TOWN OF BRISTOL, RHODE ISLAND

PLANNING BOARD MEETING

Agenda
Thursday, January 8, 2026 at 7:00 PM
Bristol Town Hall, 10 Court Street, Bristol, RI 02809

A. Pledge of Allegiance

B. Approval of Minutes – December 11, 2025

C. Agenda Item

C1. **Public Hearing and Consider Action on Master Plan phase for Major Land Development of the Comfort Inn and Suites** – *continued from December 11th, 2025* - proposal to build an 80 room hotel. Property on south side of Gooding Avenue approximately 50 feet east of the intersection of **Gooding Avenue and Broadcommon Road, near utility pole #218**. Owner: D & M Boca Development, LLC Zoned: GB. Assessor's Plat 111 Lot 1

D. Correspondence

D1. Request for Change to Planning Board regulations regarding deadline for continuance requests

E. **Adjournment**

Date Posted: December 31, 2025

Posted By: mbw

Town of Bristol, Rhode Island

Department of Community Development

10 Court Street
Bristol, RI 02809
bristolri.gov
401-253-7000

December 4, 2025

TO: Planning Board

FROM: Diane M. Williamson, Administrative Officer

RE: Comfort Inn Hotel – Major Land Development
Master Plan Phase – Public Hearing

The above application is before you for a public hearing and potential action on the Master Plan Phase of the Major Land Development.

The application was certified complete and the TRC met in August 2025. The TRC meeting notes are attached. At the TRC meeting, additional information and correction of information was requested. And, it was anticipated that another TRC meeting would be scheduled to review the new information. No new information or response to comments following the August 2025 TRC meeting has been submitted.

Peer review comments from the engineer and architect were reviewed at the TRC meeting; however, to date, we have not commissioned a review of the Fiscal Impact Statement because we haven't received confirmation that the applicant will reimburse the Town for same.

The applicant continued the application from the September meeting to the October 9 meeting with the deadline for action continued to December 31, 2025. A further extension on the application was requested in October to the November meeting with a 30 extension on the timeline for action to January 31, 2026. In November, the last extension was requested to the December 11, 2025 meeting with the deadline for action extended to February 27, 2026.

Town of Bristol, Rhode Island

Department of Community Development

10 Court Street
Bristol, RI 02809
bristolri.gov
401-253-7000

December 31, 2025

TO: Planning Board

FROM: Diane M. Williamson, Administrative Officer

RE: Staff Report – Gooding Hotel "Comfort Inn and Suites"
Master Plan Phase – Review and Public Hearing

The following is provided for some additional clarity to the materials and the information submitted for the Master Plan on the above project.

1. The pre-application meeting was held with the Planning Board on March 13, 2025.

2. A Master Plan application was submitted on May 23, 2025, with supplemental materials provided on June 6, 2025, and August 8, 2025, and was certified complete on August 13, 2025. *The deadline for action has been continued as mutually agreed upon in writing by the applicant and the Planning Board with the deadline for action now being February 27, 2026.*

3. A TRC meeting was held on August 26, 2025. The notes from that meeting are provided for your review.

4. The public hearing was advertised for the September 2025 Planning Board meeting and as requested by the applicant, the Board continued the public hearing 4 times to the January 2026 Planning Board meeting. As noted above, with each continuance of the public hearing request, the applicant has continued the time frame for action by the Board.

5. There has not been a response to the TRC comments or the peer reviews. Correspondence was received on December 30, 2025 from Attorney Resnick indicating that responses would be part of a preliminary submission.

6. The materials submitted for the Master Plan Phase application are:

- Master Plan Application dated 5/15/25 and Checklist dated 4/8/25 with application fee submitted May 23, 2025;
- Master Plan Submission "Comfort Inn and Suites" by DiPrete Engineering dated 7/9/2025 Revision 5 Sheets 1-13 of 13 along with Property Line Survey Sheet 14 of 14 by Barker Land Surveying
- Building Plans dated 5/6/24 and Elevations dated 3/12/24 by Silvestri received May 23, 2025
- Project Narrative and Environment Impact Statement dated revised June 6, 2025
- Two-hundred Foot abutters List and Map submitted May 23, 2205
- Traffic Impact Assessment provided by Solli Engineering dated as revised January 10, 2024 submitted May 23, 2025;
- Geotechnical Design Basis Report by Pare Corporation dated August 2015 submitted May 23, 2025
- Stormwater Management Report by DiPrete Engineering dated March 27, 2025 as revised
- Fiscal Impact Study by JDL Enterprises, dated May 2025
- Water Availability Request Form from Bristol County Water Authority dated January 27, 2025
- Written review by the Bristol Water Pollution Control Department dated August 25, 2025
- Permit to Alter Freshwater Wetlands from RIDEM dated December 6, 2024;
- Revised RIDEM Permit dated July 10, 2025
- Tax Certificate submitted May 2025
- Colored Elevation rendering dated 8/4/25 by Silvestri Architects
- Exterior Elevations by Silvestri dated 8/6/25
- Photometric Plan dated 5/6/24 by Silvestri Architects
- Landscape Architecture Plan by DiPrete dated 8/7/2025
- Report on Comprehensive Plan Consistency Analysis from Pimental Consulting dated January 28, 2025 and received on December 30, 2025.

7. It is noted that the Traffic Impact Assessment, Landscape Architecture Plan; and, Stormwater Management Report, were submitted with the Master Plan Phase application but these are requisites for the Preliminary Phase. The applicant has not chosen to combine Master Plan and Preliminary applications and is proceeding with the Master Plan phase only at this time. Therefore, peer review of these documents has been deferred as these are preliminary phase requisites.

8. Additional staff comments from the Bristol Water Pollution Control Department are provided in a memo from the Director dated August 25, 2025. These comments were discussed at the TRC meeting. The Water Pollution Control Department is in agreement with the plans subject to conditions as noted in the memo.

9. A peer review architect, Brewster Thornton Group, was commissioned to review and make recommendations on the architectural plans and their report dated August 15, 2025 is provided with the TRC meeting notes. Recommendations were made to photometric plans, site plans, and landscaping as well as the elevations along with a recommended redesign of the façade of the building so that it can better fit into the character of Bristol rather than the standard chain facade.

10. A peer review engineer, Fuss and O'Neill, was also commissioned and their comments in their report dated August 22, 2025 are provided along with the TRC meeting notes. Recommendations were made to address questions and clarifications needed on the plans.

11. A peer review of the Fiscal Impact Study was discussed at the TRC meeting; however, to date, it has not been commissioned since the applicant has not agreed to the cost of same which is reimbursed. We solicited a quote for the peer review in the amount of $4200.

12. A project narrative and environmental impact study was submitted. Per the Town Solicitor's Office, according to recent state law amendments as well as recent Superior Court cases, the Planning Board findings on environmental impact cannot be made at the Master Plan stage.

