings ($)
Baseline - Gas Heating 80% Efficient:	9,346	5,817	614	-	37	-	$9,037	-
Proposed Design - Gas Heating 82% Efficient:	9,346	5,675	599	2.3%	37	2.2%	$8,867	$170
Proposed Alternative - Heat Pump Heating:	63,775	0	218	64.5%	23	39.4%	$14,031	-$4,994

Bio-solids Building	Annual Energy Consumption				GHG Emissons		Annual Energy Cost	
	Electricity (kWh)	Natural Gas (therm)	Total Energy (MMBtu)	Energy Savings (%)	GHG Emissions (tons/year)	GHG Savings (%)	Energy Cost ($)	Energy Cost Savings ($)
Baseline - Gas Heating 80% Efficient:	14,096	67,664	6,814	-	401	-	$84,298	-
Proposed Design - Gas Heating 82% Efficient:	14,096	66,014	6,649	2.4%	391	2.4%	$82,317	$1,980
Proposed Alternative - Heat Pump Heating:	647,189	0	2,208	67.6%	230	42.7%	$142,382	-$58,084

As shown in the table above, the heat pump system would reduce site energy and GHG emissions; however, it would increase annual energy costs. The heat pump system would cost an additional $16,665 per year to operate compared to the proposed gas furnace heating system.

Utility rates used in the analysis are $0.22/kWh and $1.2/therm.

Construction Costs

The following construction costs were developed using RS Means:

Table 2: RS Means Cost Estimates for Air Handling Equipment (Material + Labor)

	RS Means Cost ($/MBH of installed heating capacity)
Gas Rooftop Unit 80% Efficiency ($/MBH Cost)	$70
Gas Rooftop Unit 82% Efficiency ($/MBH Cost)	$72
Rooftop Heat Pump ($/MBH Cost)	$134

Using the costs developed above, the heating system costs were calculated for each building based on floor area:

Table 3: Estimated Air Handling Equipment Cost by Building

	Glass Processing	Glass Bunker	Bio-Solids	TOTAL
Baseline - Gas Heating 82% Efficient:	$28,732	$26,170	$304,397	**$359,298**
Proposed Design - Gas Heating 85% Efficient:	$29,450	$26,824	$312,007	**$368,281**
Proposed Alternative - Heat Pump Heating:	$55,000	$50,097	$582,702	**$687,800**
Overall Construction Cost Increase for Heat Pump Heating = $319,519				

Alternative Energy Credits and Utility Incentives

Alternative energy certificates (AECs) are financial incentives available to businesses that use air-source heat pump systems, which take advantage of the naturally occurring temperature differences in the air to provide heating/cooling.

Air-source heat pumps with efficiencies that exceed code are also eligible for incentives through the Mass Save Utility Program. For purposes of this analysis the following assumptions were made:

- Project would pursue Mass Save Custom Incentive Approach
- Estimated Incentive is $0.35/kWh saved
- The heat pump system would save 20% energy compared to code, where code would be a code-compliant heat pump, as required.

Table 4 below outlines the potential AECs and incentives available for air-source heat pumps.

Table 4: AEC and Incentive Summary

Incentives Programs Available	Glass Processing	Glass Bunker	Bio-Solids
Alternative Energy Credits for Heat Pump System	$880	$802	$9,324
Mass Save Incentives for Heat Pump System	$2,451	$2,232	$22,652

Conclusion

Table 5 and 6 below summarize the first cost, incentives, and net operating cost for each building. The proposed gas heating system has a simple payback of 3.8 years, while the heat pump system does not payback. WSP recommends installing 82% efficient gas-fired air handling units for all buildings.

The heat pump system would reduce GHG emissions by 40%, however it would cost an additional $59,892 per year to operate when compared to the proposed gas furnace heating system. It would also increase construction cost by approximately $292,182.

WSP reach out to several vendors that indicated air source heat pump units are currently available in sizes up to ~240,000 Btu/hr. One (1) proposed gas heating make-up air unit for the Bio-solids is currently 47,500 CFM, and ~4,000,000 Btu/hr. This would need to be replaced with (17) air-source heat pumps, which is not a realistic design or approach to heating a high-bay warehouse or manufacturing facility.

Table 5: Annual First Cost and Operating Cost (By Building)

Glass Processing Building	Incentives and Construction Costs				Net First Cost	Net Annual Operating Cost Savings	Simple Payback (years)
	Construction Cost ($)	Incremental First Cost ($)	Alt. Energy Credits ($)	Mass Save Incentive*			
Baseline - Gas Heating 80% Efficient:	$28,732	$0	$0	$0	-	-	-
Proposed Design - Gas Heating 82% Efficient:	$29,450	$718	$0	$0	$718	$187	3.8
Proposed Alternative - Heat Pump Heating:	$55,000	$26,269	$880	$2,451	$23,818	-$4,602	Does Not Payback

Glass Bunker Building	Incentives and Construction Costs				Net First Cost	Net Annual Operating Cost Savings	Simple Payback (years)
	Construction Cost ($)	Incremental First Cost ($)	Alt. Energy Credits ($)	Mass Save Incentive*			
Baseline - Gas Heating 80% Efficient:	$26,170	$0	$0	$0	-	-	-
Proposed Design - Gas Heating 82% Efficient:	$26,824	$654	$0	$0	$654	$170	3.8
Proposed Alternative - Heat Pump Heating:	$50,097	$23,927	$802	$2,232	$21,695	-$4,192	Does Not Payback

Bio-solids Building	Incentives and Construction Costs				Net First Cost	Net Annual Operating Cost Savings	Simple Payback (years)
	Construction Cost ($)	Incremental First Cost ($)	Alt. Energy Credits ($)	Mass Save Incentive*			
Baseline - Gas Heating 80% Efficient:	$304,397	$0	$0	$0	-	-	-
Proposed Design - Gas Heating 82% Efficient:	$312,007	$7,610	$0	$0	$7,610	$1,980	3.8
Proposed Alternative - Heat Pump Heating:	$582,702	$278,306	$9,324	$22,652	$255,654	-$48,760	Does Not Payback

Table 6: Added First Cost and Operating Cost for Heat Pump System (Total – all 3 buildings)

	Net Added First Cost	Net Added Operating Cost
Heat Pump Heating System for entire site	$292,184	$59,892

--END--

ATTACHMENT 12

PRIME FARMLAND ANALYSIS

August 1, 2018

Tim Cusson
Parallel Products of New England
969 Shawmut Avenue
New Bedford, MA 02746

Re: Detailed Soil Survey – Agricultural Lands Suitability Criteria
100 Duchaine Blvd., New Bedford, MA

Dear Mr. Cusson:

Apex Companies, LLC (Apex) is pleased to present this letter report to Parallel Products of New England (PPNE; the Client) summarizing the results of our Detailed Soil Survey of the 100 Duchaine Blvd. property (Subject Property, the Site) in New Bedford, Massachusetts. Apex's activities associated with the soil survey included an office review of relevant background materials provided by PPNE and information maintained by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and related agencies, and one (1) Site visit to characterize the occurrence of soil mapping units within the limits of the survey area. This summary letter report provides a detailed narrative of the approach taken to conduct the soil survey with associated figures and a photolog of the activities for the Site visit, a discussion of the findings of the Detailed Soil Survey, and a conclusion that reports soil mapping units corresponding to Agricultural Land of Prime, Unique, or of State or Local Importance occur to a smaller extent than what was previously mapped by NRCS.

PROJECT NARRATIVE

PPNE proposes to construct and operate a solid waste handling facility at the Subject Property. As part of the permitting process, the Site is potentially subject to the General Site Suitability Criteria requirements at 310 CMR 16.40(4) of the Site Assignment Regulations for Solid Waste Facilities that are administered by the Massachusetts Department of Environmental Protection (MassDEP). The NRCS provides the general public with information from published Soil Survey Reports with Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/), which allows public access to soil maps and data for more than 95 percent of the nation's counties. The soil maps provided by NRCS for the Subject Property indicate the occurrence of the Sudbury fine sandy loam, 0 to 3 percent slopes mapping unit (260A), which is rated as Prime Farmland, a category of land subject to the Site Assignment criteria. Due to limitations in interpreting the information provided by NRCS online, notably that its soil maps are of such a small scale so as to be unreliable for application to relatively small areas, the USDA Assistant State Soil Scientist for Massachusetts, Al Averill, has previously recommended that an applicant retain a qualified soil scientist to ascertain the accuracy of available USDA NRCS soil mapping information by conducting a Detailed Soil Survey to determine the applicability of the permitting requirements of the Agricultural Lands Suitability Criteria.

As requested, Apex performed a Detailed Soil Survey of the Subject Property in accordance with the scope and limitations presented in our proposal to PPNE dated June 27, 2018. The onsite survey effort was conducted during one (1) Site visit on July 13th by two (2) Certified Soil Scientists (CPSSc) registered by the Soil Science Society of America and registered as having Professional Member Status by the Society of Soil Scientists of Southern New England. The project was overseen by Apex Senior Project Manager Edward (Ted) Pickering (CPSSc #01266) with technical support provided by subcontractor Arthur Allen (CPSSc #22529), Vice President of EcoTec, Inc. (EcoTec) of 102 Grove Street, Worcester, MA, together comprising the Apex Team. The two soil scientists traversed the entire survey area together and conferred throughout as observations and evaluations were made leading to the generation of this Detailed Soil Survey summary letter report.

Appended to this report are one (1) figure and two (2) attachments. Figure C-1 – Prime Farmland Soils presents a plan of the Detailed Soil Survey findings showing the identity and extent of soil mapping units encountered onsite by the Apex Team. Attachment A provides a photolog of site photographs taken during the July 13th Site visit to document observations and findings of the Detailed Soil Survey. A separate letter report prepared by EcoTec to summarize Mr. Allen's evaluations was submitted to Apex for its use in preparing this summary letter report and is incorporated as Attachment B.

FINDINGS OF THE DETAILED SOIL SURVEY

The findings of the Detailed Soil Survey conducted by the Apex Team are presented in the attached Figure C-1 – Prime Farmland Soils, which relies upon a base drawing that was prepared and modified by Green Seal Environmental, Inc. (GSE), a third-party environmental consultant to PPNE. The NRCS soils map accessed online at the Web Soil Survey site, published from the current Soil Survey Report for Bristol County, Massachusetts, Southern Part, indicates the presence of a soil mapping unit rated as Prime Farmland in two areas on the western side and southwest corner of the Subject Property; Sudbury fine sandy loam, 0 to 3 percent slopes (map unit symbol 260A). In general, the Detailed Soil Survey found that the areal extent of this natural soil is less than has been indicated by NRCS due to historical disturbance by human activities resulting from a combination of earthwork excavation and filling, and construction of roads, a building, a railroad, and a perimeter drainage swale, which together constitute Urban Land (map unit symbol 602).

The Site visit on Friday, July 13, 2018 was conducted from approximately 9:00 A.M. to approximately 12:00 P.M. under mostly sunny skies with temperatures reaching the mid-80s, after dry weather conditions in the preceding days. The Detailed Soil Survey was confined to areas previously designated by NRCS as soil mapping unit 260A that occurred on and within 100 feet of the Subject Property at 100 Duchaine Blvd. The survey area encompassed areas beyond the unpaved roadway, perimeter drainage swale and northern property boundary into the power line right-of-way to the north and beyond the unpaved roadway, perimeter drainage swale and western property boundary into undeveloped land on the opposite side of the active railway line to the west. The southern extent of the survey area was defined by a small area of 260A bounded to the west and south by an unpaved roadway at the southwest corner of the Subject Property.

During the course of performing this Detailed Soil Survey, five (5) shallow shovel pits were advanced to prepare pedon (i.e., soil horizon) descriptions in four areas, in addition to numerous probes of the surface soil and underlying material using a hand auger. Besides detailed inspections of soil at a certain location, supporting observations were made of natural and artificial features, including topography, hydrology, vegetation, and disturbance related to human activity. The Sudbury 260A map unit is a very deep, moderately well and somewhat poorly drained soil formed on nearly level glacial outwash plains with a fine sandy loam surface horizon overlying stratified sand and gravel parent material. Evidence of a fluctuating groundwater table occurs within a depth of 12 to 24 inches of the ground surface, which is a vestigial feature of the Sudbury soil within the area of this Detailed Soil Survey because the perimeter drainage swale has significantly increased the depth to groundwater on and off the Subject Property.

Meeting at the northwest corner of the Subject Property, at the end of a paved extension of Duchaine Blvd., and in front of a building operated by Farland Corp., the Apex Team proceeded north on foot over a dilapidated foot bridge to access land offsite, underneath the east-west trending power line right-of-way. Although it is evident that widespread soil disturbance underneath the power lines has occurred as a result of human activity, an area of undisturbed 260A was observed at the southern edge of the power line right-of-way and north of the perimeter drainage swale. As shown on Figure C-1, the undisturbed area of 260A at this location is estimated to be approximately 0.1 acres.

Surrounded by highly disturbed soils and isolated from other farmland soils, the Apex Team concurred in its opinion that the remnants of such small pockets of natural 260A areas on and adjacent to the Subject Property have little or no value with regard to agricultural production. As noted in the attached EcoTec report, for this Detailed Soil Survey effort, the Apex Team employed "…a higher standard for minimum delineation of an area than that typically applied by NRCS when preparing a soil survey report." The soils map presented in the attached EcoTec report was further amended by Art Allen using highly magnified photos of vestigial 260A areas to more accurately reflect their exact size and shape, as is shown on Figure C-1 – Prime Farmland Soils.

Proceeding south along the railway, the Apex Team advanced an observation shovel pit and prepared a soil description within 50 feet of the western extent of the railroad right-of-way, opposite the Subject Property. A natural soil that conforms to the soil description for the Sudbury fine sandy loam, 0 to 3 percent slopes (260A) was encountered to confirm the soil map prepared by NRCS for this location. Besides observations made of soil horizons, mature natural vegetation, including native tree species, further indicated that the soils had not been extensively disturbed at this location, other than perhaps by clearing of the trees in the distant past, which left little trace.

Returning to the northwest corner of the Subject Property, to an area north of the building and south of the drainage swale, a hand-dug observation pit and auger sampling indicated that the surface soil had been removed and reworked during the course of land clearing and construction of the building on the northern side of the paved road extension off of Duchaine Blvd. An area of undisturbed natural 260A soil was determined to remain at the end of the paved access road to the northwest, west, and south, which again confirmed NRCS mapping of this particular location. However, proceeding to the south within the area mapped by NRCS as 260A, an area of significant active soil disturbance was encountered that consisted of earth moving of surface soils by heavy equipment and mounding of soil material into piles varying from 10 to 20 feet in height throughout much of the disturbed area. Storage in this area included earth-moving equipment and concrete stormwater conveyance materials, including conveyance piping, catch basins, and risers. All of the southern portion of the 260A mapped by NRCS on the Subject Property in this area had been removed and is more correctly mapped as 602 – Urban Land. At the southwest corner of the Subject Property, a discontinuous, isolated area of 260A was described after observing a shallow observation pit, to the north and east of the unpaved road that was constructed by depositing up to 8 feet of soil material to form the mounded roadway.

CONCLUSIONS

The Apex Team completed a Detailed Soil Survey of the Subject Property located at 100 Duchaine Blvd. and within a 100-foot setback of the property line of the Subject Property. Apex's activities were limited to an office review of various materials provided by PPNE and supporting information obtained separately by Apex, and field work conducted during one (1) Site visit on Friday, July 13, 2018. Based on the Detailed Soil Survey work performed, Apex developed the following conclusions:

- Soil mapping units that correspond to Agricultural Land of Prime, Unique, or of State or Local Importance do occur on and within a 100-foot setback of the Subject Property but to a lesser extent than that depicted by NRCS.
- Areas of soil previously mapped by the NRCS as consisting of Sudbury fine sandy loam, 0 to 3 percent slopes (Map Unit 260A), rated as Prime Farmland, were not encountered because the natural soils had been destroyed by various human activities.
- As shown in Figure C-1, the findings of the Detailed Soil Survey determined that certain areas previously designated as having soils classified by NRCS as Prime Farmland were not present but instead consisted of 602 – Urban Land, that is not rated as farmland.

It has been our pleasure to assist you with this project. Please do not hesitate to call the undersigned at (617) 728-0070, ext. 5407 should you have any questions or require additional information with regard to this letter report.

Sincerely,
APEX COMPANIES, LLC

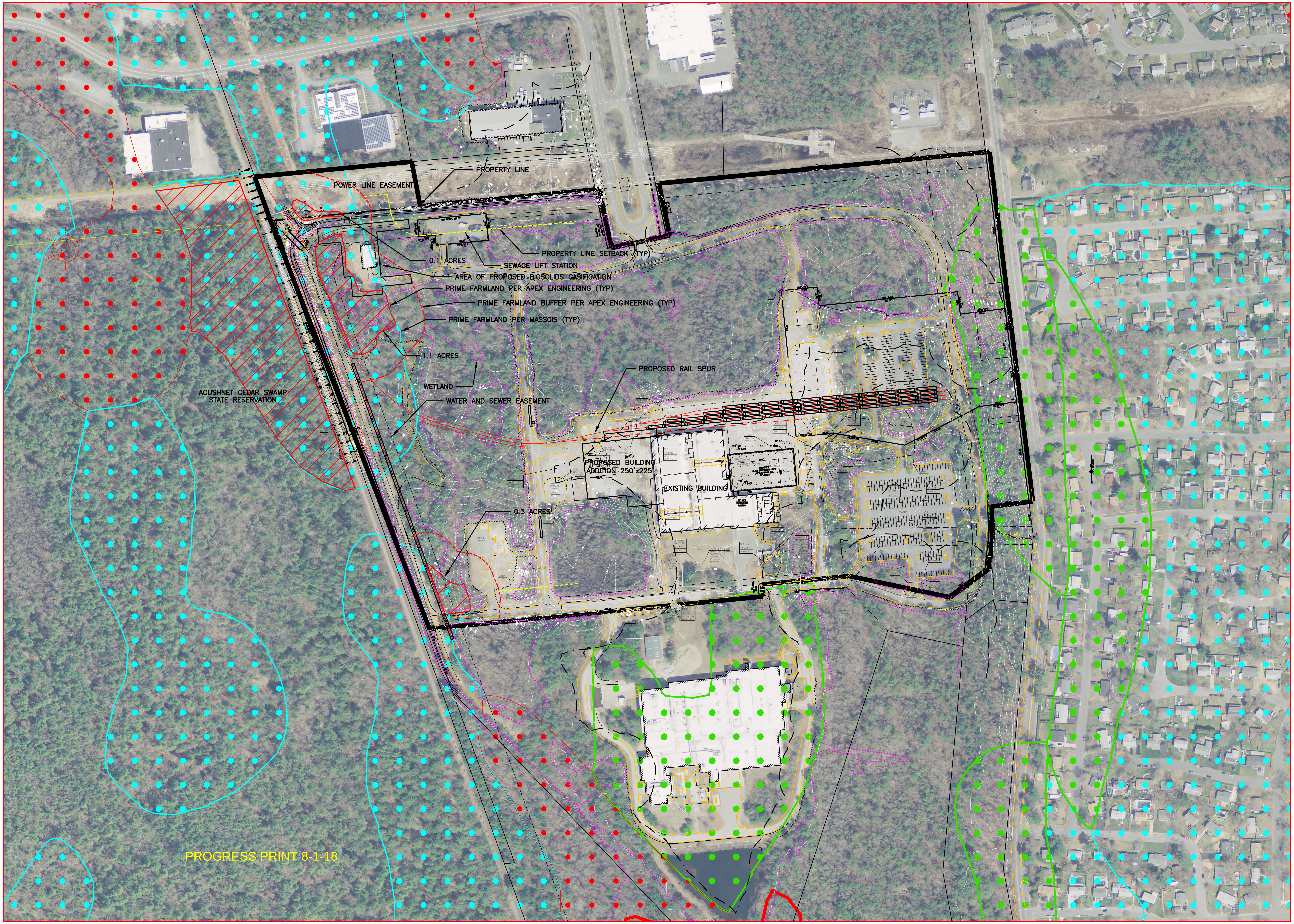
Edward W. Pickering

Edward W. Pickering, PE, CPSSc
Senior Project Manager

Attachments:
Figure C-1: "Prime Farmland Soils," prepared by Green Seal Environmental, August 1, 2018
Attachment A: Site Photographs – Detailed Soil Survey, 100 Duchaine Blvd., New Bedford, MA, July 13, 2018
Attachment B: EcoTec, Inc. Letter Report dated August 1, 2018

FIGURE C-1

PRIME FARMLAND SOILS



150' 0 150' 300'
BAR SCALE
1" = 150'

GREEN SEAL
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Est. 1997

□reen Seal Environmental□Inc□
114 State Road□Buildin□B
Sa□amore Beach□MA 02562
Tel□□508□888-6034
□a□□508□888-1506
□□□□□seenv□com

Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:

PRIME FARMLAND EVALUATION

LOCUS:

NEW BEDFORD INDUSTRIAL PARK
in
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR:

PARALLEL PRODUCTS, LLC

DRAWING TITLE:

PRIME FARMLAND SOILS

CAD TECH:

CHECKED BY:

ENGINEER: W. HALL

DATE: 8/2/2018

SCALE: 1"=150'

SHEET: C-1

APEX

ATTACHMENT A

SITE PHOTOGRAPHS

Site Photographs – Detailed Soil Survey
100 Duchaine Blvd., New Bedford, MA
July 13, 2018

Proceeding north off of the Subject Property over the perimeter drainage swale to the power line ROW.