13. As Gooding Avenue is a State Road, a Physical Alteration Permit will be required for this project which is a preliminary phase requisite.

14. The RIDEM Wetlands Permit and Revised RIDEM Permit was submitted as part of the Master Plan application which is a preliminary phase requisite. The applicant has submitted a request for an extension on the RIDEM permit which was to expire on December 6, 2025.

15. The plans were to be referred to the Conservation Commission, for review of the landscaping plans, after the resubmission based on the TRC comments; however, to date those plans have not been submitted.

16. Floor plans were submitted with the Master Plan application which demonstrate that the rooms will not have kitchens which is per the Zoning Ordinance definition of a hotel.

17. A hotel is a permitted use in the General Business zone, which this property is zoned for. The Master Plan application states that no waivers are being requested and no variances are needed.

18. Comprehensive Plan Future Land Use Map – General Business with opportunity for Mixed Use -Affordable residential with commercial.

19. Public correspondence submissions are:
    - Email from Elizabeth and Seth Funt dated June 28, 2025;
    - Letter with attachments from Edward and Emily Spinard dated August 26, 2025
    - Letter from Edward and Emily Spinard dated August 26, 2025 regarding the peer architect review;
    - Letter from Kevin Pires received October 6, 2025;
    - Memorandum from James Farley dated October 9, 2025;
    - Letter from Emily Spinard with attachments dated December 8, 2025 regarding Comprehensive Plan;
    - Letter from Emily Spinard with attachments dated December 8, 2025 regarding the Fiscal Impact Study;
    - Letter from Edward J. Spinard dated December 8, 2205 with attachments regarding the Environmental Impact Study;
    - Letter from Edward J. Spinard dated December 8 regarding Stormwater Management Report; and
    - Email from George Yioulos of Zim Sailing dated December 29, 2025

Standards

Per the Planning Board's Subdivision and Development Review Regulations, Section 8.6, in addition to a finding on each of the applicable General Purposes Section 1.1 of the Subdivision and Development Regulations, the Planning Board needs to make the findings on the following:

A. Consistency

The proposed development is consistent with the comprehensive community plan and/or has satisfactorily addressed the issues where there may be inconsistencies;

B. Compliance with Zoning Ordinance

The proposed development is in compliance with the standards and provisions of the Town's zoning ordinance;

C. Environmental Impact

There will be no significant negative environmental impacts from the proposed development as shown on the final plan, with all required conditions for approval;

D. Buildable Lot

The subdivision or development project, as proposed, will not result in the

creation of individual lots with such physical constraints to development that building on those lots according to pertinent regulations and building standards would be impracticable. (See definition of Buildable lot). Lots with such physical constraints to development may be created only if identified as permanent open space or permanently reserved for a public purpose on the approved, recorded plans; and

E. Street Access

All proposed development projects and all subdivision lots shall have adequate and permanent physical access to a public street. Lot frontage on a public street without physical access shall not be considered compliance with this requirement.

If the Board finds that the application satisfies the standards for Master Plan approval (see standards above), the following are **DRAFT** conditions for discussion to be satisfied at the Preliminary Plan Phase. These **DRAFT** conditions noted below include the items discussed during the TRC meeting of August 26, 2025 as items needing to be addressed:

1. Revised Engineering plans based on comments from Fuss and O'Neill in their review memorandum of August 22, 2025;
2. Revised plans to address
    a. any proposed lighting in the rear parking lot (photometric plan),
    b. snow removal area,
    c. a trash enclosure to screen the dumpster;
    d. a 6' opaque fence on the west side in addition to the proposed arborvitae bordering the abutting residential property on Lot 9, Plat 111, 78 Gooding Avenue.
    e. accurate location of driveway and abutting residential property on Lot 9, Plat 111, 78 Gooding Avenue.
3. Revised plans to indicate a generator or a plug in for the emergency pump station as requested by the Fire Chief at the TRC meeting to accommodate occupants during a power outage event.
4. An operations and maintenance agreement for the proposed drainage system/stormwater management including a determination on an amount for an escrow account to guarantee the applicant's maintenance of the drainage.
5. In order to further mitigate site drainage and runoff, the parking area must have pervious pavement with a maintenance plan for same;
6. Revised and updated plans and renderings per the recommendations of the peer review architect in their August 15, 2025 report, including revised architectural façade plans so that the building fits into the New England character of Bristol rather than the standard chain hotel façade. (Peer review architect presented two alternate facades -- Alternate A or B – Planning Board to decide)
7. Revised plans for a smaller building including alternate layouts for a smaller footprint and fewer rooming units which have implications for drainage in the Silver Creek Watershed as well as implications for traffic.
8. A Market Analysis, to be peer reviewed, on the hotel's viability based on the proposed number of rooming units and the alternate smaller footprint layout/ and less room count.
9. Agreement for the maintenance of the sewer including an estimate for escrow to guarantee the maintenance of same.
10. Review of the Landscaping Plan by the Conservation Commission.
11. A report from a licensed arborist on the trees to be removed from the project site and tree removal to be offset by the planting of additional trees in the watershed or a dollar value to be paid to the Town, as determined by the Town's Tree Warden, for replanting trees elsewhere in the watershed. (Reference Section 6.3 of the Subdivision and Development Review Regulations "Mitigation of Negative Impacts".

DRAFT

12. Conservation easement to the Town for the remainder of the property of approximately 8 acres to be left as permanent and protected open space.
13. Peer review of the Fiscal Impact Statement, Traffic Assessment, Landscape Architect Plan, and Stormwater Management Report with the cost for same to be reimbursed by the applicant.
14. The Planning Board will open the Preliminary Phase Public Meeting to the public for comments on the additional and updated materials presented.

DRAFT

Comfort Inn & Suites - 80-Room Hotel Development
Major Land Development Project

Comprehensive Plan 'Consistency' Analysis

Gooding Avenue
Assessor's Plat Map 111 - Lot 1

Prepared For: D & M Boca Development, LLC

Prepared By: Pimentel Consulting, Inc.

Date: 28 January 2025

INTRODUCTORY STATEMENT

D & M Boca Development, LLC ("Applicant") has retained the professional land use planning and zoning consulting services of Pimentel Consulting, Inc. ("Consultant"), in order to evaluate the proposed development of property situated along Gooding Avenue for 'Hotel' purposes. The subject development proposal is not only as a matter-of-right (introducing a 'by-right' land use), but also solely necessitating Major Land Development Project review and approval ("Major LDP"). The proposed 'Hotel' development, as this report will evidence in a most comprehensive and conclusive manner, is a much-desired land use that fulfills many Comprehensive Plan goals and objectives. Furthermore, pursuant to recent statutory amendments, the community thoroughly revised their zoning regulations reemphasizing the appropriateness of the referenced 'Hotel' development; continuing to render it as a matter-of-right. Whereas certain massing and scale regulations have been somewhat altered (e.g. maximum three-stories in overall height), the community's aspiration remains intact. The community has neither imposed the need for a special use permit, invoking the need to meet certain 'specific' and 'objective' criteria, nor restrictive dimensional criteria that would otherwise preclude development of the subject property. What can be most assured is the sensitive manner in which the subject development has been engineered; particular attention afforded certain site characteristics as evidenced by obtained regulatory permits, most notably the Wetlands Permit.

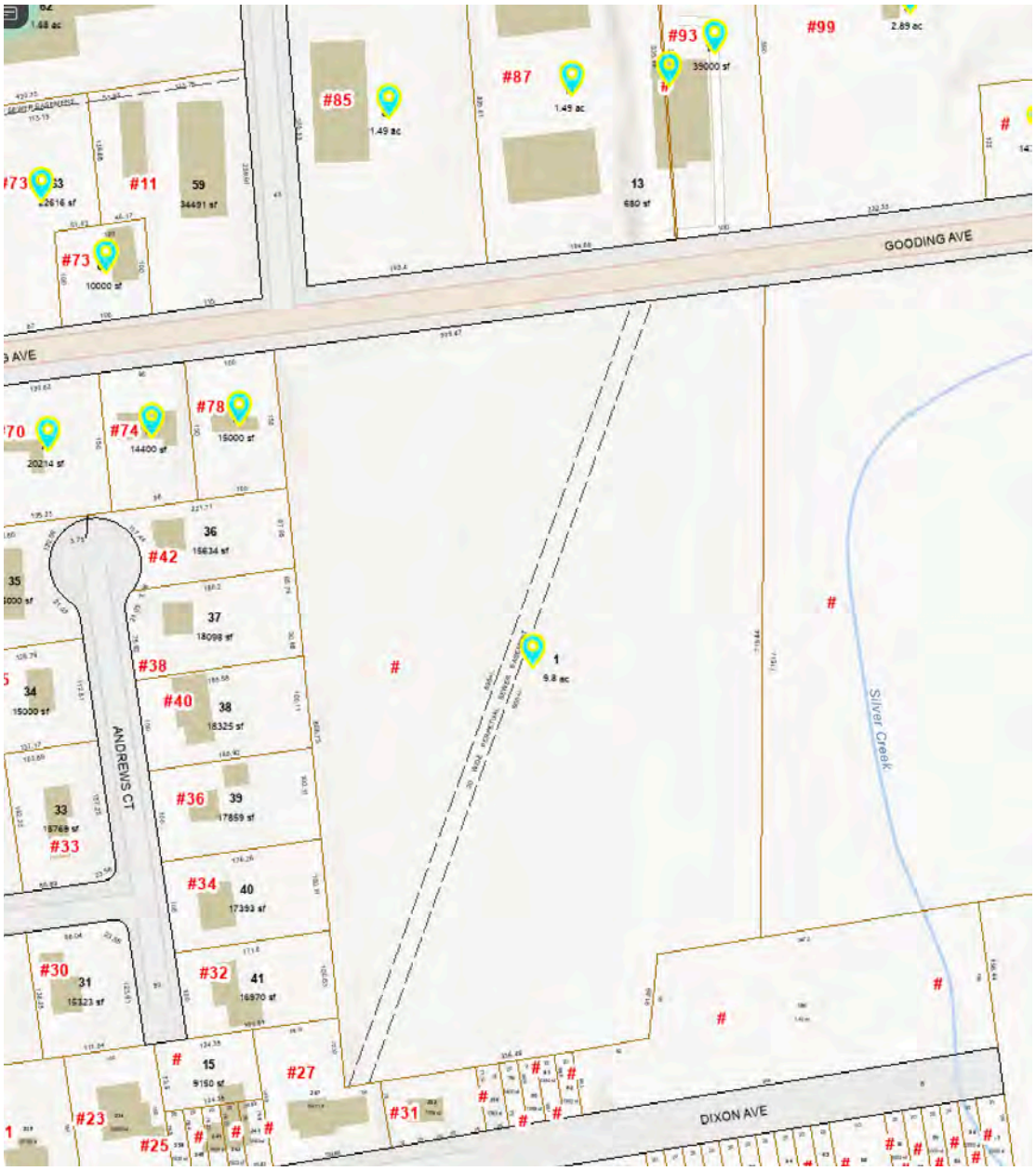
In light of the subject hotel development proposal, this land use consultant has thoroughly reviewed all submission materials and associated plans, in addition to the following regulatory documents:

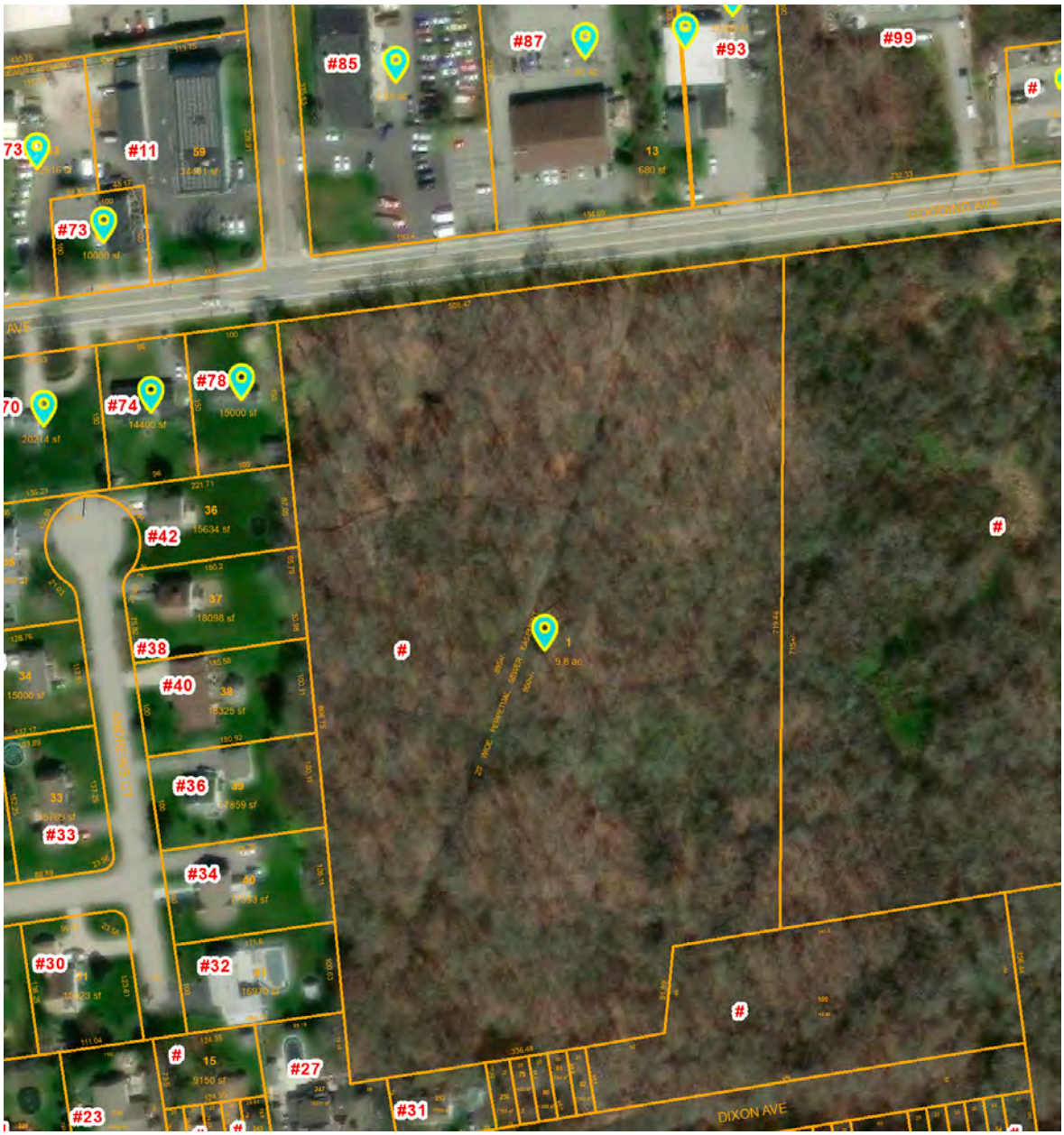
- **o** Town of Bristol 2016 Comprehensive Community Plan - Adopted by Town Council: 25 January 2017 - Approved by the State of Rhode Island: 2 February 2017 ("Comprehensive Plan");
- **o** Town of Bristol, Rhode Island, Zoning Ordinance ("Ordinance");
- **o** Town of Bristol, Rhode Island, Subdivision & Development Review Regulations - As Amended Through 14 March 2024 ("Development Regulations"); and,
- **o** Pertinent Rhode Island General Law ("RIGL"), to include recent statutory amendments.