Significant surface disturbance under the power line right-of-way (ROW), keys out as Urban Land (602).

An area of undisturbed soil was encountered along the southern margin of the power line ROW.

An isolated area of Sudbury fine sandy loam exists between the drainage swale and power line ROW.

Proceeding southwest along the railroad tracks, which form the western boundary of the Subject Property.

The presence of undisturbed Sudbury fine sandy loam was confirmed within 50' west of the railroad.

Site Photographs – Detailed Soil Survey
100 Duchaine Blvd., New Bedford, MA
July 13, 2018

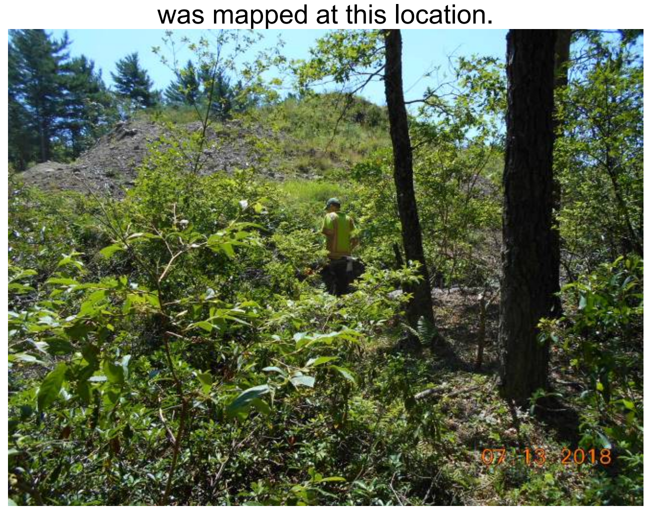
At the NW corner of the Subject Property, between the building and power lines, soils were disturbed.

The surface soil at this location had been stripped away and the subsoil appears to have been mixed.

An area of natural soil occurs west of the Duchaine Blvd. extension (note building in background).

Somewhat poorly drained Sudbury fine sandy loam was mapped at this location.

This shovel pit location occurred within a micro-depression, near wetland flag ‘TEC 4-75.’



Approximately 100’ to the southwest, an area of significant soil disturbance was encountered.

Site Photographs – Detailed Soil Survey
100 Duchaine Blvd., New Bedford, MA
July 13, 2018

An area that had been mapped by NRCS as Sudbury soil was destroyed by earth moving activities.

Besides construction materials stored in this area, soil piles and boulders appear to have offsite origin.

The disturbed area of soil abuts the access road to the west, which in turn borders the drainage swale.

Viewing south, the presence of heavy earth-moving equipment indicates this area remains active.

At the northern extent of the disturbed area, the building at the NW corner is visible (center of photo).

At the SW corner of the Subject Property, the survey team confirmed a small area of Sudbury soil.

Site Photographs – Detailed Soil Survey
100 Duchaine Blvd., New Bedford, MA
July 13, 2018

The soil was examined in an area between the dirt access road and a developed area to the east.

The presence of Sudbury soil in this small area as mapped by NRCS was confirmed.

Soil mottles close to the surface appear to be relict features formed before drainage of the area.

The extent of Sudbury soil is limited by construction of the access road to the west and south.

APEX

ATTACHMENT B

ECOTEC, INC. LETTER REPORT

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 / Fax: 508-752-9494

August 1, 2018

Edward Pickering, P.E., MBA
Senior Project Manager
Apex Companies, LLC
125 Broad St., 5th Floor
Boston, MA 02110

Re: 100 Duchaine Boulevard, New Bedford, MA

Subject: Farmland Soil Evaluation, Description & Mapping

This report concerns evaluation of soil and site conditions undertaken on July 13, 2018. The areas of concern which were evaluated are identified on a plan labeled “Conceptual Site Plan” by Green Seal Environmental Inc., dated April 23, 2018 (AKA: the “Plan”). The purpose of my evaluation was to confirm and/or revise USDA-NRCS soil mapping of farmland soils based on site-specific reconnaissance for a portion of 100 Duchaine Boulevard, New Bedford, MA (AKA: the “Site”). My findings were as follows:

My evaluations were performed with reference to a USDA NRCS Web Soil Survey map for the Site. The soil map units, including Prime Farmland and Farmland of Statewide Importance, from this report were also overlain on an existing conditions aerial map. I used these maps of the study area during my site evaluation. In preparation for my evaluation I noted that Prime Farmlands, consisting of Sudbury fine sandy loam (Map Unit 260A) were present within the study area. During my evaluation I traversed the Site and made observations of natural and artificial features including topography, hydrology, vegetation, soils, impervious surfaces and other human-derived artifacts. I have attached copies of my field notes. As a result of my site evaluation I found cause to modify the USDA NRCS soil map for the Site, relative to farmland soils. My findings are detailed below.

A significant portion of the study area has been historically disturbed by a combination of earth removal, trail and road construction, powerline construction and railway construction. These disturbed areas should now be classified as “Urban Lands” which no longer have soil profiles that are representative of the original farmland soil series. During my evaluation I dug thirteen (13) shallow shovel pits and advanced several hand auger borings across the study area. I confirmed the presence of farmland soil remnants in four areas. These areas are shown approximately on the attached soil survey mark-up as black shaded polygons. The mapped farmland soil remnants are relatively small and are located within a highly disturbed landscape. They are isolated from other farmland soils and have little or no value as farmland soils in terms of agricultural production or from a land use planning perspective. The inclusion of these small areas reflects a higher standard for minimum delineation of an area than that typically applied by NRCS when preparing a soil survey report.

I have attached a brief description of my qualifications. Please do not hesitate to contact me if you have any questions concerning this or other matters.

Sincerely,

Arthur Allen, CPSS, CWS, CESSWI, ASE
Vice President
Certified Professional Soil Scientist

Attachments: 3, 5 pages (Biography, Field Notes, Sketch Map)

AA/Soils/Leominster 200 Tanzio Soil Report

QUALIFICATIONS

Arthur Allen, CPSS, CWS, CESSWI
Vice President
Soil & Wetland Scientist

Arthur Allen is the Vice President of EcoTec, Inc. and has been a senior environmental scientist there since 1995. His work with EcoTec has involved wetland delineation, wildlife habitat evaluation, environmental permitting (federal, state and local), environmental monitoring, expert testimony, peer reviews, contaminated site assessment and the description, mapping and interpretation of soils. His clients have included private landowners, developers, major corporations and regulatory agencies. Prior to joining EcoTec, Mr. Allen mapped and interpreted soils in Franklin County, MA for the U.S.D.A. Natural Resources Conservation Service (formerly Soil Conservation Service) and was a research soil scientist at Harvard University's Harvard Forest. Since 1994, Mr. Allen has assisted the Massachusetts Department of Environmental Protection and the Massachusetts Association of Conservation Commissions as an instructor in the interpretation of soils for wetland delineation and for the Title V Soil Evaluator program.

Mr. Allen has a civil service rating as a soil scientist, an undergraduate degree in Natural Resource Studies and a graduate certificate in Soil Studies. His work on the Franklin County soil survey involved interpretation of landscape-soil-water relationships, classifying soils and drainage, and determining use and limitation of the soil units that he delineated. As a soil scientist at the Harvard Forest, Mr. Allen was involved in identifying the legacies of historical land-use in modern soil and vegetation at a number of study sites across southern New England. He has a working knowledge of the chemical and physical properties of soil and water and how these properties interact with the plants that grow on a given site. While at Harvard Forest he authored and presented several papers describing his research results which were later published. In addition to his aforementioned experience, Mr. Allen was previously employed by the Trustees of Reservations as a land manager and by the Town of North Andover, MA as a conservation commission intern.

Education:
1993-Graduate Certificate in Soil Studies, University of New Hampshire
1982-Bachelor of Science in Natural Resource Studies, University of Massachusetts

Professional Affiliations:
Certified Professional Soil Scientist (ARCPACS CPSS #22529)
New Hampshire Certified Wetland Scientist (#19)
Registered Professional Soil Scientist – Society of Soil Scientists of SNE [Board Member (2000-2006)]
Certified Erosion, Sediment & Stormwater Inspector (#965)
Massachusetts Approved Soil Evaluator (#13764)
Massachusetts Arborists Association-Certified Arborist (1982 – 1998)
New England Hydric Soils Technical Committee member
Massachusetts Association of Conservation Commissions member
Society of Wetland Scientists member

Refereed Publications:
Soil Science and Survey at Harvard Forest. A.Allen. *In*: Soil Survey Horizons. Vol. 36, No. 4, 1995, pp. 133-142.
Controlling Site to Evaluate History: Vegetation Patterns of a New England Sand Plain. G.Motzkin, D.Foster, A.Allen, J.Harrod, & R.Boone. *In*: Ecological Monographs 66(3), 1996, pp. 345-365.
Vegetation Patterns in Heterogeneous Landscapes: The Importance of History and Environment. G.Motzkin, P.Wilson, D.R.Foster & A.Allen. In: Journal of Vegetation Science 10, 1999, pp. 903-920.

7/13/18 Duchaine Blvd. New Bedford
(7:30-2:30)

TP-1 @ so. edge of power lines in no. part of site
Litter 1"
O 1-0
A 0-1 10YR 2/1
Ab 1-6 10YR 3/2 5% 2.5Y 6/2 <5% 7.5YR 4/4
Bw 6-20 10YR 5/6 10% 7.5YR 4/6 5% 2.5Y 4/2
- shallow plowed
- A - fsl; Ab - fsl; Bw - glfs

TP-2 - west side RR tracks
Litter 2"
O 2-0
A 0-5 7.5YR 2.5/1
E 5-16 10YR 6/1
Bhs 16-18 7.5YR 4/4 5% 5YR 5/6

- A - fsl; E & Bhs - glfs
- Unplowed profile

TP-3; north of bldg.
Litter 1"
O 1-0
E 0-1 10YR 6/2
Bw 1-7 10YR 4/4
C 7-16 10YR 5/3

- E - g lfs; Bw - g lfs; C - g fs
- stripped profile

TP-4: west of bldg.
Litter 1"
O 2-0
A 0-4 10YR 3/2
E 4-6 7.5YR 5/2 20% 10YR 2/2
Bw 6-12 10YR 5/4 5% 7.5YR 4/6
Cg 12-16 2.5Y 5/1 10% 10YR 4/6

A - fsl
E - fsl
Bw - fsl
Cg - glfs

(OVER)

TP-5: no. tip of Sudbury
@ south end of ~~AOI~~

Litter 2"
O 3-0
A 0-7 10YR2/1
Bg 7-14 10YR6/2 20% 7.5YR4/6

A - fsl
Bg fsl

Undisturbed (160min)

USDA NRCS Soils Map

EcoTec 7/13/2018 Farmland Soil Survey Results (Black Shaded Polygons Are Remnant Farmland Soils)

ATTACHMENT 13

CERTIFICATION OF SERVICE

South Coast Renewables, LLC
Solid Waste Handling Facility
New Bedford, MA

CERTIFICATION OF SERVICE OF COPIES

Pursuant to 310 CMR 16.08(3), I certify that the Site Suitability Application (BWP SW 01), prepared by Green Seal Environmental, LLC for the proposed new Solid Waste Handling Facility was sent to the following recipients by U.S. Mail, postage prepaid or hand delivered, on or before February 14, 2023.

<u>Distribution List</u>

City of New Bedford Health Department Attn: Damon Chaplin., Director 1213 Purchase Street New Bedford, MA 02740 *(Hand delivered USB flash drive and 2 copies)*	Massachusetts Department of Public Health Bureau of Environmental Health Assessment 250 Washington Street, 7th Floor Boston, MA 02108 *(1 copy)*
New Bedford Public Library 613 Pleasant St. New Bedford, MA 02740 *(Hand delivered USB flash drive and 1 copy)*	Department of Environmental Protection Southeast Regional Office Solid Waste Section Attn: Mark Dakers, Section Chief 20 Riverside Drive Lakeville, MA 02347 *(Hand delivered 2 copies)*
Southeastern Regional Planning and Economic Development District 88 Broadway Street Taunton, MA 02780 *(USB flash drive and 1 copy)*	

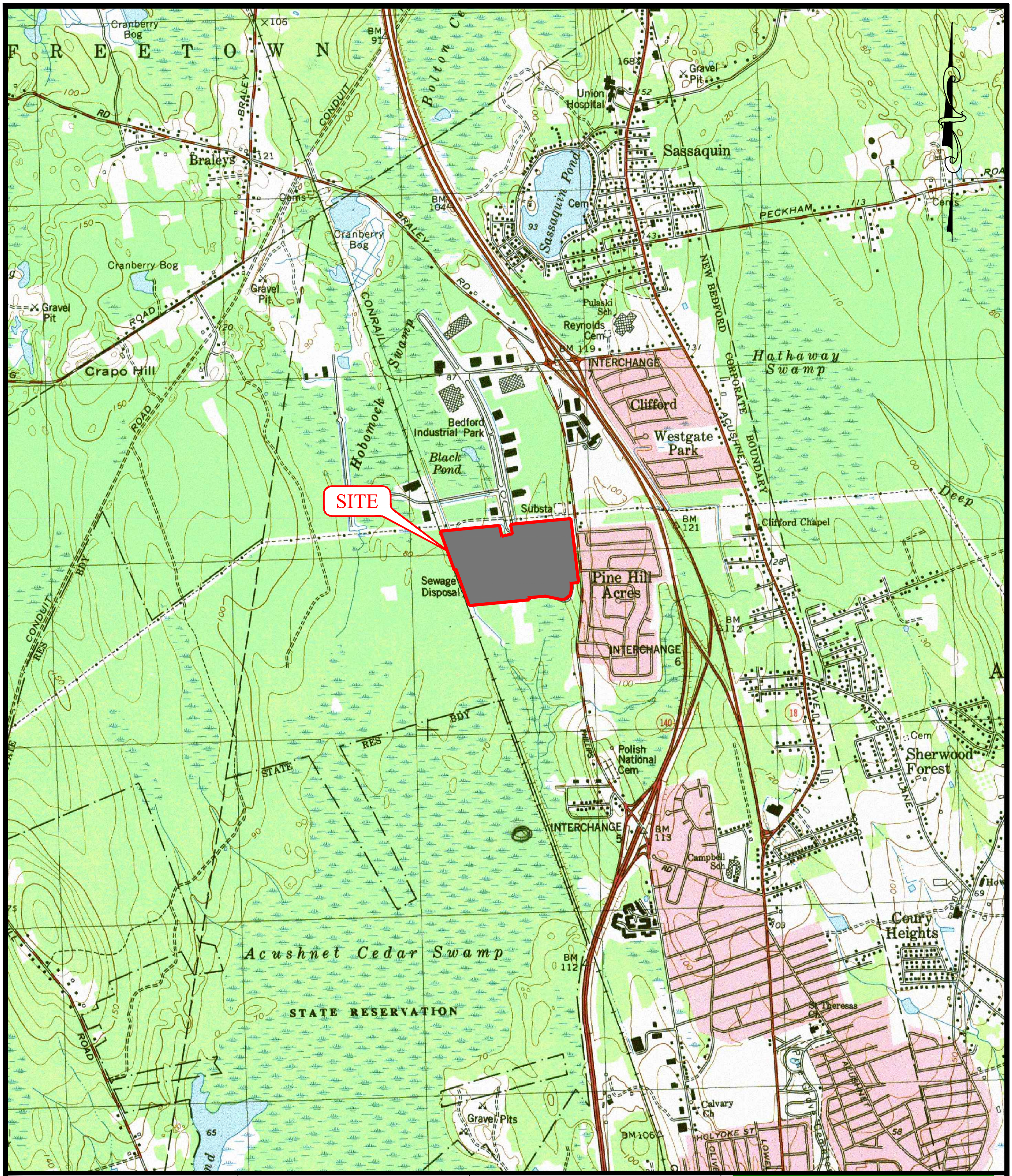
Signed under the pain and penalties of perjury on February 13, 2023.

Laura A. Bugay

Laura A. Bugay, P.E. – Executive Vice President

INSERT 1

USGS TOPOGRAPHICAL LOCUS MAP



NOTE: USGS TOPOGRAPHIC MAP WAS PROVIDED BY THE OFFICE OF GEOGRAPHIC AND ENVIRONMENTAL INFORMATION (MassGIS), COMMONWEALTH OF MASSACHUSETTS EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS CURRENT TO MARCH 2017.