Finally, a thorough analysis of the subject property and general surrounding neighborhood has been personally prepared, for the express purpose of evidencing neighborhood compatibility. My analysis entails rendering a determination as to the appropriateness of the proposed hotel development, in light of the respective Comprehensive Plan, Development Regulations and Ordinance goals and objectives.

PRESENT PROPERTY CONDITIONS

The subject property is addressed 0 Gooding Avenue, further identified as Assessor's Plat Map 111, Lot 1, and containing approximately 9.78-acres, or 426,017 square feet, is presently unimproved ("Property"). The Property is configured in typical rectangular fashion, having in excess of 500 linear feet of lot frontage along Gooding Avenue. Although there are some on-site wetlands constraints, development has been sensitive to said features, preserving the vast quantity of natural vegetation in perpetuity. In fact, the present mature vegetation, along with stated wetlands, will serve as natural buffers to the sole immediately abutting residential neighborhood. However, as this report will fully detail, the predominant land use(s) along Gooding Avenue, are general commercial and light industrial. Lot configuration and present site conditions are illustrated below and on the following page, as excerpted from the Town's GIS.





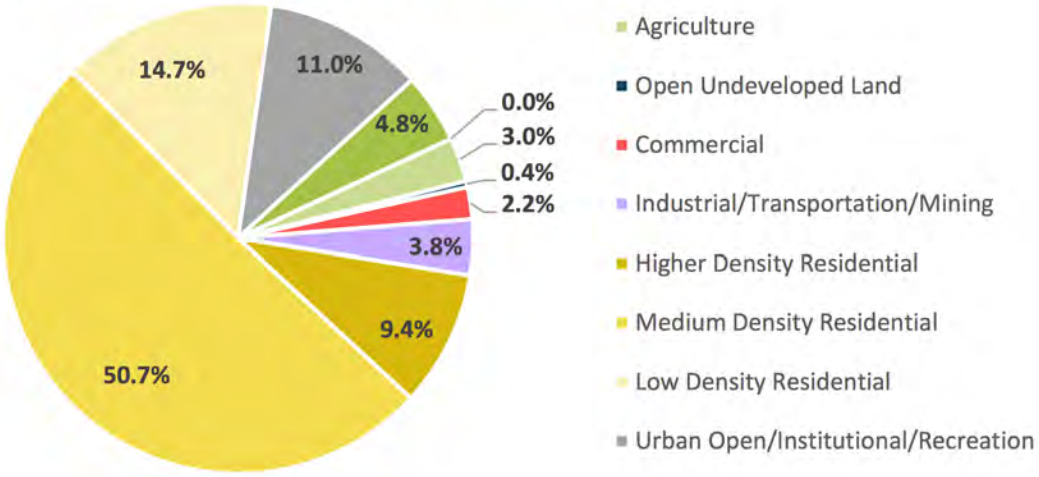
Pursuant to the Comprehensive Plan - Map 13 'Circulation' [Page 159], Gooding Avenue is classified a 'Major Collector' roadway, recognizing its importance for vehicular movement serving nearby business entities. The Rhode Island Department of Transportation defines a Major Collector in the following manner:

> **Major and Minor Collectors -** "***Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network....****The distinctions between Major Collectors and Minor Collectors are often subtle. Generally,* ***Major Collector routes*** *are longer in length; have lower connecting driveway densities;* ***have higher speed limits****; are spaced at greater intervals;* ***have higher annual average traffic volumes****;*

and may have more travel lanes than their Minor Collector counterparts…Since ***Major Collectors offer more mobility****…*"

The Property is presently zoned in a General Business District ("GB District") manner, as are all of the properties along the same side of Gooding Avenue and extending throughout Metacom Avenue, with the exception of a small pocket of Residential-15 District ("R-15 District") to the immediate west, reflecting their existing historical land usage, and Open Space District ("OS District") property directly abutting to the west. The referenced approximately 15-acre OS District property must have been recently rezoned, considering the Comprehensive Plan illustrates that it was zoned in a similar GB District manner. Therefore, now being zoned OS District not only serves as permanent vegetative buffering, but also evidences the dire need to realize full and reasonable development of the Property. The Comprehensive Plan [Pages 23 - 24] details that approximately 75% of all land resources are residentially oriented with an additional 10% allocated to open space and institutional land uses, as contrasted with a mere 6% utilized for a combination commercial and industrial usage.

Figure 2.1: Existing Land Use in Bristol, RI



Source: Town of Bristol GIS data

Such a drastic disparity realizes serious fiscal concerns, necessitating all commercial land resources be developed to their fullest extent.