REVISIONS	
NO./ DATE	COMMENT

DRAWING TITLE:

SITE LOCUS MAP

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER:	DATE:
L. BUGAY	1/2/2023

PREPARED FOR:

SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

LOCUS:

NEW BEDFORD INDUSTRIAL PARK
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

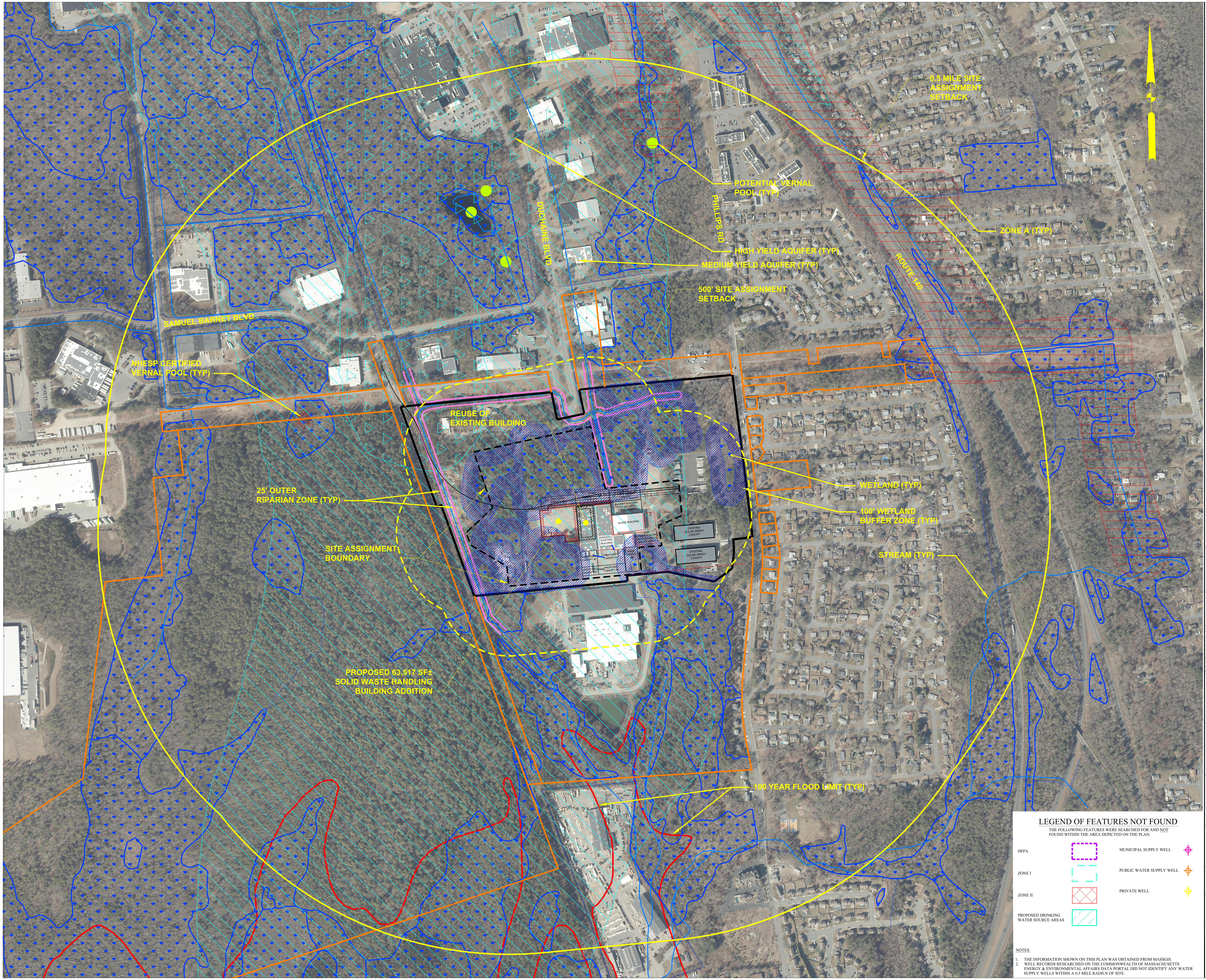
SCALE: 1" = 2,500'

SHEET: INSERT 1

S:\Solid Waste Department\Clients\Parallel Products\Site Suitability - MassDEP\CAD\PRLL-2022-0001 11-15-2022.dwg, Insert01-Locus, 2/6/2023 12:42:49 PM, DWG To PDF.pc3

INSERT 2

WATER RESOURCES PLAN



LEGEND

- DEP WETLANDS
- 100' WETLANDS BUFFER ZONE
- HIGH YIELD AQUIFER
- MEDIUM YIELD AQUIFER
- ZONE A
- PROPOSED SOLID WASTE BUILDING ADDITION
- REUSE OF EXISTING BUILDING FOR MSW PROCESSING
- SITE ASSSIGNMENT LIMIT
- SITE PROPERTY LINES
- ABUTTER PROPERTY LINE
- FEMA 100 YEAR FLOOD LIMIT
- 25' OUTER RIPARIAN ZONE TO RIVERFRONT AREA
- 0.5 MILE FROM SITE ASSIGNMENT LIMIT
- 500' FROM SITE ASSIGNMENT LIMIT
- NHESP CERTIFIED VERNAL POOL
- POTENTIAL VERNAL POOL

LEGEND OF FEATURES NOT FOUND

THE FOLLOWING FEATURES WERE SEARCHED FOR AND NOT FOUND WITHIN THE AREA DEPICTED ON THE PLAN:

- IWPA
- ZONE I
- ZONE II
- PROPOSED DRINKING WATER SOURCE AREAS
- MUNICIPAL SUPPLY WELL
- PUBLIC WATER SUPPLY WELL
- PRIVATE WELL

NOTES:

1. THE INFORMATION SHOWN ON THIS PLAN WAS OBTAINED FROM MASSGIS.
2. WELL RECORDS RESEARCHED ON THE COMMONWEALTH OF MASSACHUSETTS ENERGY & ENVIRONMENTAL AFFAIRS DATA PORTAL DID NOT IDENTIFY ANY WATER SUPPLY WELLS WITHIN A 0.5 MILE RADIUS OF SITE.

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

NEW BEDFORD
INDUSTRIAL PARK
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:

SOUTH COAST
RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:

WATER RESOURCES PLAN

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER:	DATE:
L. BUGAY	1/2/2023

COMMONWEALTH OF MASSACHUSETTS
LAURA A.
BUGAY
CIVIL
No. 47599
REGISTERED
PROFESSIONAL ENGINEER

SCALE:

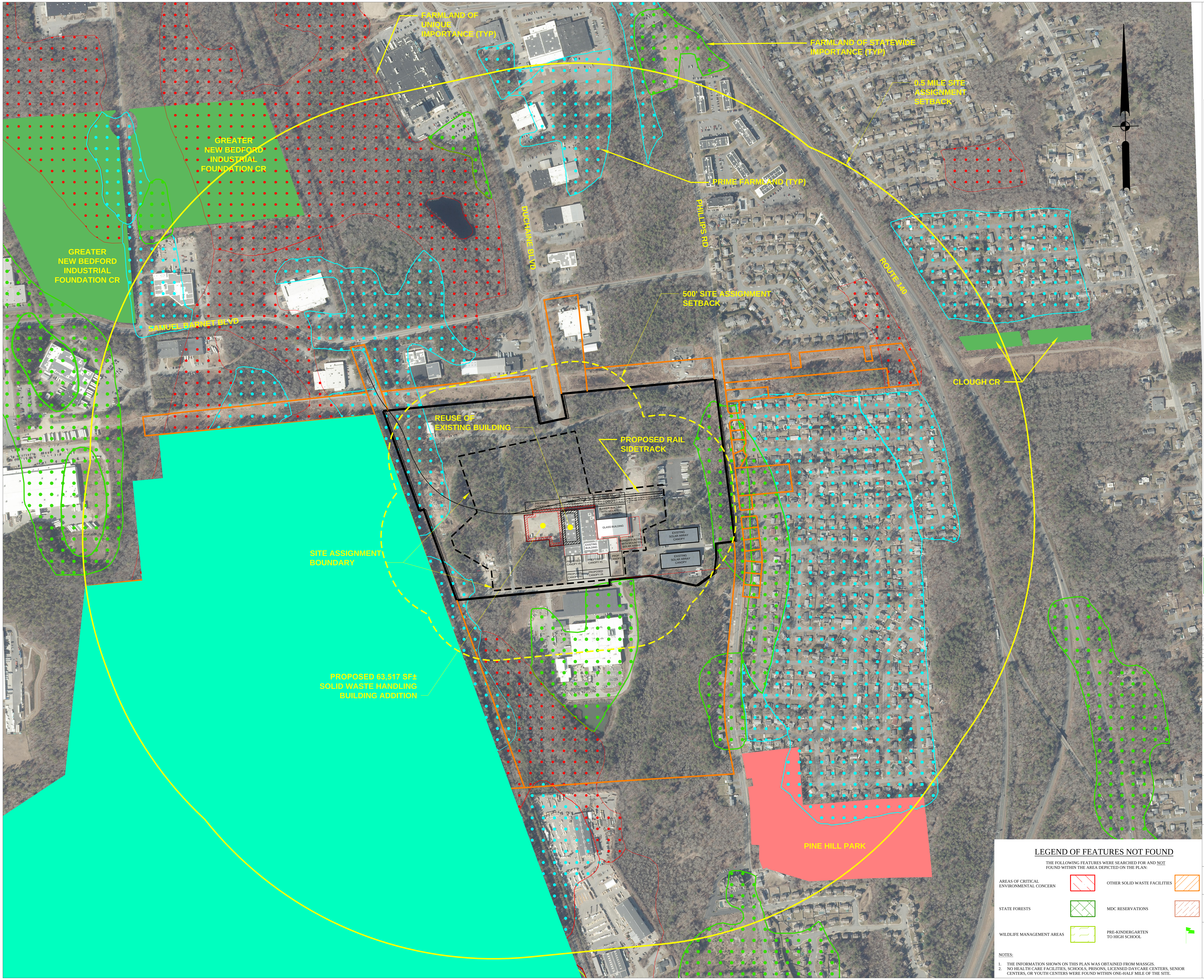
1" = 200'

SHEET:

INSERT 2

INSERT 3

LAND USE PLAN



LEGEND

PRIME FARMLAND	
FARMLAND OF UNIQUE IMPORTANCE	
FARMLAND OF STATEWIDE IMPORTANCE	
CONSERVATION AREA	
RECREATION AREA	
CONSERVATION AND RECREATION AREA	
NHESP PRIORITY HABITATS OF RARE SPECIES	
NHESP ESTIMATED HABITATS OF RARE WILDLIFE	
SITE ASSIGNMENT LIMITS	
SITE PROPERTY LINES	
ABUTTER PROPERTY LINE	
0.5 MILE FROM SITE ASSIGNMENT LIMIT	
500' FROM SITE ASSIGNMENT LIMIT	
PROPOSED SOLID WASTE BUILDING ADDITION	
REUSE OF EXISTING BUILDING FOR WASTE HANDLING	

LEGEND OF FEATURES NOT FOUND

THE FOLLOWING FEATURES WERE SEARCHED FOR AND NOT FOUND WITHIN THE AREA DEPICTED ON THE PLAN:

AREAS OF CRITICAL ENVIRONMENTAL CONCERN	OTHER SOLID WASTE FACILITIES
STATE FORESTS	MDC RESERVATIONS
WILDLIFE MANAGEMENT AREAS	PRE-KINDERGARTEN TO HIGH SCHOOL

NOTES:

1. THE INFORMATION SHOWN ON THIS PLAN WAS OBTAINED FROM MASSGIS.
2. NO HEALTH CARE FACILITIES, SCHOOLS, PRISONS, LICENSED DAYCARE CENTERS, SENIOR CENTERS, OR YOUTH CENTERS WERE FOUND WITHIN ONE-HALF MILE OF THE SITE.

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Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

NEW BEDFORD INDUSTRIAL PARK
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:

SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

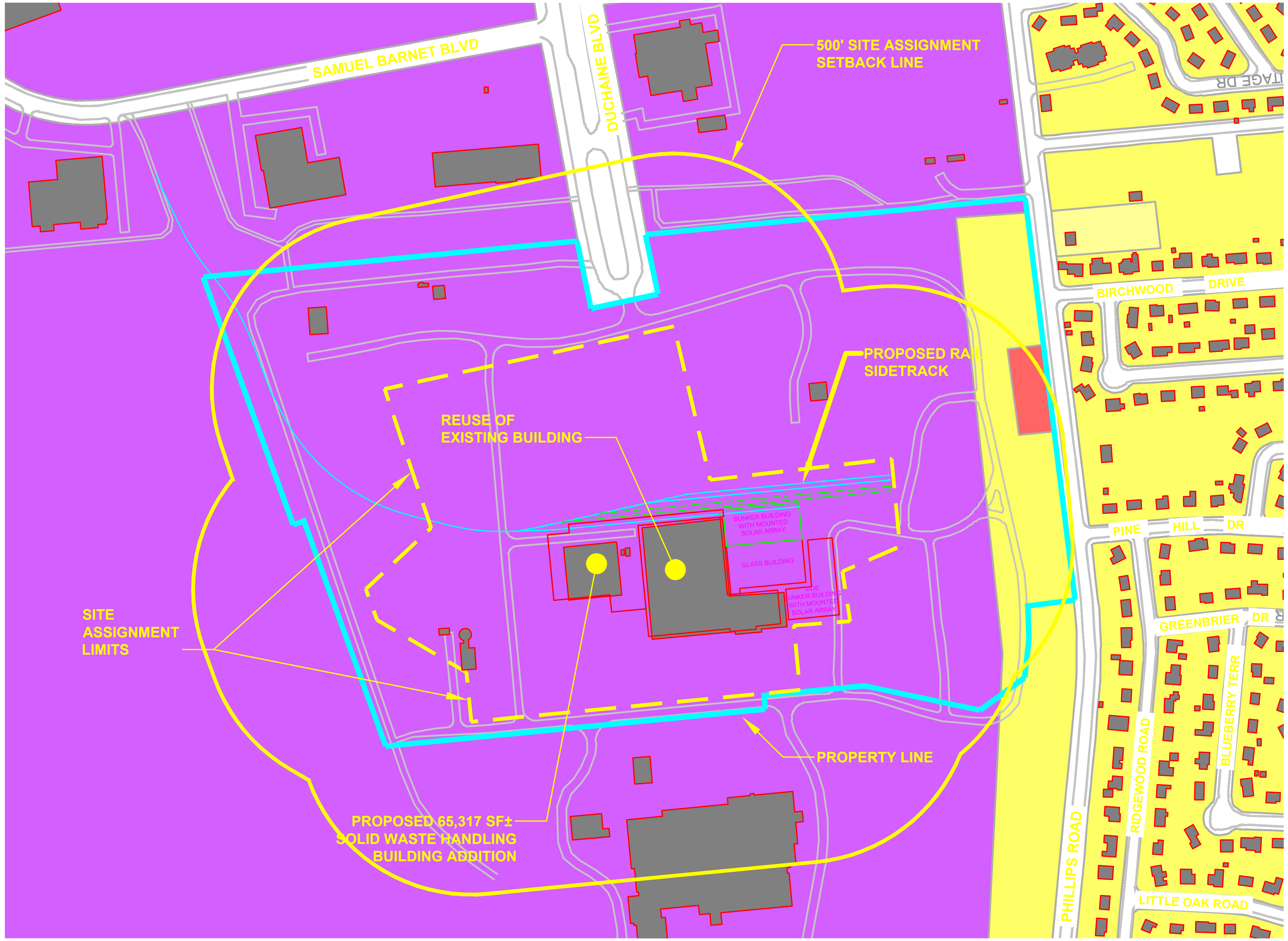
DRAWING TITLE:

LAND USE PLAN

CAD TECH: R. VAUTRINOT	CHECKED BY: G. WIRSEN
ENGINEER: L. BUGAY	DATE: 1/2/2023
COMMONWEALTH OF MASSACHUSETTS LAURA A. BUGAY CIVIL No. 47599 REGISTERED PROFESSIONAL ENGINEER	SCALE: 1" = 200'
	SHEET: INSERT 3

INSERT 4

SITE ZONING MAP



New Bedford Zoning

Zoning 2015

- Residential A
- Residential AA
- Mixed Use Business
- Industrial C

Map Produced by:
City of New Bedford
Management Information Systems
June 2015

NOTE:
THE INFORMATION SHOWN ON THIS PLAN WAS OBTAINED FROM THE CITY OF NEW BEDFORD AND MASSGIS.

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REVISIONS

NO.	DATE	COMMENT

PURPOSE:
SITE SUITABILITY

LOCUS:
NEW BEDFORD INDUSTRIAL PARK
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:
SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:
SITE ZONING

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER: L. BUGAY	DATE: 1/2/2023
	SCALE: NOT TO SCALE
	SHEET: INSERT 4

S:\Solid Waste Department\Clients\Parallel Products\Site Suitability - MassDEP\CAD\PRLL-2022-0001 11-15-2022.dwg, Insert05-Site Zoning 11x17, 2/6/2023 12:51:41 PM, DWG To PDF.pc3

INSERT 5

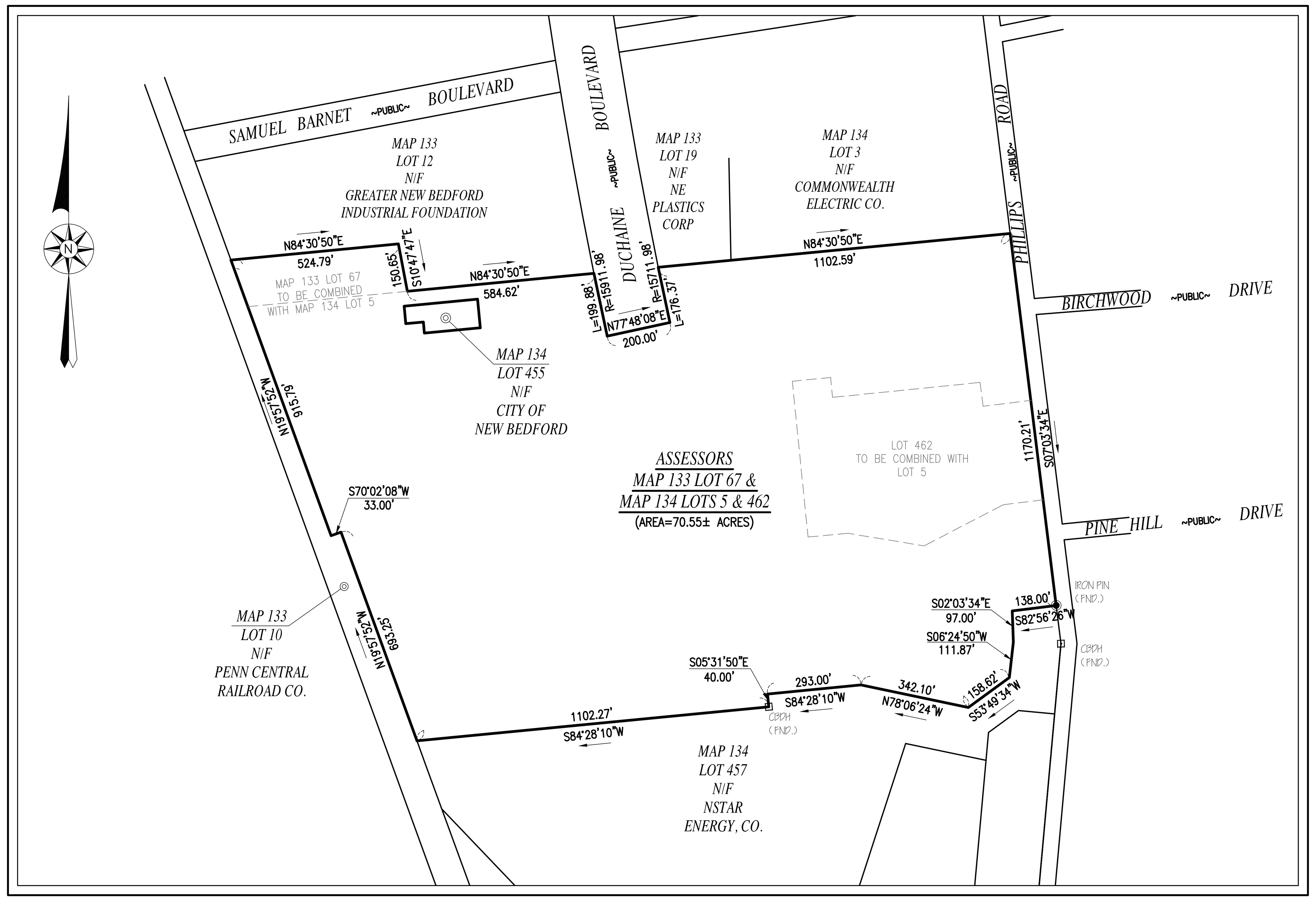
SITE PLANS – EXISTING AND PROPOSED CONDITIONS