Goal 1. "*The sustained, viable growth of business to provide for improved standard of living and economic health of Bristol, the pursuit of which should be built upon Bristol Values and Attributes, as follows:*" [Page 102]

Policy B. Section B: "*Streamlining regulations permitting and approvals that:*" [Page 103]

2. "***Optimizing the use of scarce manufacturing/commercial zoned land - only 6% of Bristol land is zoned for commercial/industrial use…***"

Goal 4. "*Maintain a favorable tax base*." [Page 19]

Policy A. "*Encourage balanced growth*.

Policy B. "*Manage growth in concert with the fiscal capacities of the community*."

Opposite Gooding Avenue, properties are zoned a mixture of GB District and Manufacturing District ("M District"), with the latter having a much more profound presence. The referenced zoning districts are respectively defined below. In addition the Town's official zoning map, as excerpted from the Town's GIS, is provided to illustrate the appropriateness of development for 'Hotel' purposes from a zoning regulatory perspective.

Section 28-3. - Establishment of Zoning Districts: "*For the purposes of this chapter, the following zoning districts shall be designated*:"

(2) "*Commercial zoning districts shall be as follows*:"

GB Zone: "*General business. This zoning district is* ***intended for commercial areas that serve town-wide and regional commercial needs*** *for retail services, and professional office establishments*."

(3) "*Industrial zoning districts shall be as follows:*"

M Zone: "*Manufacturing. This zone is* ***intended for general industrial uses that accommodate a variety of manufacturing, assembly, storage of durable goods*** *and related activities, provided that they do not pose toxic, explosive or environmental hazard in the town*."

As this report will clearly evidence, careful attention to development has been undertaken, thus the reasoning for attaining Department of Environmental Management ("DEM") review and approval, even before proceeding onto the Pre-Application Phase of Major LDP, particularly in regard to the respective Wetlands Permit. It is without question that introduction of a 'Hotel' will follow the commercial and industrial pattern of development along Gooding Avenue and extending out towards Metacom Avenue. Only a minute portion of the Property will be utilized for the express purpose of protecting and preserving the vast on-site land resources. The overwhelming majority of the Property, upwards of 88%, will remain in a naturally pervious state, thereby affording extensive natural screening and buffering. Finally, all drainage will be engineered to assure site and neighborhood improvement. The development will in fact further many respective Comprehensive Plan - Goals and Objectives, as evidenced below:

Statement of Goals and Policies - "*Land use planning and management, in a sustainable manner that respects Bristol's environment and unique character for present and future generations, is paramount and is intended to support all other comprehensive planning goals of the Town of Bristol. Based on the critical issues described in the Introduction and the overarching goal stated above, this section presents the goal and policies developed by the Town of Bristol to guide its land use planning. This goal encompasses goals expressed in the other elements of this plan*." [Page 57]

Goal 1. "*Promote land use patterns that are sensitive to the Town's character and assets, recognize the Town's resource constraints, are economically sound, and facilitate smart growth to build capacity in sustainability and climate resiliency in Bristol*." [Page 57]

Policy E. "*Maintain the character of Bristol and make sure that new development does not adversely impact the integrity of the Town*."

Policy F. "*Embrace Smart Growth principles, conservation development zoning and encourage sustainability of our resources in all land use decisions made by the Town of Bristol*."

The referenced zoning districts can also shown to be consistent with the Comprehensive Plan. Consistency is corroborated by evidencing agreement with the corresponding land use classification in the Future Land Use Map ("FLUM") [Map 5B - Page 64]. Consistency further evidences agreement with the Zoning Ordinance and permissibility of land usage. The FLUM classifies the Property for General Business purposes. It also recommends a Mixed-Use Overlay, although it does not appear that this has ever been effectuated. Regardless, the underlying zoning designation dictates, pursuant to the Ordinance, what is deemed 'appropriate' usage of one's property.

DEVELOPMENT PROPOSAL

The present development proposal entails construction of an 80-room, three-story hotel, referenced facility to be situated along the northwesterly corner of the Property. The only other visible improvement(s) are all accessory, to include off-street parking, loading, etc. A multi-storied facility minimizes usage of land resources, and yet realizes regulatory compliance; commercial facilities being limited to a maximum of three-stories. The Comprehensive Plan recognizes the value of supporting height over sprawling footprint coverage. This can be evidenced via the recommendation that alternate development regulatory tools, such as 'Form-Based Zoning,' be pursued. This type of development tool actually affords greater neighborhood protection.

Goal 2. "*Ensure that neighborhoods are livable places*." [Page 4]

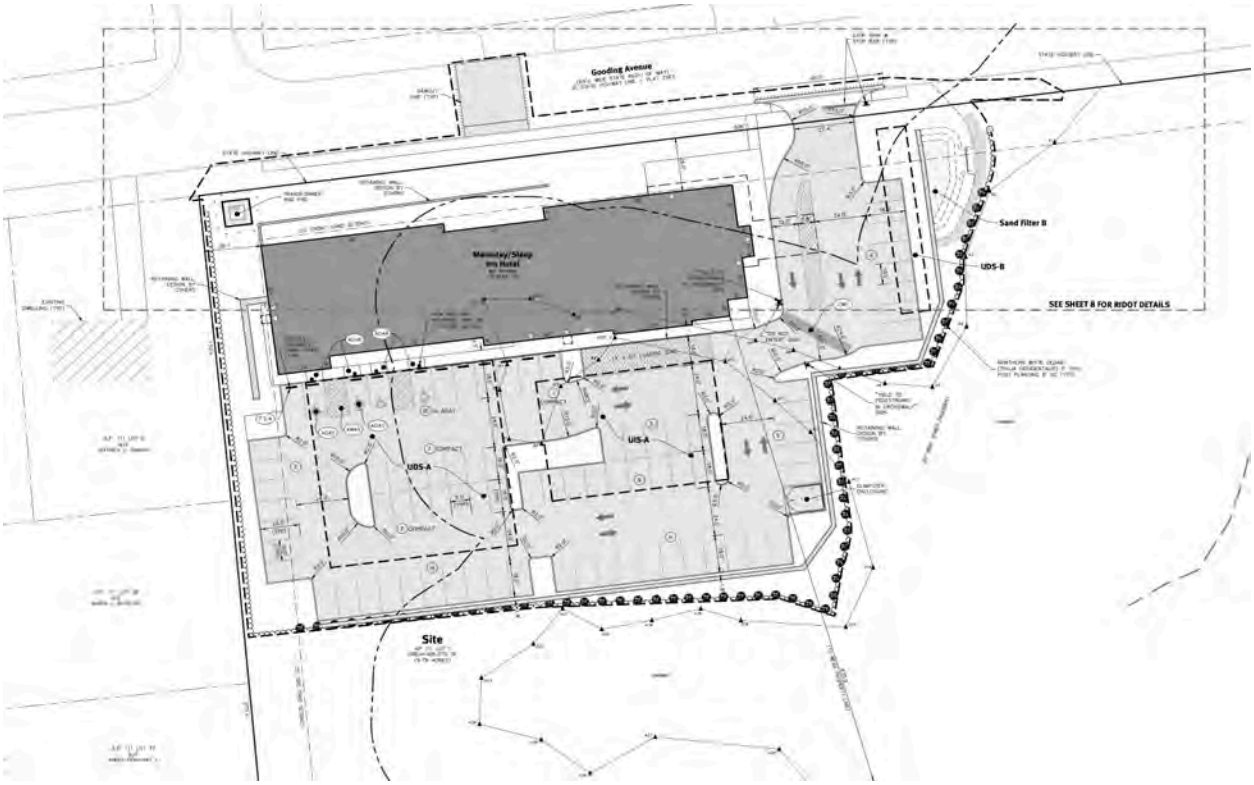
> **Policy B.** "*The Town is encouraged to investigate new urbanism techniques such as form based vs. use based zoning regulations to maintain characteristics of existing neighborhoods*."

Comprehensive Plans do not typically provide commentary on any specified land use, unless it is well-desired and deemed much-needed. Both the community and public-at-large voiced this sentiment within the Town's Comprehensive Plan [Pages 96 - 99], as evidenced below.

Economic Development Element - Our Process

> "*About a dozen of the 48 action items from the 2009 Comprehensive Plan survive in this Plan and several are more on-going "Policy Items.""*"
>
> "*The Steering Committee conducted interviews with businesses to better understand business needs and competitive pressures that manifest themselves in government/business relations. Interviews were organized by business groupings/ segments as follows:*"
>
> **o** "***Destination businesses***."
>
> "***Included in Destination businesses were*** *cultural events, museums, other arts and crafts,* regionally-known restaurants*,* ***hotels****, and recreational water sports*."

Another pertinent consideration, is the limited town-wide zoned land resources that would otherwise permit introduction of a Hotel as a matter-of-right. This is further rendered problematic by the presence of appropriately sized parcels with limited constraints to development. Therefore, a property that is properly zoned and contains sufficient constraint-free land area to accommodate a viable hotel development, should be carefully considered and supported by all regulatory bodies. The referenced development is illustrated below, as excerpted from the Applicant's submission package [Credit: DiPrete Engineering].



In regard to the specified 'Hotel' land use, the Comprehensive Plan identifies it as a 'destination business'. It the determination of the Comprehensive Plan [Pages 99 - 100], in great part due to the results of the requisite regulatory in-depth public participation process, that destination business, inclusive of 'Hotels,' be supported because they contribute to the economic health of Bristol, "*Each of the Business Segments is an important element for improved standard of living and economic health of Bristol, but with different roles*."

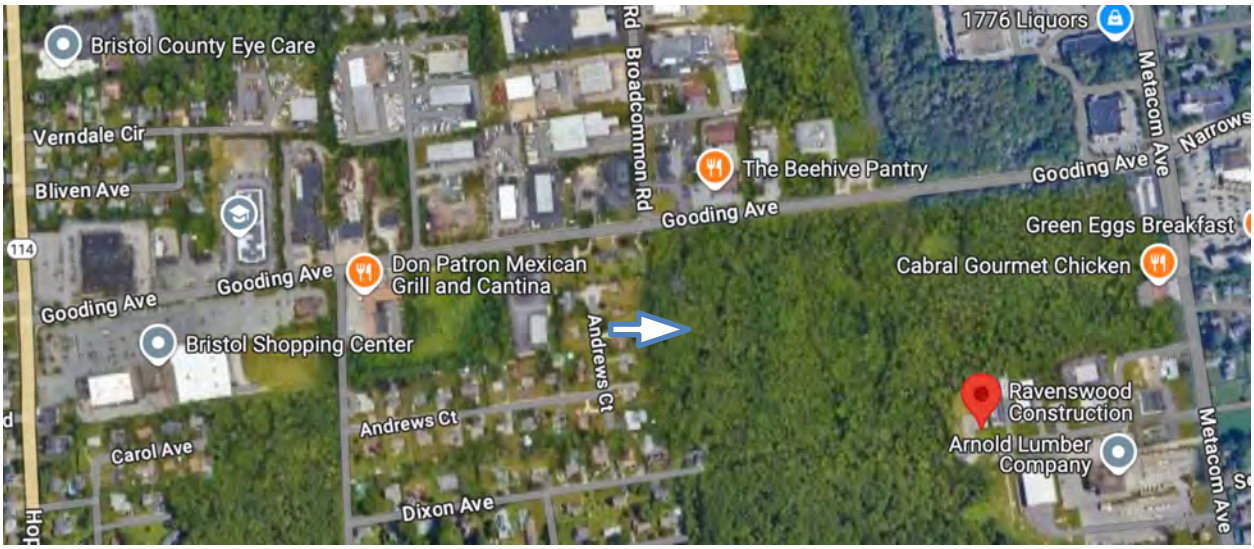
> "***The Town must focus on growing destination*** *and external-facing* ***businesses****.* ***These are the basic, core building blocks for our future. They are the growth engines and provide synergistic growth to other segments.*** *External-facing businesses are particularly important because for each new job created it supports 3-4 local jobs. These tend to be well-paying jobs*."

Based on interviews conducted, destination businesses bring annually about 35,000 wedding guests and 300-400,000 events visitors to our Town. But, the Town has not optimized the economic growth potential of this market, which requires concerted effort amongst all the constituents to broaden the season and diversify/ broaden the opportunities."

Finally, it cannot be emphasized enough that the proposed 'Hotel' is permitted as a matter-of-right land use within the GB District. Furthermore, development is reviewed pursuant to the by-right Major LDP regulatory procedural process.

NEIGHBORHOOD ANALYSIS

Gooding Avenue is predominantly improved by a variety of commercial and industrial land uses. There are also a smattering of residences and Town-owned properties that are now zoned in an OS District manner. A comprehensive assessment of all properties lining Gooding Avenue was prepared. In total, 30-properties were detailed, but only 19-properties fully analyzed because they reflected the true commercial and industrial character of the immediate Gooding Avenue neighborhood. The excluded properties represented a limited assortment of residences and those that are presently unimproved. A much more comprehensive analysis would have realized a much greater quantity, considering the industrial character across Gooding Avenue extends some distance in a northerly direction. The aerial photo below, excerpted from Google Earth, illustrates both the intensity and parameters of the referenced neighborhood analysis.