SITE SUITABILITY APPLICATION

100 DUCHAINE BOULEVARD

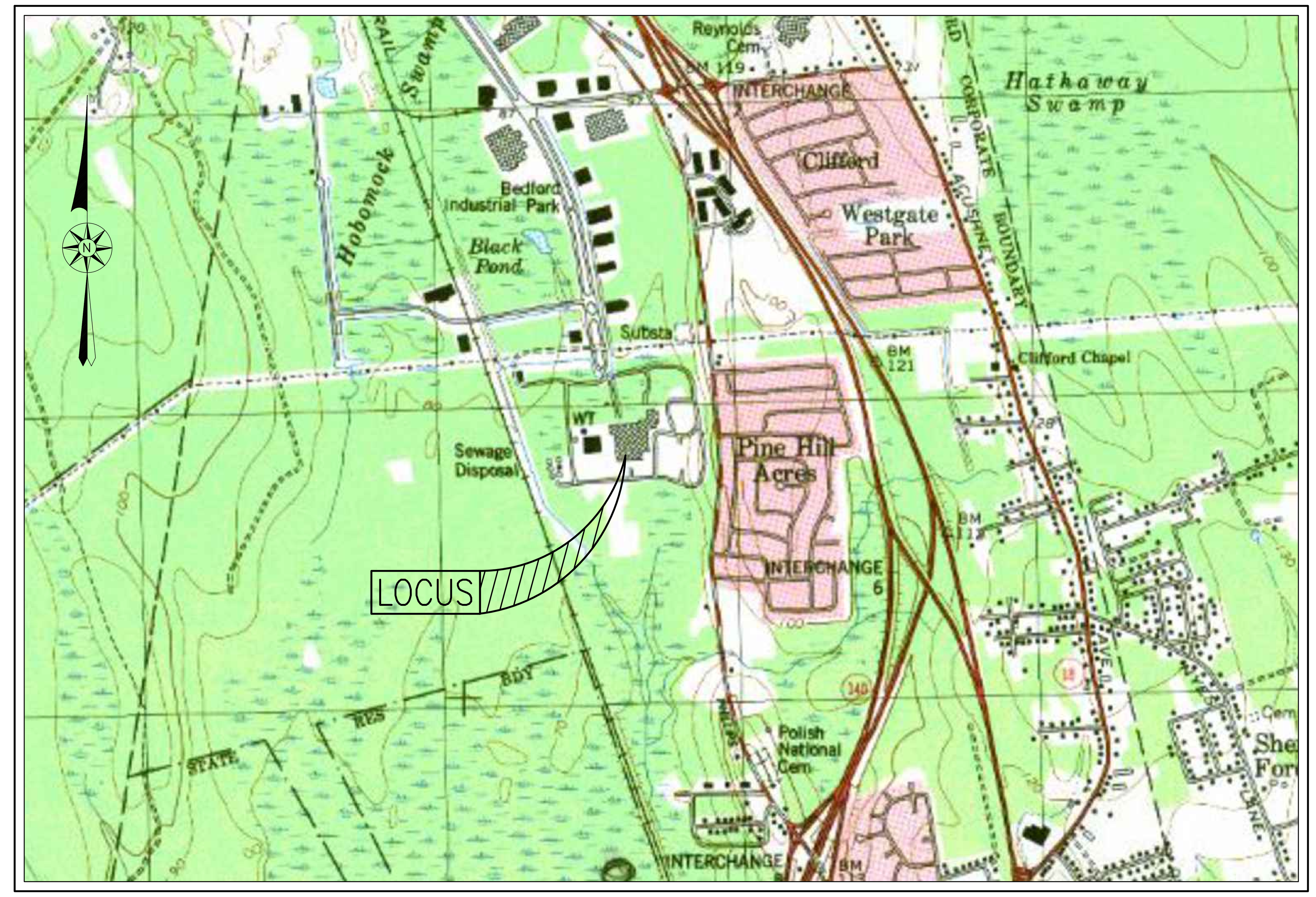
ASSESSORS MAP 133 LOT 67 AND MAP 134 LOTS 5 & 462

NEW BEDFORD, MASSACHUSETTS



— OVERALL SITE MAP —

SCALE: 1"=300'



— AREA MAP —

SCALE: 1"=1,000'±

— INDEX —

RECORD OWNER:

REGISTERED:

ASSESSORS MAP 134 LOT 5
SMRE 100, LLC
255 STATE STREET, 7TH FLOOR
BOSTON, MA 02109
L.C. CERTIFICATE No. 24201
LOT 8 ON L.C. PLAN 36318D

ASSESSORS MAP 134 LOT 462
SMRE SUBLOT 20 LLC
401 INDUSTRY ROAD – SUITE 100
LOUSIVILLE, KY 40208
L.C. CERTIFICATE No. 24417
LOT 7 ON L.C. PLAN 36318D

UNREGISTERED:

ASSESSORS MAP 133 LOT 67
SMRE 100, LLC
50 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745
DEED BOOK 12378 PAGE 314
PARCEL B ON PLAN BOOK 177 PAGE 55

— ZONING DATA —

DISTRICT: IC (INDUSTRIAL C)

DESCRIPTION	REQUIRED	EXISTING	PROVIDED
LOT AREA	0 S.F.	61.96± AC	70.55± AC
LOT FRONTAGE	0 FT	576.17 FT	576.17 FT
FRONT SETBACK	25 FT	642.3± FT	582.0± FT
SIDE SETBACK	25 FT	758.9± FT	674.9± FT
REAR SETBACK	25 FT	192.3± FT	86.8± FT
BUILDING HEIGHT (MAXIMUM)	100 FT	<100 FT	<100 FT
BUILDING COVERAGE (MAXIMUM)	50 %	4.0± %	6.8± %
LOT COVERAGE (MAXIMUM)	80 %	22.9± %	25.8± %

— PARKING & LOADING REQUIREMENTS —

PRINCIPAL USE: RECYCLING FACILITY

(FOR PARKING REGULATION PURPOSES: BUSINESS ENGAGED IN WAREHOUSING & DISTRIBUTION)

REQUIREMENT	REQURIED	PROVIDED
1 SPACE PER 1,500 S.F. OF G.F.A. UP TO 15,000 S.F. THEREAFTER, ONE ADDITIONAL SPACE FOR EACH 5,000 S.F. OR PORTION THEREOF IN EXCESS OF 15,000 S.F., PLUS ONE SPACE FOR EACH VEHICLE UTILIZED IN THE BUSINESS.	47 STANDARD SPACES PLUS FLEET VEHICLES	189 TOTAL SPACES
WHEN 26–50 TOTAL PARKING SPACES ARE REQUIRED, 2 MUST BE ACCESSIBLE SPACES. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, SHALL BE VAN ACCESSIBLE	2 TOTAL SPACES (2 VAN)	2 TOTAL SPACES (2 VAN)
TWO (2) LOADING SPACES FOR EACH BUILDING CONTAINING 10,000 S.F. OF GROSS FLOOR AREA. THEREAFTER, ONE (1) ADDITIONAL LOADING SPACE SHALL BE REQUIRED FOR EACH FIFTEEN (15) FEET OF DOCK, PLATFORM, OR OPENING IN THE BUILDING WHERE THE LOADING OR UNLOADING OF COMMODITIES IS INTENDED TO OCCUR.	18 LOADING SPACES	20 LOADING SPACES

REVISIONS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

FARLAND CORP.
www.FarlandCorp.com
21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479
- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

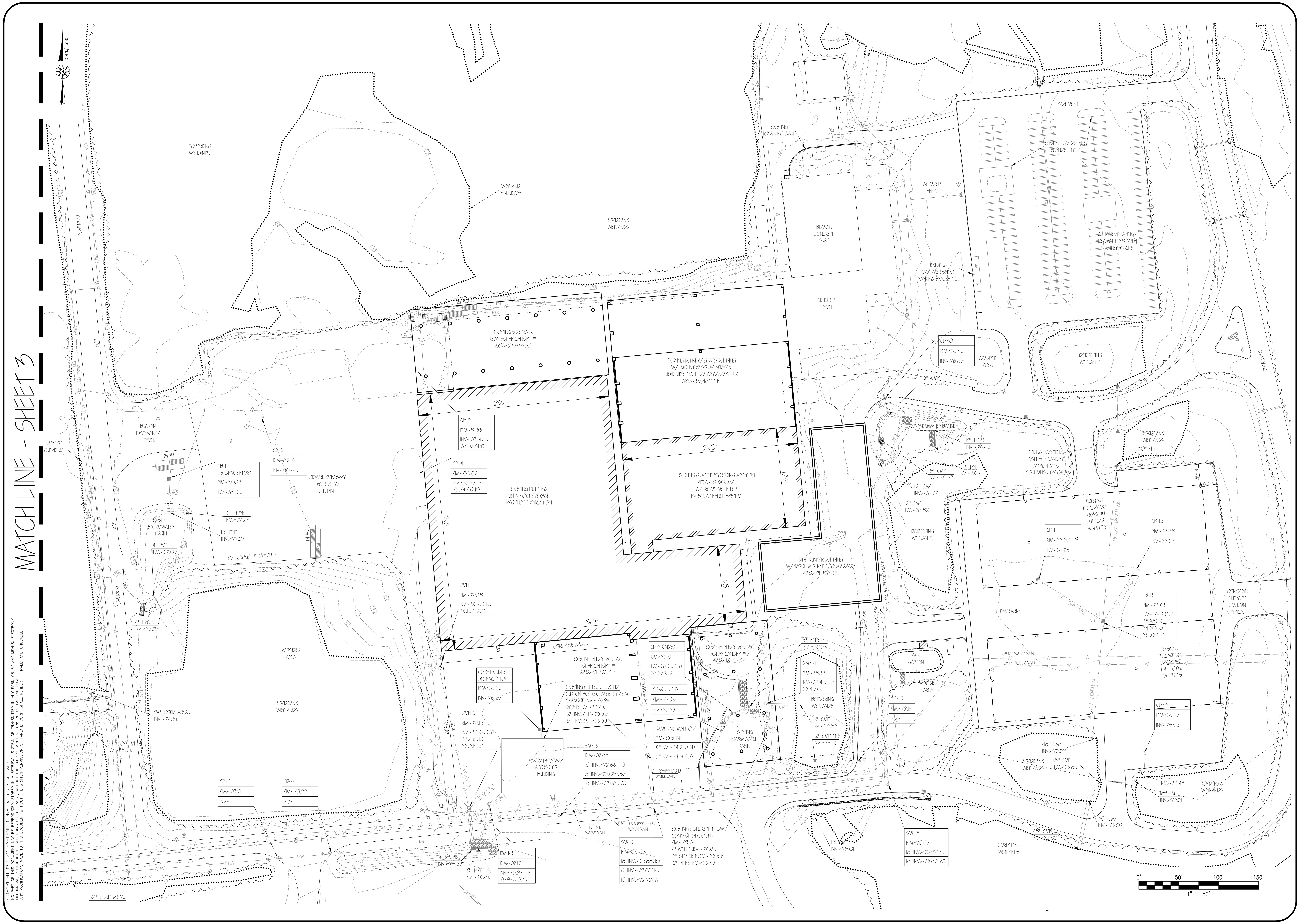
DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION
— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR:
SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: AS NOTED
JOB NO. 15–500.2
LATEST REVISION:

COVER



REVISIONS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
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No. 47544
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DARTMOUTH, MA 02747
P.508.717.3479

- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION

100 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

EXISTING CONDITIONS

REVISIONS

CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL

FARLAND CORP.
www.FarlandCorp.com
21 VENTURA DRIVE
DARTMOUTH, MA 02747
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- ENGINEERING
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DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION

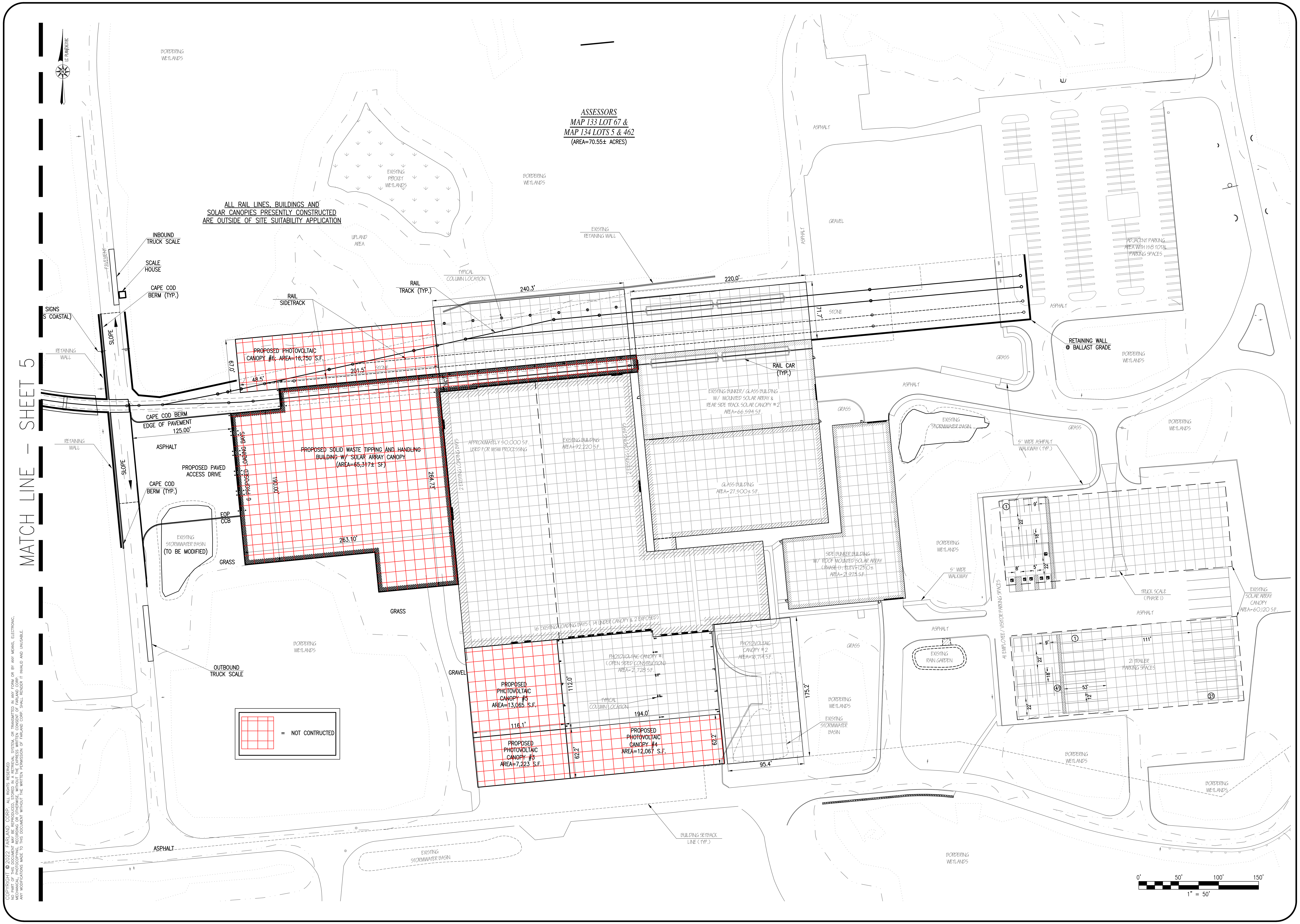
100 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

EXISTING CONDITIONS CONT.
SHEET 3 OF 10



REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL

FARLAND CORP.

www.FarlandCorp.com

21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479

- ENGINEERING
- SITEWORK
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- DEVELOPMENT

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION
— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022

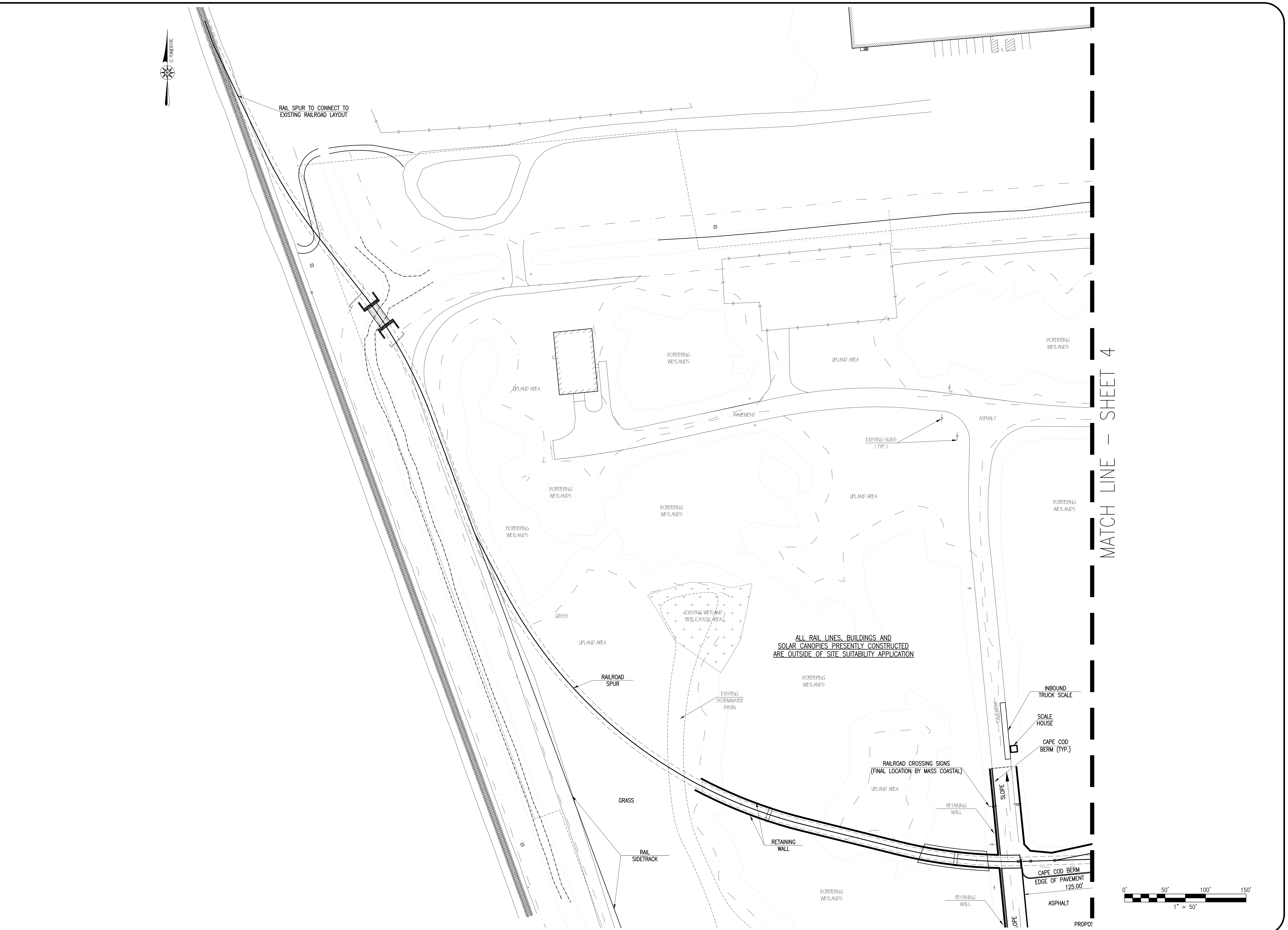
SCALE: 1"=50'