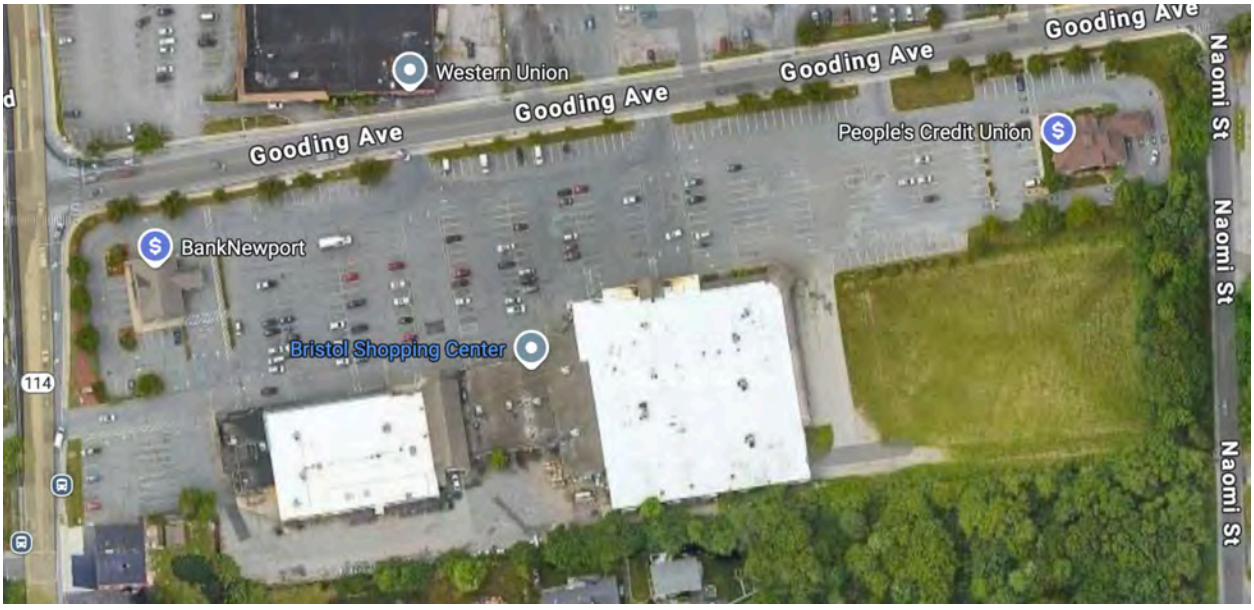


The Gooding Avenue corridor, extending out onto Metacom Avenue, is presently improved with nine (9) general commercial businesses (retail sales, restaurants, etc.), seven (7) more intensive commercial entities (services garages, car washes, gas stations, etc.), and three (3) industrial operations. Pursuant to the data collected from the Town's Tax Assessment Records,

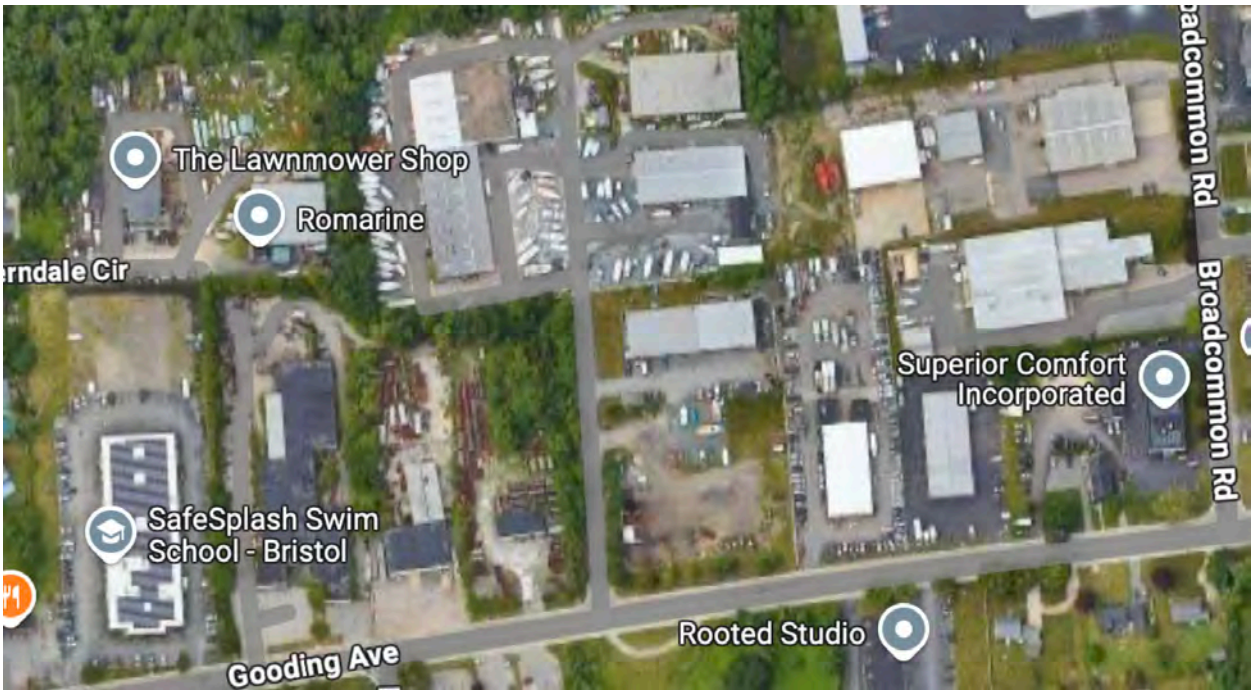
the average building coverage is 18.3%, or a six-fold increase over proposed development conditions. In regard to impervious lot coverage, the collected data is a bit more circumspect. Detailed data appears to severely undercount existing conditions. Nevertheless, were one to simply consider record data, average impervious coverage is 24.2%, or greater than a two-fold increase over proposed development conditions. However, this Consultant would contend that existing impervious lot conditions are woefully more drastic, with certain properties appearing to be close to 100% covered. The following aerial photos [Credit: Google Earth], provide a sample of true on-site development conditions.

Looking north, directly across Gooding Avenue from Property.

Looking west, at the intersection of Gooding Avenue and Hope Street.



Looking northwest, across Gooding Avenue from the subject property.



Another pertinent consideration is the presence of extensive town-owned open space resources. Directly abutting the Property along the entire easterly boundary is a 14.7-acre parcel that was previously zoned in a GB District, but now in an OS District manner, thereby serving as natural buffer in perpetuity. This also corroborates this Consultant's assertion that commercial land resources are forever becoming more scarce, as evidenced by the loss of another sizable parcel. The second point is in regard to the immediately abutting residences to both the west and south. Once again, their presence has been carefully considered in development of the Property, and thus the reasoning for overall massing and scale (atypical three-story proposal), as well as facility placement. The vast majority of the property, upwards of 88%, will be maintained in a naturally forested state.