JOB NO. 15-500.2

LATEST REVISION:

LAYOUT

SHEET 4 OF 10



REVISIONS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
CIVIL
No. 47544
REGISTERED PROFESSIONAL ENGINEER

FARLAND CORP.
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DARTMOUTH, MA 02747
P.508.717.3479

- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

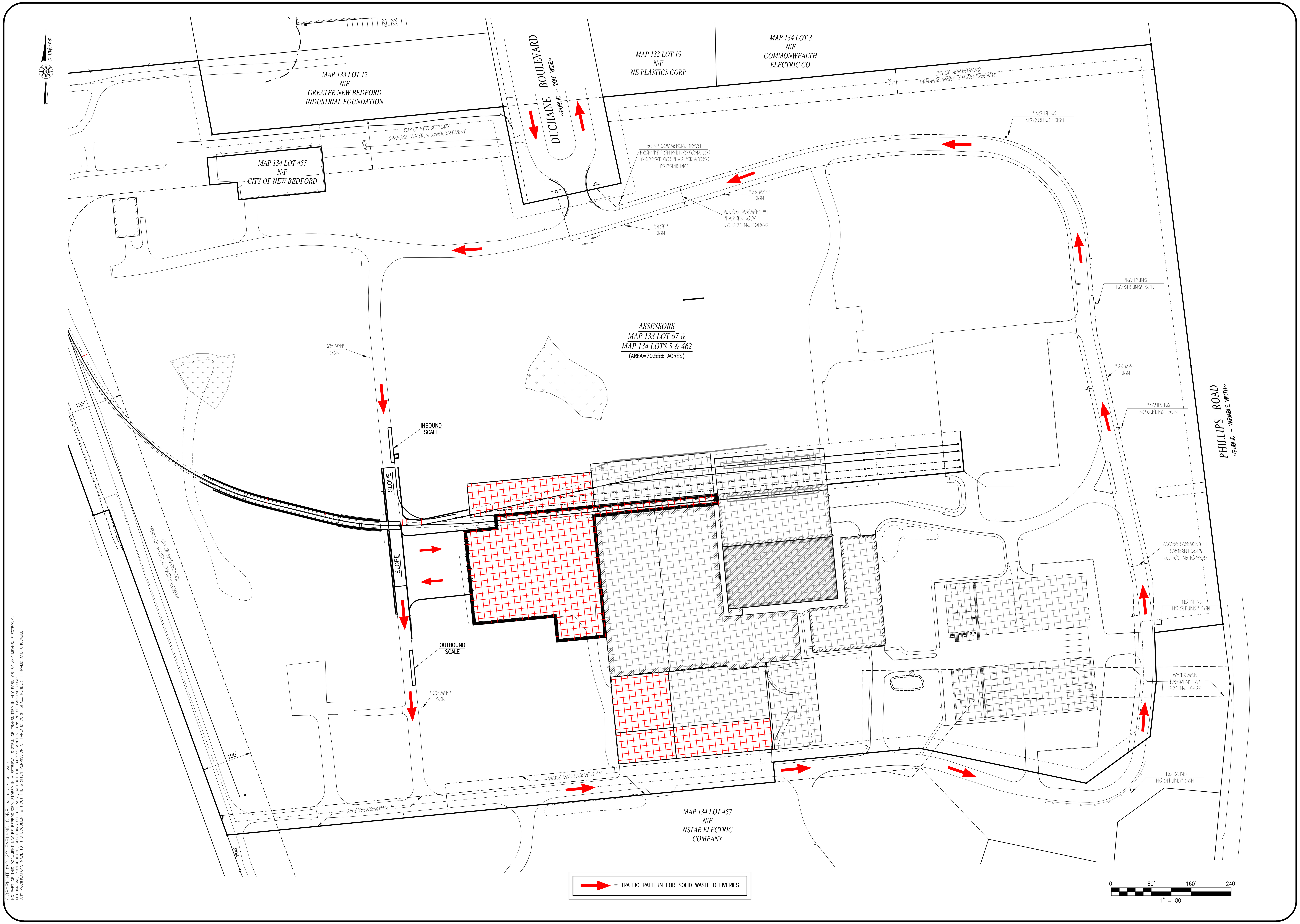
DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION
100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

LAYOUT CONT.
SHEET 5 OF 10



REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL

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21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479
- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION

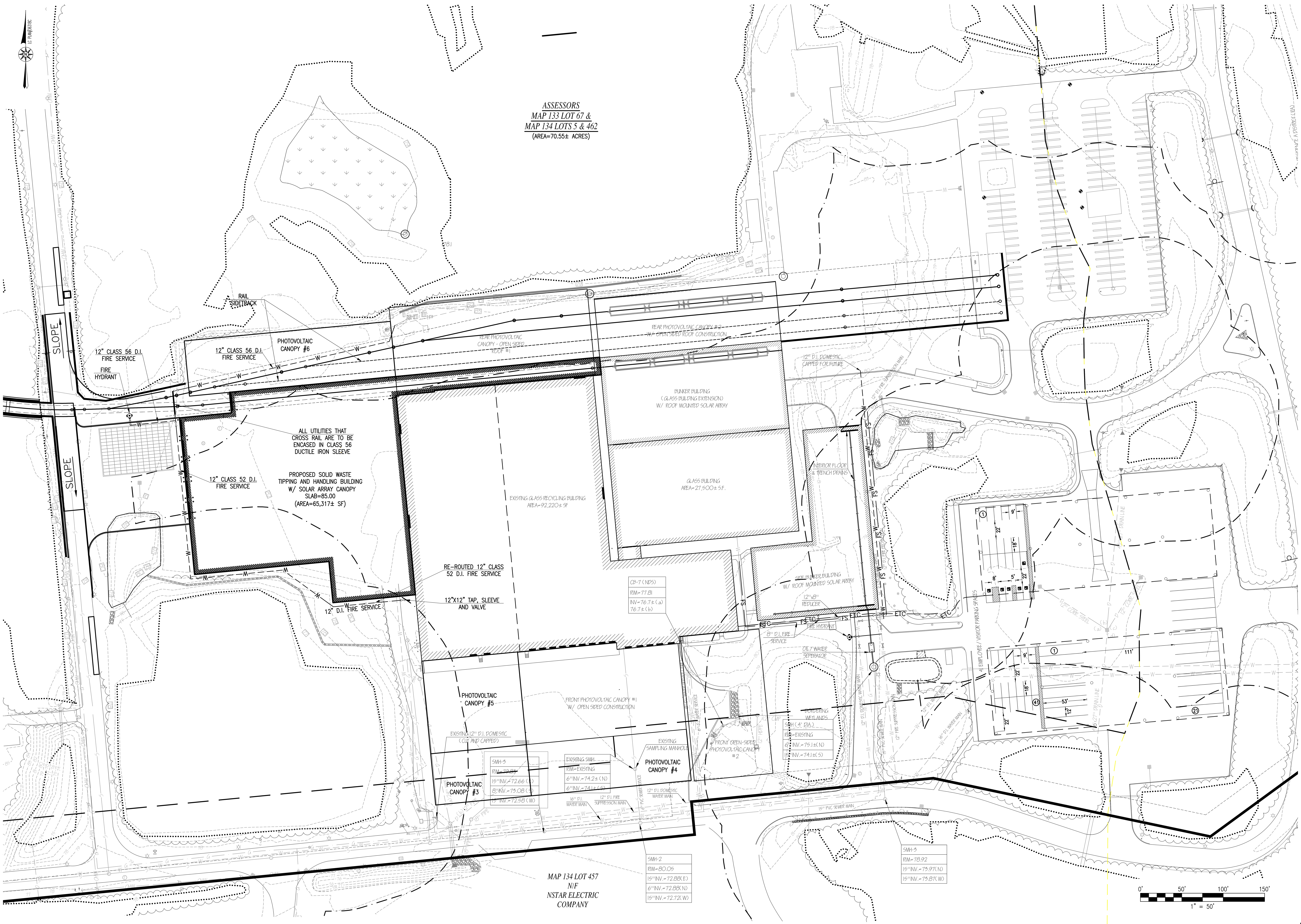
100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=80'
JOB NO. 15-500.2
LATEST REVISION:

TRAFFIC CIRCULATION

SHEET 6 OF 10



REVISIONS

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- DEVELOPMENT

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION

100 DUCHAINE BOULEVARD

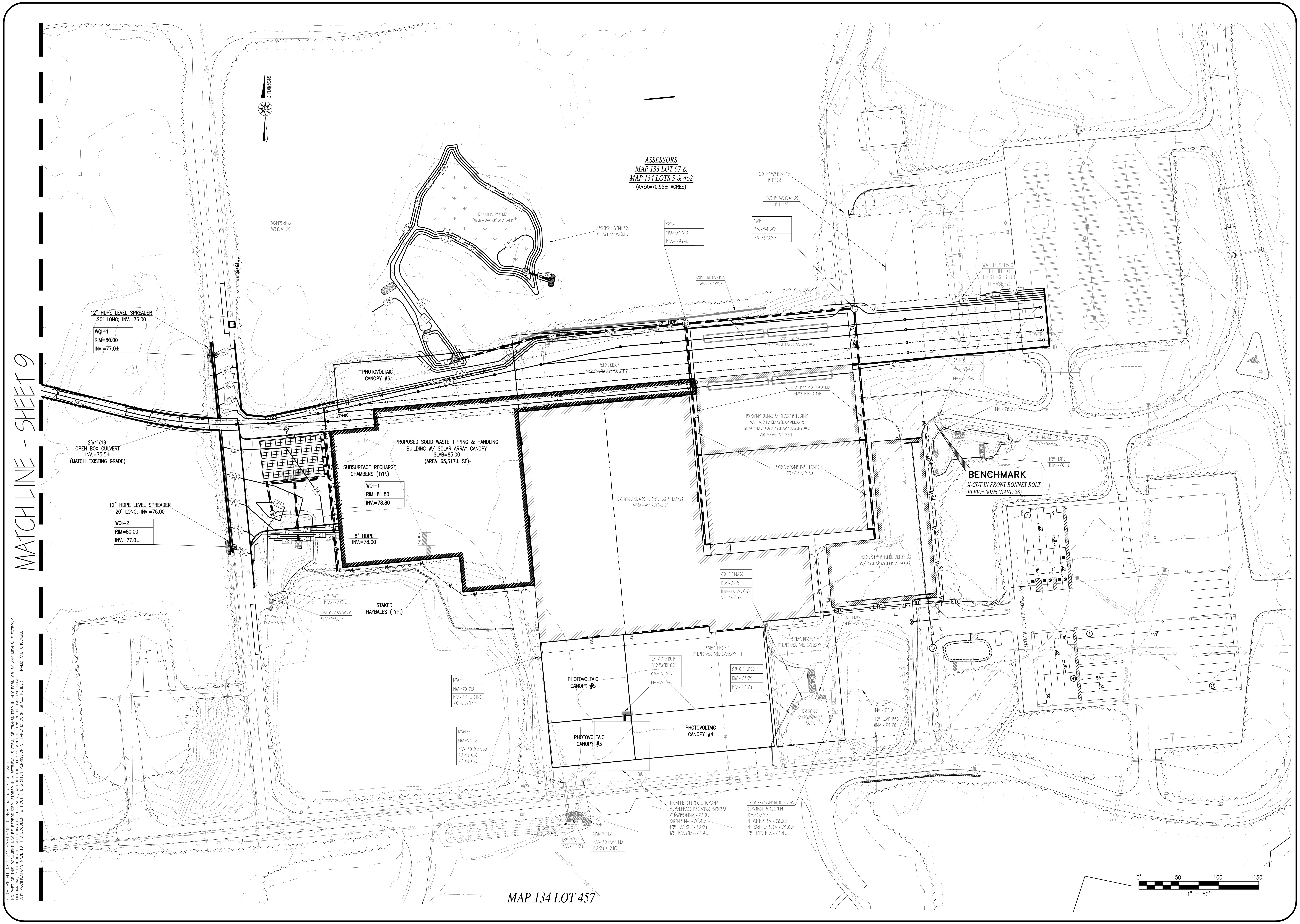
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

UTILITIES

SHEET 7 OF 10



REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL

FARLAND CORP.

www.FarlandCorp.com

21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479

- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

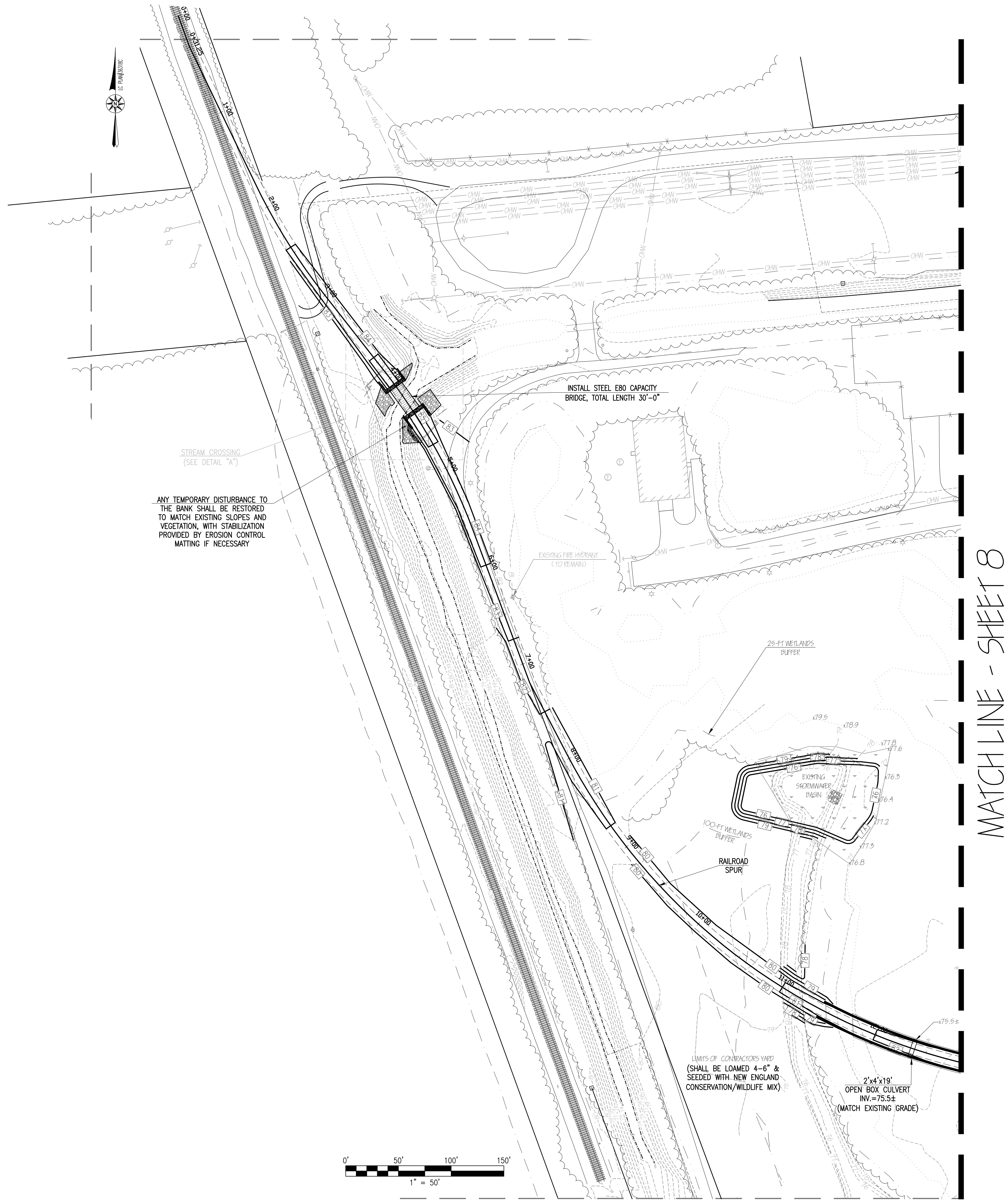
SITE SUITABILITY APPLICATION

100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

GRADING & DRAINAGE



REVISIONS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

FARLAND CORP.

www.FarlandCorp.com
21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479

- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABILITY APPLICATION

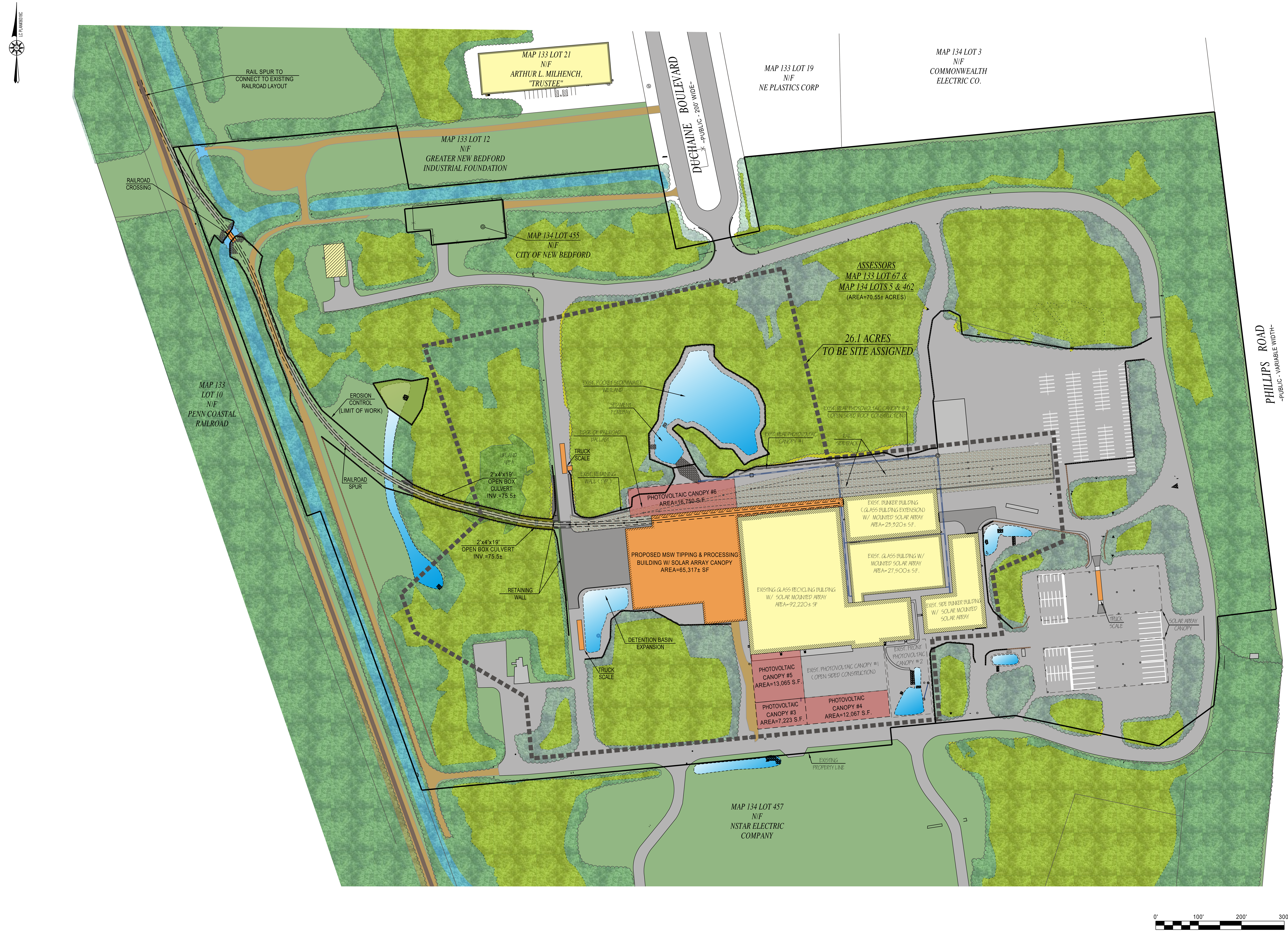
100 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

DECEMBER 23, 2022
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

GRADING & DRAINAGE CONT.
SHEET 9 OF 10



REVISIONS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL

FARLAND CORP.

www.FarlandCorp.com

401 COUNTY STREET
NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
- TAUNTON
- MARLBOROUGH
- WARWICK, RI

DRAWN BY: JT
DESIGNED BY: CAF
CHECKED BY: CAF

SITE SUITABLITY APPLICATION

— 100 DUCHAINE BOULEVARD —

ASSESSORS MAP 133 & 134 LOTS 67 AND 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DECEMBER 23, 2022

SCALE: 1"=100'

JOB NO. 15-500.2

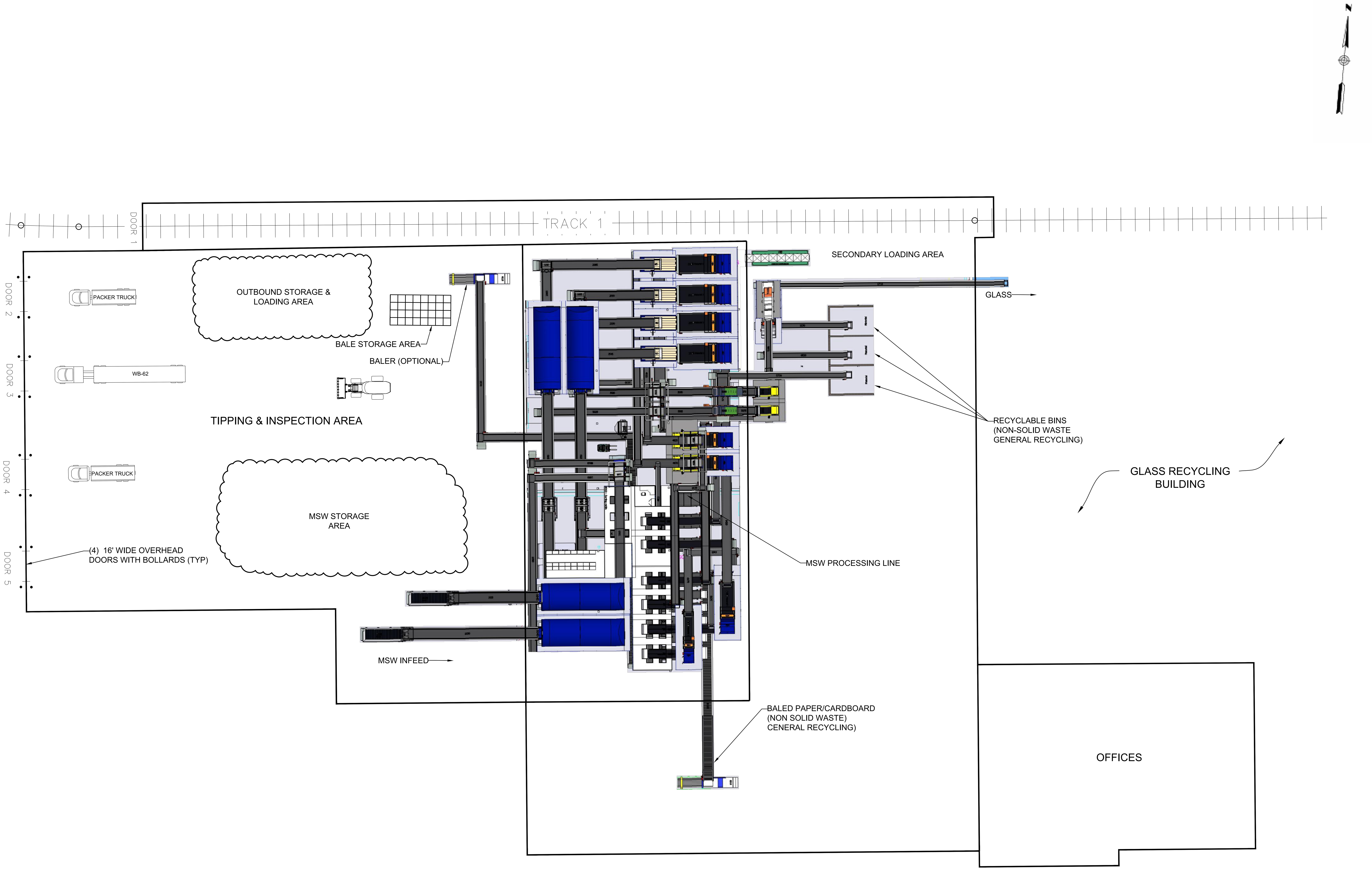
LATEST REVISION:

PRESENTATION

SHEET 10 OF 10

INSERT 6

INTERIOR LAYOUT PLAN



Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

Dimensions are as indicated.

Use of this plan constitutes acceptance of terms and conditions set forth in accompanying project documentation.

It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

NEW BEDFORD INDUSTRIAL PARK
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:

SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:

INTERIOR LAYOUT PLAN

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER:	DATE:
L. BUGAY	1/2/2023

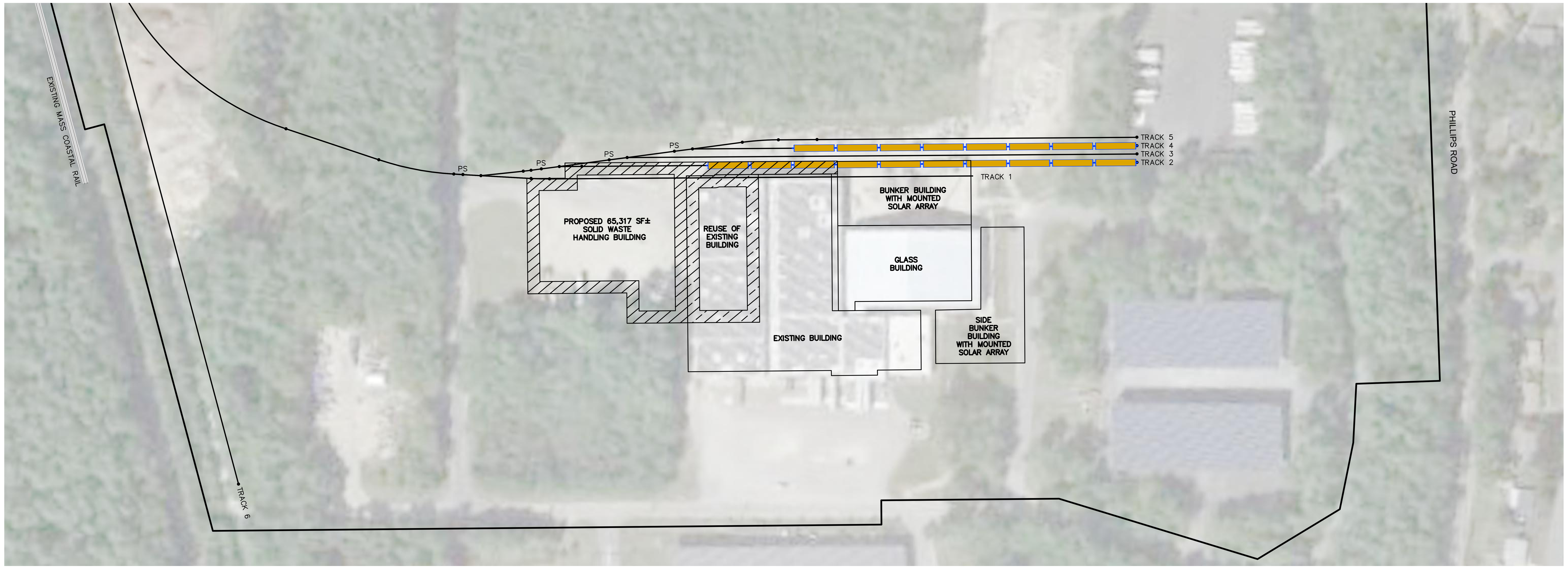
COMMONWEALTH OF MASSACHUSETTS
LAURA A. BUGAY
CIVIL
No. 47599
REGISTERED PROFESSIONAL ENGINEER

SCALE: *NOT TO SCALE*

SHEET: INSERT 6

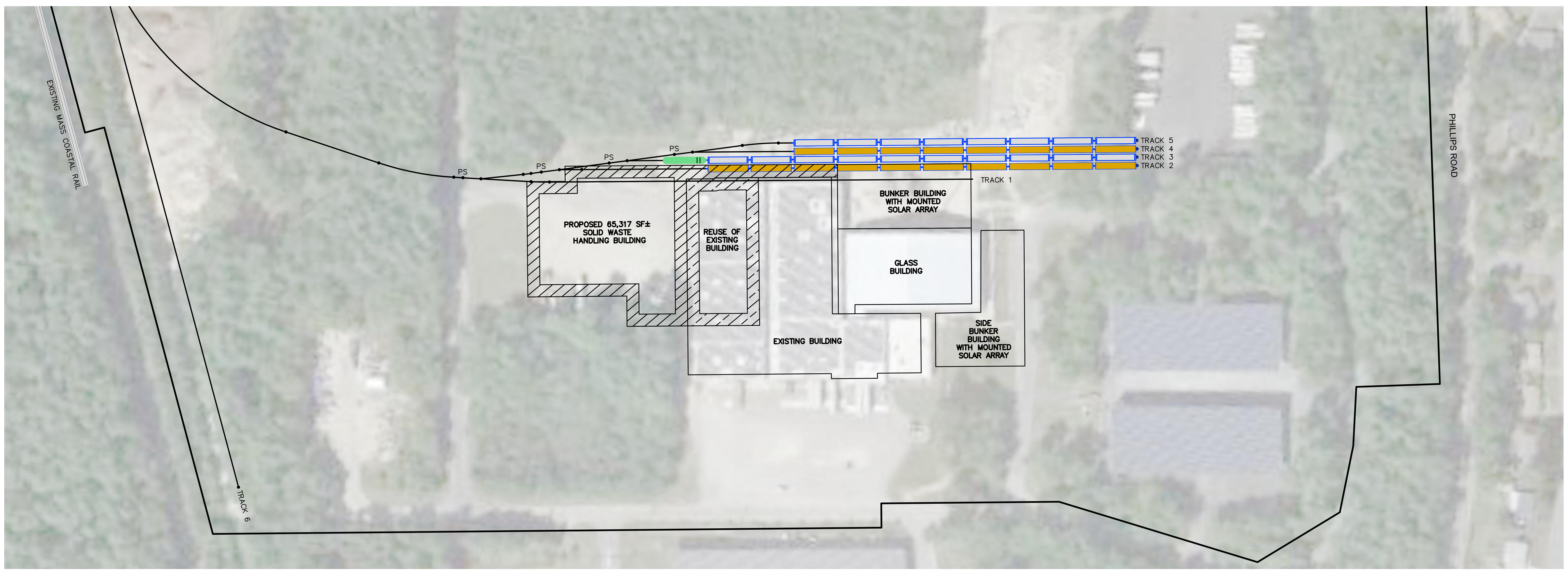
INSERT 7

RAILCAR MOVEMENT PLANS



INITIAL CONDITIONS

10 FILLED RAIL CARS ON TRACK 2
8 FILLED RAIL CARS ON TRACK 4



STEP 1

MASS COASTAL DELIVERS 10 EMPTY RAIL CARS TO TRACK 3 AND
8 EMPTY RAIL CARS TO TRACK 5

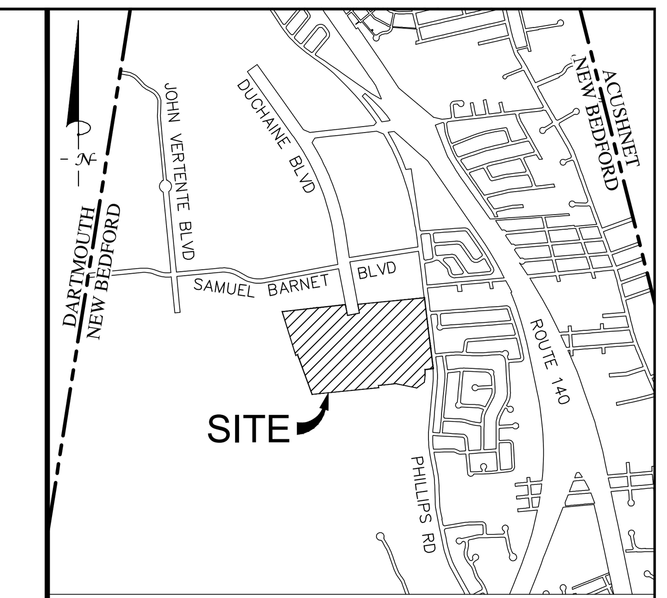
LEGEND

- EMPTY RAIL CAR
- FULL RAIL CAR
- LOCOMOTIVE
- RAIL CAR MOVER
- PS POINT OF SWITCH

NOTE:

SOLAR CANOPIES NOT SHOWN FOR CLARITY.

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



LOCUS MAP NOT TO SCALE

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Sagamore Beach, MA 02562
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

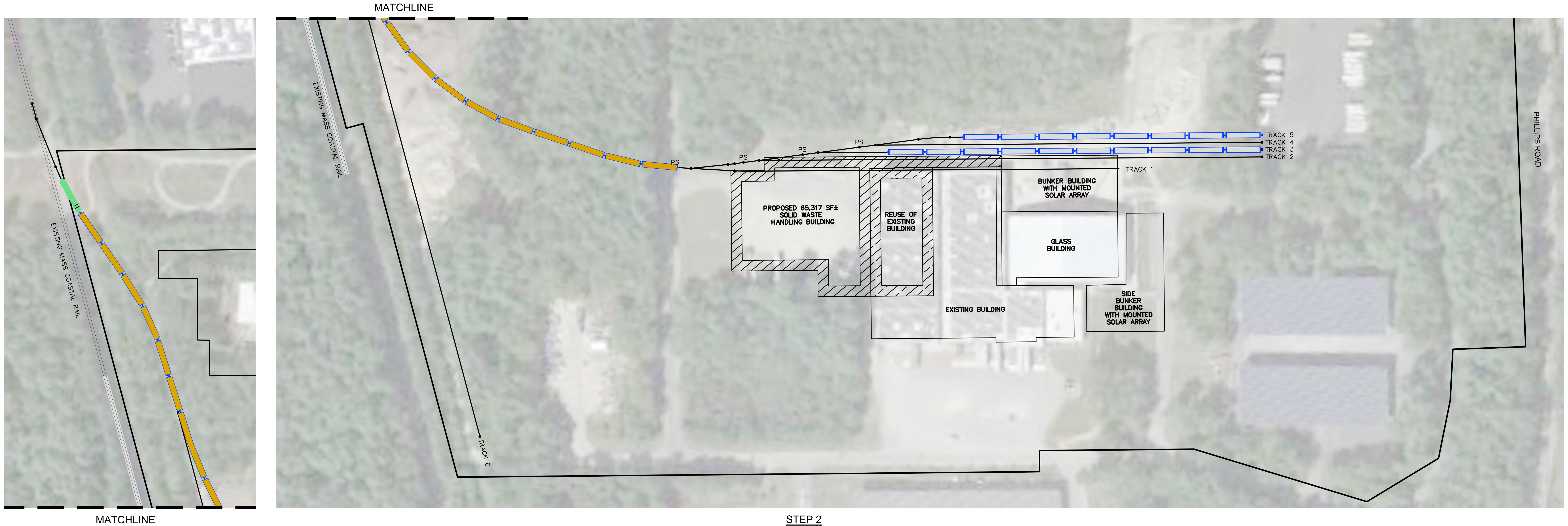
PREPARED FOR:

SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:

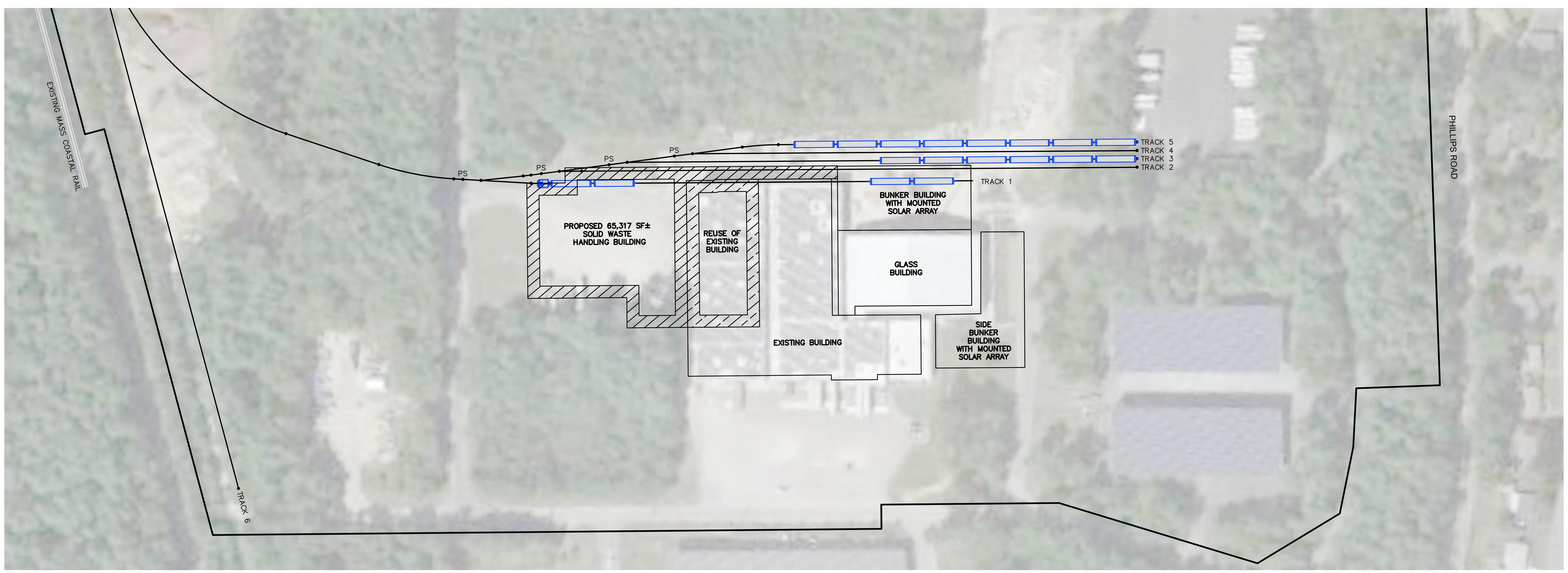
RAIL CAR MOVEMENTS

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER: L. BUGAY	DATE: 1/2/2023
	SCALE: 1"=100'
	SHEET: INSERT 7.1



STEP 2

MASS COASTAL LEAVES SITE WITH 18 FULL CARS
(10 FROM TRACK 2 AND 8 FROM TRACK 4)



STEP 3

PPNE MOVES 2 EMPTY RAIL CARS FROM TRACK 3 TO GLASS BUILDING
PPNE MOVES 2 EMPTY RAIL CARS FROM TRACK 3 TO SOLID WASTE HANDLING BUILDING

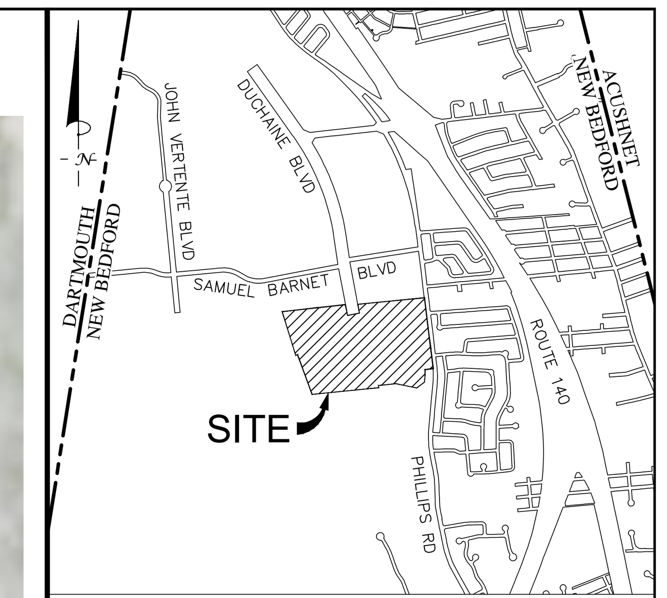
LEGEND

- EMPTY RAIL CAR
- FULL RAIL CAR
- LOCOMOTIVE
- RAIL CAR MOVER
- PS POINT OF SWITCH

NOTE:

SOLAR CANOPIES NOT SHOWN FOR CLARITY.

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



LOCUS MAP NOT TO SCALE

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Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

REVISIONS

NO.	DATE	COMMENT

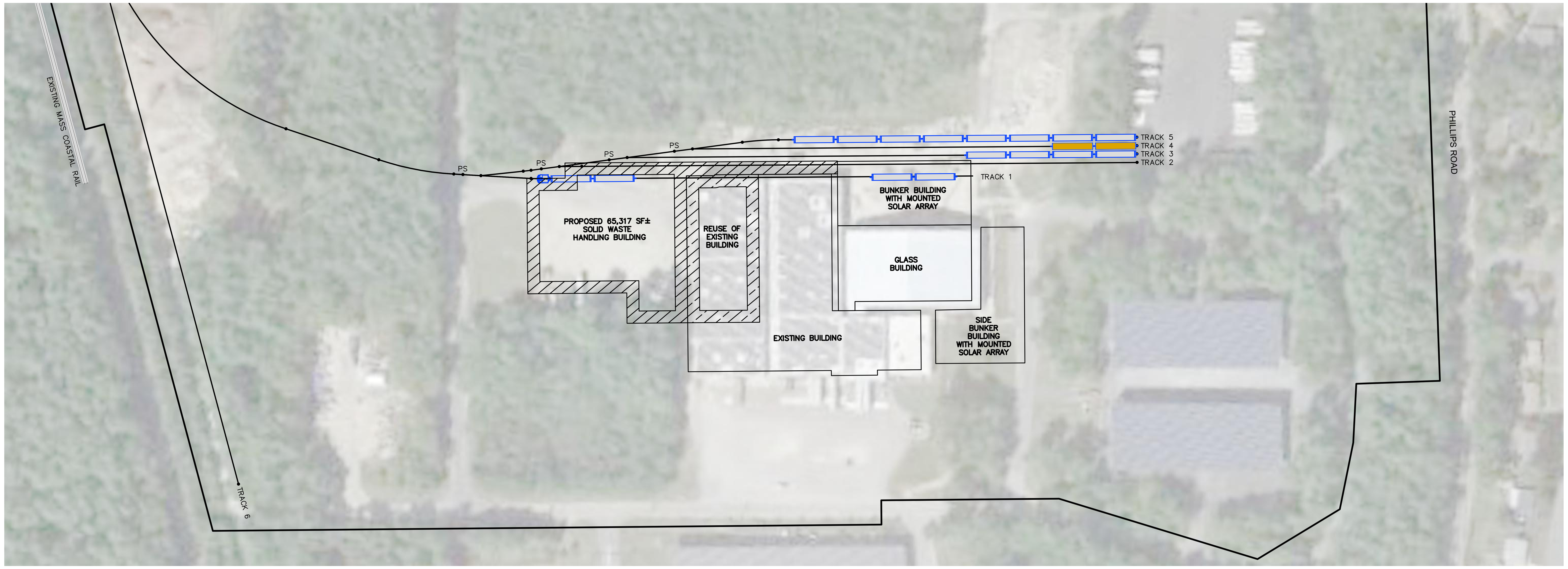
PURPOSE:
SITE SUITABILITY

LOCUS:
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:
SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

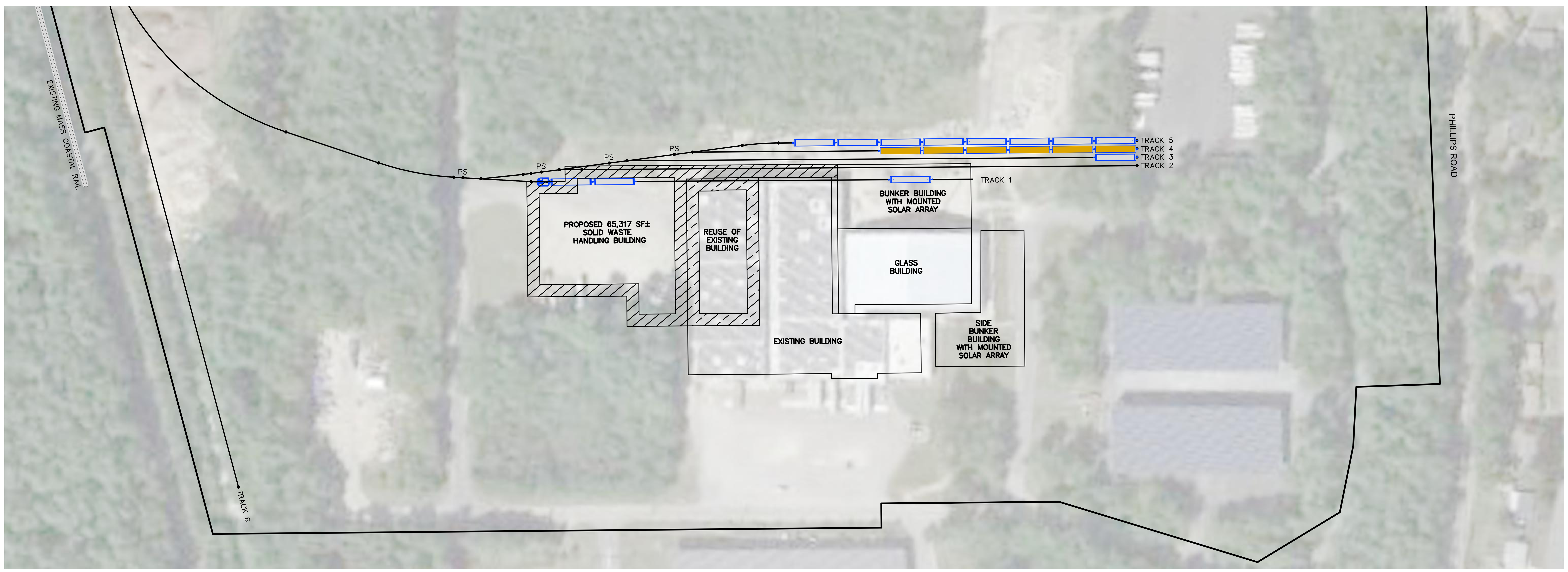
DRAWING TITLE:
RAIL CAR MOVEMENTS

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER:	DATE:
L. BUGAY	1/2/2023
	SCALE: 1"=100'
	SHEET: INSERT 7.2



STEP 4

PPNE MOVES 2 FULL CARS FROM MSW TIPPING BUILDING TO TRACK 4
PPNE MOVES 2 EMPTY CARS FROM TRACK 3 TO MSW TIPPING BUILDING



STEP 5

PPNE MOVES 2 FULL CARS FROM MSW TIPPING BUILDING AND 2 FULL CARS FROM GLASS BUILDING TO TRACK 4
PPNE MOVES 2 EMPTY CARS FROM TRACK 3 TO SOLID WASTE HANDLING BUILDING AND 1 EMPTY CAR FROM TRACK 3 TO GLASS HANDLING BUILDING

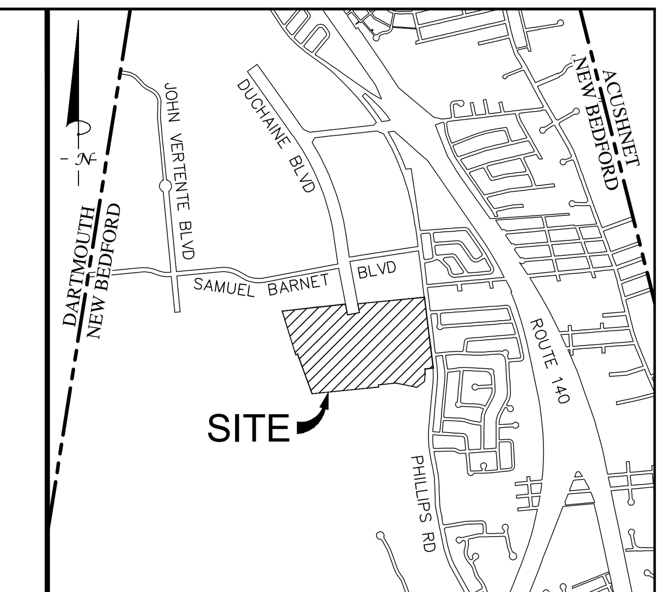
LEGEND

- EMPTY RAIL CAR
- FULL RAIL CAR
- LOCOMOTIVE
- RAIL CAR MOVER
- PS POINT OF SWITCH

NOTE:

SOLAR CANOPIES NOT SHOWN FOR CLARITY.

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



LOCUS MAP NOT TO SCALE

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Tel: (508) 888-6034
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REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

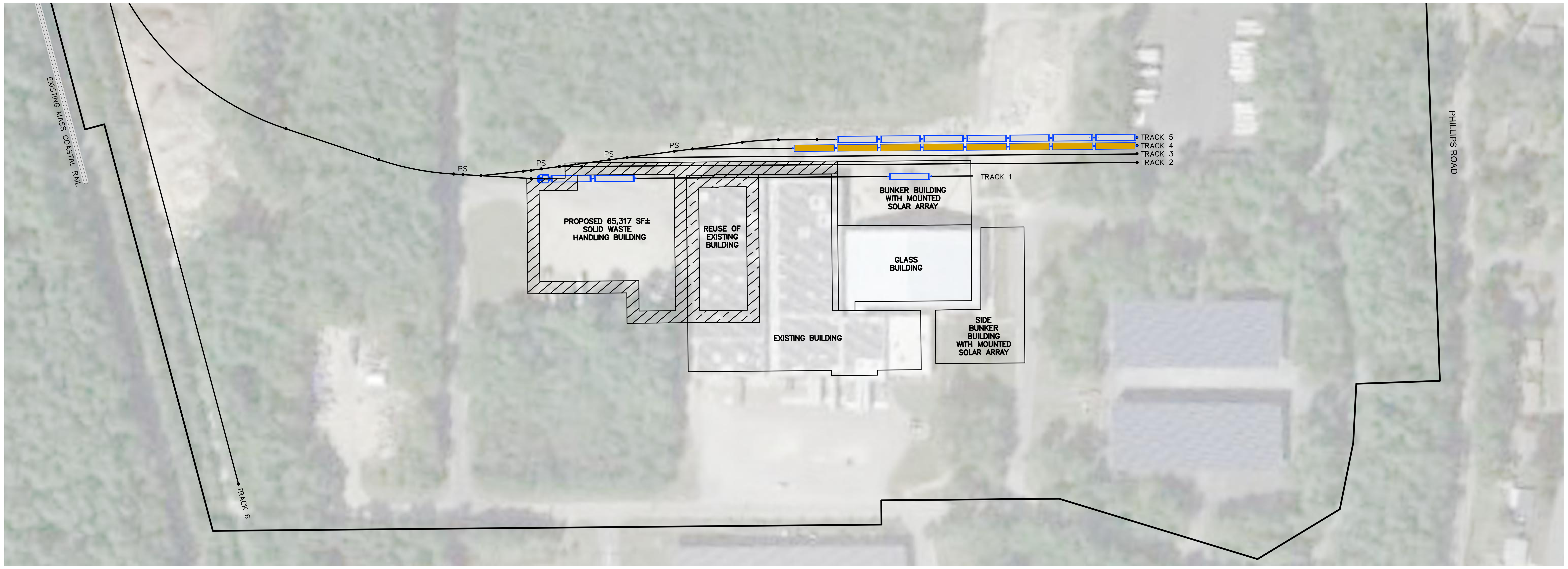
PREPARED FOR:

SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:

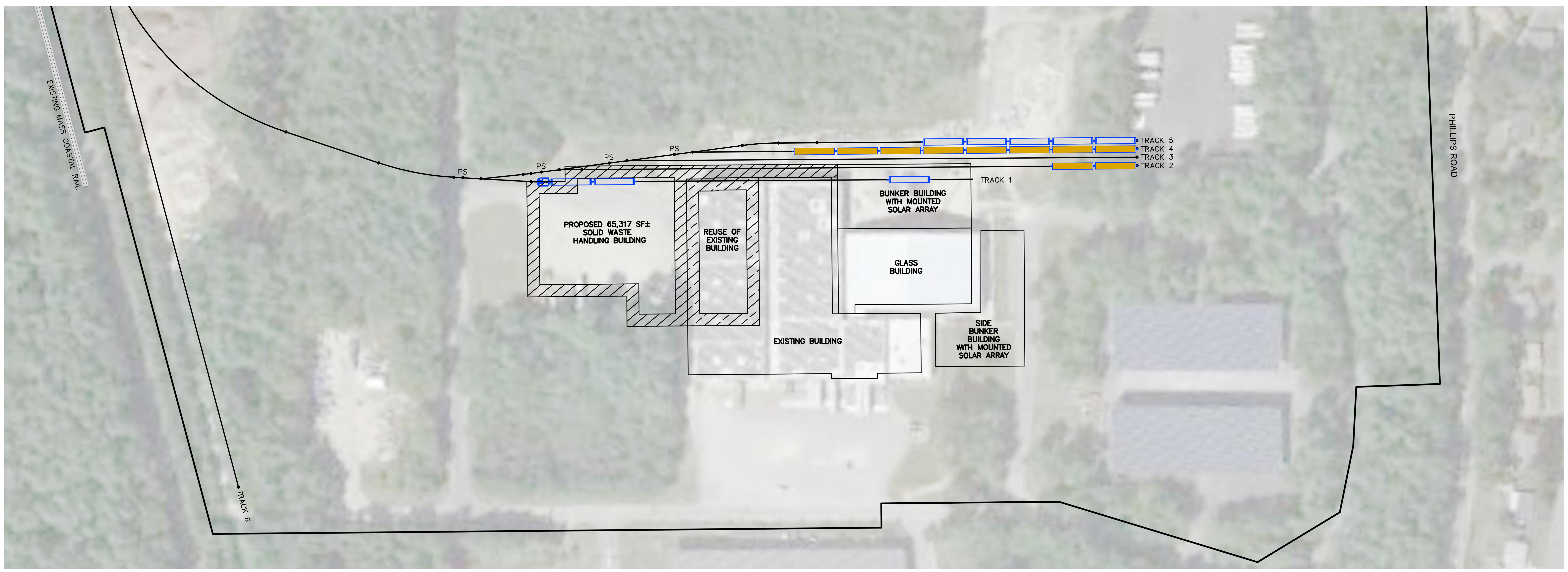
RAIL CAR MOVEMENTS

CAD TECH: R. VAUTRINOT	CHECKED BY: G. WIRSEN
ENGINEER: L. BUGAY	DATE: 1/2/2023
	SCALE: 1"=100'
	SHEET: INSERT 7.3



STEP 6

PPNE MOVES 2 FULL CARS FROM MSW TIPPING BUILDING TO TRACK 4
PPNE MOVES 2 EMPTY CARS FROM TRACK 3 AND TRACK 5 TO MSW TIPPING BUILDING



STEP 7

PPNE MOVES 2 FULL CARS FROM SOLID WASTE HANDLING BUILDING TO TRACK 2
PPNE MOVES 2 EMPTY CARS FROM TRACK 5 TO SOLID WASTE HANDLING BUILDING

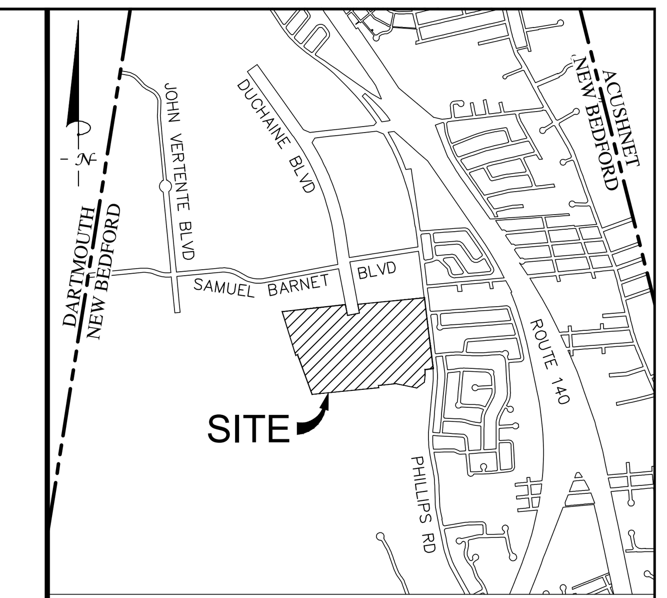
LEGEND

- EMPTY RAIL CAR
- FULL RAIL CAR
- LOCOMOTIVE
- RAIL CAR MOVER
- PS POINT OF SWITCH

NOTE:

SOLAR CANOPIES NOT SHOWN FOR CLARITY.

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



LOCUS MAP NOT TO SCALE

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
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REVISIONS

NO.	DATE	COMMENT

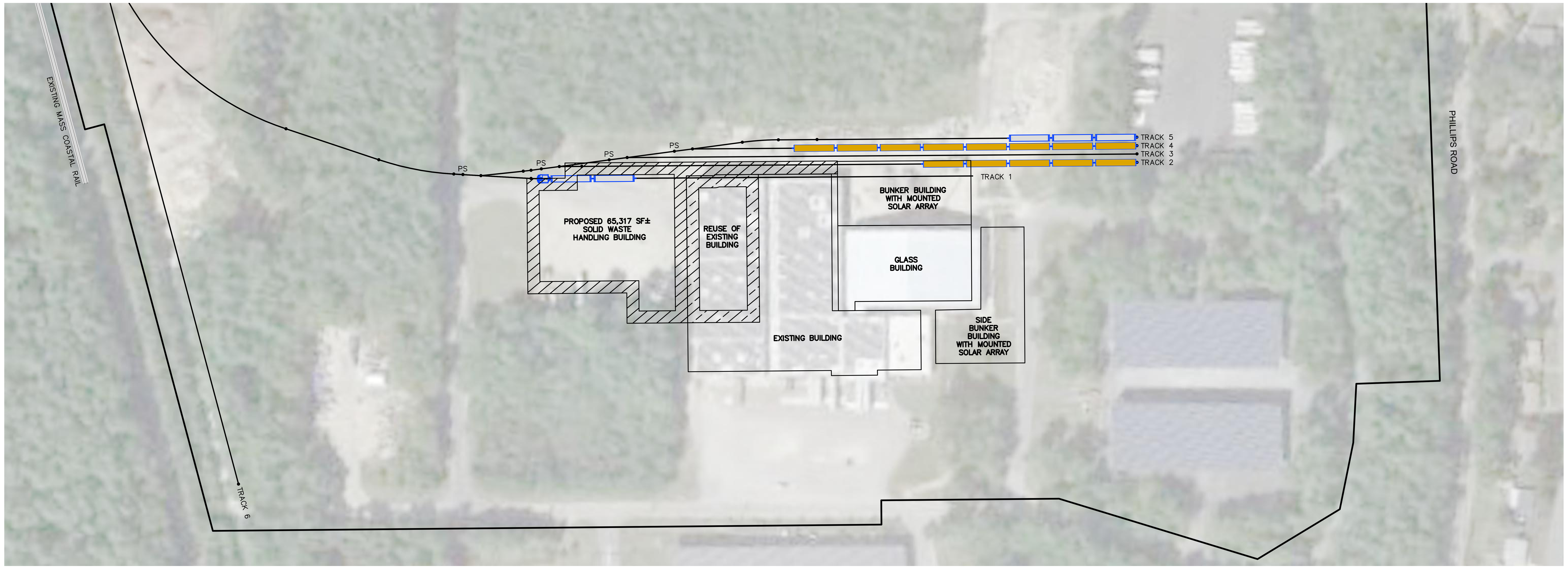
PURPOSE: SITE SUITABILITY

LOCUS: 100 DUCHAINE BOULEVARD NEW BEDFORD, MA 02745

PREPARED FOR: SOUTH COAST RENEWABLES, LLC 100 DUCHAINE BOULEVARD NEW BEDFORD, MA 02745

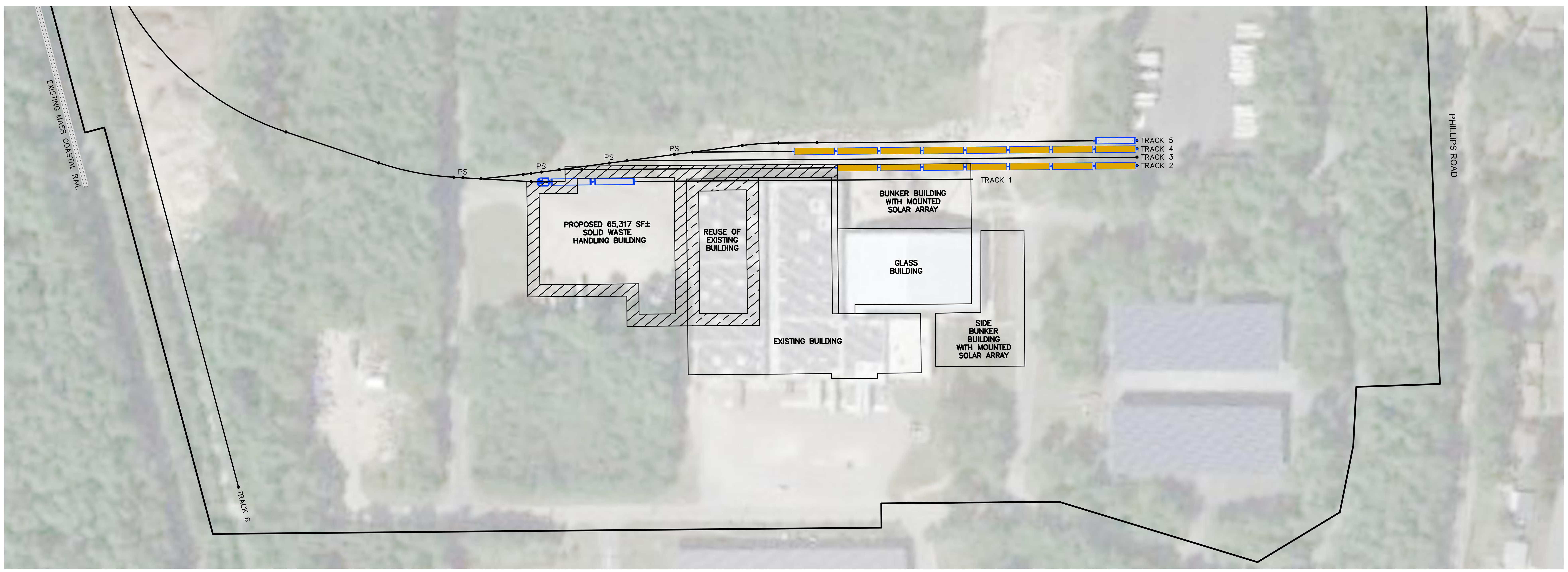
DRAWING TITLE: RAIL CAR MOVEMENTS

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER: L. BUGAY	DATE: 1/2/2023
	SCALE: 1"=100'
	SHEET: INSERT 7.4



STEP 8

PPNE MOVES 2 FULL CARS FROM MSW TIPPING BUILDING TO TRACK 2 AND 1 FULL CAR FROM GLASS BUILDING TO TRACK 2
PPNE MOVES 2 EMPTY CARS FROM TRACK 5 TO MSW TIPPING BUILDING



STEP 9

PPNE MOVES 2 FULL CARS FROM SOLID WASTE HANDLING BUILDING TO TRACK 2
PPNE MOVES 2 EMPTY CARS FROM TRACK 5 TO SOLID WASTE HANDLING BUILDING

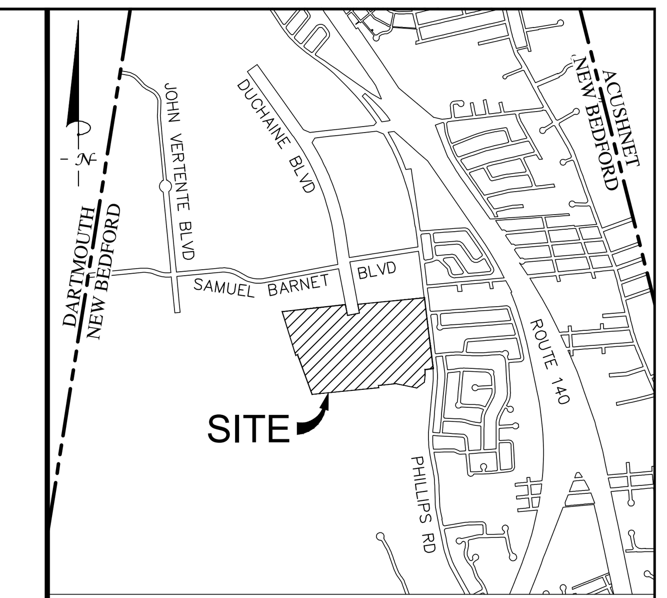
LEGEND

- EMPTY RAIL CAR
- FULL RAIL CAR
- LOCOMOTIVE
- RAIL CAR MOVER
- PS POINT OF SWITCH

NOTE:

SOLAR CANOPIES NOT SHOWN FOR CLARITY.

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



LOCUS MAP NOT TO SCALE

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

REVISIONS

NO.	DATE	COMMENT

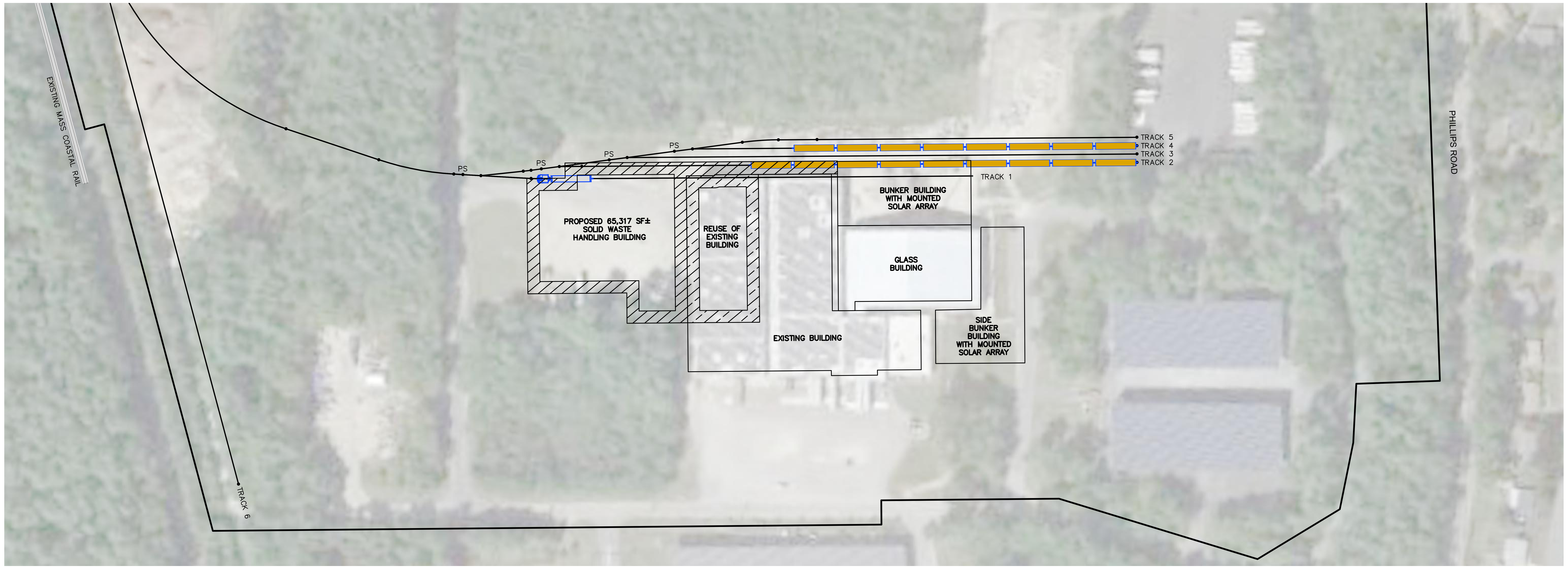
PURPOSE:
SITE SUITABILITY

LOCUS:
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:
SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

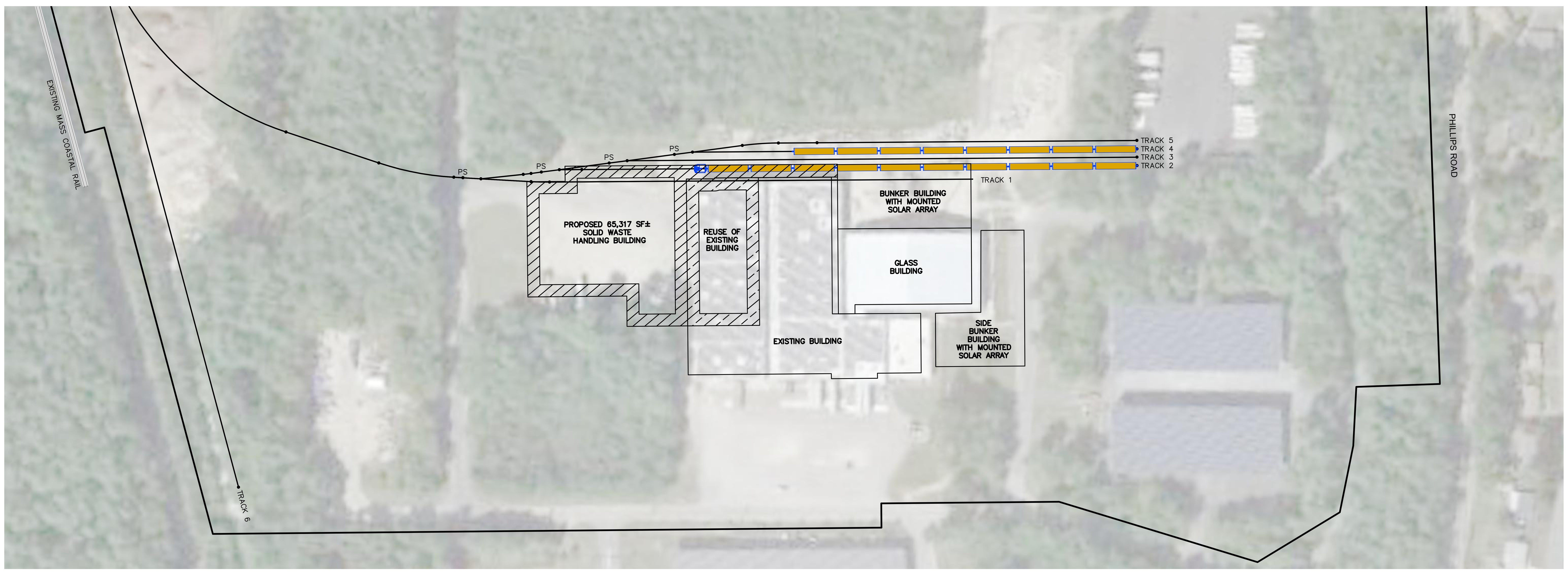
DRAWING TITLE:
RAIL CAR MOVEMENTS

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER:	DATE:
L. BUGAY	1/2/2023
	SCALE: 1"=100'
	SHEET: INSERT 7.5



STEP 10

PPNE MOVES 2 FULL CARS FROM SOLID WASTE HANDLING BUILDING TO TRACK 2
PPNE MOVES 1 EMPTY CARS FROM TRACK 5 TO SOLID WASTE HANDLING BUILDING



STEP 11

PPNE MOVES 1 FULL CAR FROM SOLID WASTE HANDLING BUILDING TO TRACK 2

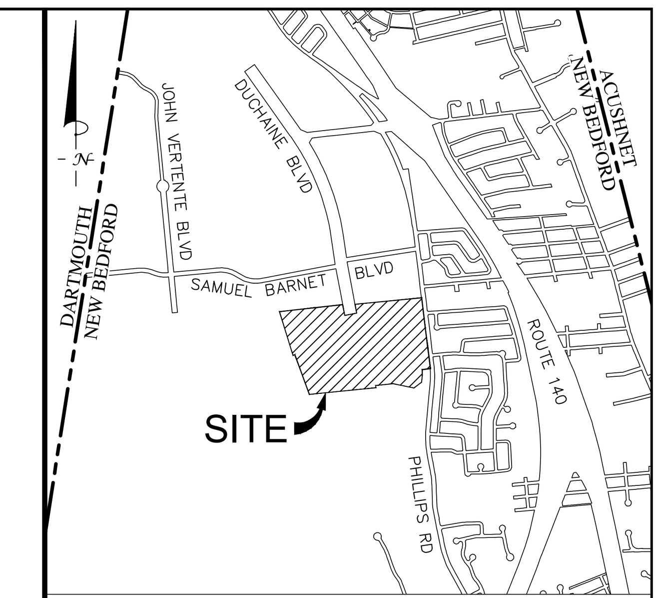
LEGEND

- EMPTY RAIL CAR
- FULL RAIL CAR
- LOCOMOTIVE
- RAIL CAR MOVER
- PS POINT OF SWITCH

NOTE:

SOLAR CANOPIES NOT SHOWN FOR CLARITY.

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



LOCUS MAP NOT TO SCALE

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:

SOUTH COAST RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:

RAIL CAR MOVEMENTS

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER: L. BUGAY	DATE: 1/2/2023
	SCALE: 1"=100'
	SHEET: INSERT 7.6

INSERT 8

GROUNDWATER MONITORING WELL LOCATIONS

Green Seal Environmental, LLC
114 State Road, Building B
Sagamore Beach, MA 02562
Tel: (508) 888-6034
Fax: (508) 888-1506
www.gseenv.com

Dimensions are as indicated.

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It is the responsibility of the user to confirm discrepancies with the Engineer prior to use.

REVISIONS

NO.	DATE	COMMENT

PURPOSE:

SITE SUITABILITY

LOCUS:

NEW BEDFORD
INDUSTRIAL PARK
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

PREPARED FOR:

SOUTH COAST
RENEWABLES, LLC
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

DRAWING TITLE:

GROUNDWATER MONITORING
WELL PLAN

CAD TECH:	CHECKED BY:
R. VAUTRINOT	G. WIRSEN
ENGINEER:	DATE:
L. BUGAY	1/2/2023
	SCALE: NOT TO SCALE
	SHEET: INSERT 8

S:\Solid Waste Department\Clients\Parallel Products\Site Suitability - MassDEP\CAD\PRLL-2022-0001 11-15-2022.dwg, Insert08 - Groundwater monitoring Plan 11x17 (2), 2/6/2023 12:57:02 PM, DWG To PDF.pc3