GENERAL REGULATORY ANALYSIS

Considering a 'Hotel' is permitted as a matter-of-right within the GB District, pursuant to the Ordinance's 'Use Schedule', and there are only a smattering of properties that are appropriately sized and suitably developable for such purposes, as corroborated by both the Comprehensive Plan and Zoning Map, it is self-evident that development of the Property in the manner so-proposed is most appropriate. Once again, this Consultant reemphasizes that there are little to no remaining viable land resources, as evidenced by the Comprehensive Plan [Pages 23 - 24]. There is a major disparity between residential and commercial / industrial land usage; with

approximately 75% of overall land resources dedicated to residential land usage, as compared to a mere 6% dedicated to a combination of commercial and industrial land usage. The limited appropriately zoned land resources not only renders it difficult to realize a viable location, but also places a great strain on the community from a fiscal perspective. A heavy reliance on a residential tax base is unsustainable, without corresponding sufficient commercial and industrial revenue streams. It is therefore imperative that appropriately sited, by-right commercial development that is 'consistent' with the respective goals and objectives of the Comprehensive Plan, be supported whenever it avails itself.

Land Use Goal 1. "*Promote land use patterns that are sensitive to the Town's character and assets, recognize the Town's resource constraints, are economically sound, and facilitate smart growth to build capacity in sustainability and climate resiliency in Bristol*." [Page 3]

Policy D. "***Maintain a strong tax base, favorable tax rate and identify alternative revenue sources***."

Policy E. "*Maintain the character of Bristol and make sure that new development does not adversely impact the integrity of the Town*."

Policy F. "*Embrace Smart Growth principles, conservation development zoning and encourage sustainability of our resources in all land use decisions made by the Town of Bristol*."

Services and Facilities Goal 3. "*Manage growth so as not to overtax the sewer system.*" [Page 18]

Policy A. "*Plan for growth in areas that are, or can be, served by the sewer system*."

Therefore, after careful review of all pertinent regulations, to include the Ordinance and Development Regulations, this Consultant has concluded that the sole review necessary is attaining Major LDP approval

MAJOR LAND DEVELOPMENT PROJECT REVIEW - REGULATORY ANALYSIS

As detailed in this report, a 'Hotel' is permitted by-right within the GB District, in accordance with the Ordinances' - Use Schedule.

Article III. Permitted Uses - Table A. Permitted Use Table - Section 28-82. - Use regulations.

Residential - Hotel: Permitted-by-Right within the GB District

Furthermore, pursuant to Article I. 'Definitions' of the Development Regulations [Pages 59 - 60], the subject development proposal, the subject development proposal is defined as a Major LDP.

Major land development plan - "*A land development project which exceeds the thresholds for a minor land development project as set forth in this section*."

Minor land development project - . A land development project involving any one of the following:

H. "*Seven thousand five hundred (7,500) gross square feet of floor area of new commercial, manufacturing or industrial development; or less*."

This Consultant has already categorically evidenced regulatory compliance. This Consultant, in conjunction with the design team, have also evidenced Comprehensive Plan 'consistency'. A Comprehensive Plan is not prepared in a vacuum, but encompasses a global view that entails many disciplines in order to render a definitive determination on appropriate land usage. It is for this very reason why experts in their respective fields review and provide independent conclusions on a development's appropriateness, to include civil engineering, traffic engineering, architecture, wetlands (if necessary), etc, just to mention a few disciplines. The following is a compilation of this Consultant's and respective experts (as applicable) responses in satisfactorily addressing both the Ordinance's 'General LDP Standards' and Development Regulation's more specific 'Required Findings'

Zoning Ordinance - LDP - General Standards for Development

The requisite Ordinance 'General Standards' for the granting of the Major LDP approval are detailed in Section 28-282(c) 'General Standards for Development'. The referenced standards are individually addressed below.

(1) Relation to Transportation - "*Principal vehicular access shall not be from arterial highways. Access points shall be designed to encourage smooth traffic flow with controlled turning movements and minimum hazards to vehicles and pedestrians. Where the development is located on an arterial highway, a service road should be utilized, together with common driveways. Merging, turnout lanes and traffic dividers shall be provided where existing or anticipated heavy flows indicate need*."

Gooding Avenue is classified a 'Major Collector', thereby realizing regulatory compliance. Furthermore, the Hotel development will be accessed via a singular curb-cut, thereby minimizing ingress and egress points as preferred by both the Ordinance and Comprehensive Plan. Finally, interior vehicular travel has been designed to meet all design standards, to include interaction with pedestrians. Regardless, a traffic analysis has been prepared and will be presented by the respective expert.

Circulation and Transportation Goal 1. "*Increase the ability to travel about town with ease*." [Page 14]

Policy C. "*Reduce and/or eliminate the curb cuts along regional street systems. Only consider new curb cuts if there is no other way to access a property*." [Page 15]

(2) Relation to Surrounding Property - "*Site planning shall provide protection from potentially adverse surrounding influences, and protection of surrounding areas from potentially adverse influences from within the development*."

The vast majority of the Property will be maintained in a naturally vegetated state, upwards of 88% of the overall land resources, thereby serving to preserve and protect both property and immediate neighborhood. The Hotel development proper, facility and all accessory improvements, will be concentrated along the northwesterly corner. The referenced development has been sensitively designed, being carefully considerate of the sparse abutting residences. Thus the reasoning for integrating such considerable separation, realizing appropriate distancing and visual screening. The referenced improvements are well detailed in both the engineered site plan and landscape plan, both of which have been prepared by licensed professionals in their respective fields. It necessitates reemphasizing that the Property is zoned in a GB District manner and continues to permit the proposed Hotel land use as a matter-of-right. In fact, most, if not all, commercially zoned properties are aligned with residential land uses; a very typical commercial corridor condition.

(3) Buffer Zone - "*Landscaped buffers shall be required for certain land development projects, and are set forth in the requirements for each type of land development project. The buffer shall not be paved, nor be used for parking or driveway, nor contain any structure, nor be used for leaching or absorption fields. However, underground water, sewer or drainage lines with appropriate easements thereto may be permitted in a buffer*."

Once again, the vast majority of the Property will be maintained in a naturally vegetated state, upwards of 88% of the overall land resources, and the Hotel development proper, facility and all accessory improvements concentrated along the northwesterly corner. Therefore, far in excess of the minimum requisite buffers will be preserved and protected in perpetuity in their current natural state. Not a single site feature or activity associated with the development will encroach into the requisite buffers. This is not only evidenced by the professionally prepared plans and associated documents, but will also be testified to respective experts.

(4) Screening - "*Fences, walls or vegetative screening shall be provided along the perimeter of the development where needed to provide a buffer, to preserve public viewsheds and to minimize incompatibility with surroundings. In particular, the following uses and areas within the development shall be screened from adjacent residential district or public streets:*"

a. "*Off-street parking areas containing more than ten spaces. When nearest portions of noncontiguous parking areas are separated by less than 50 feet of landscaped space, as measured from their nearest points, they shall be considered as combined for computing the above minimum number of spaces*."

b. "*Service areas for loading and unloading vehicles other than passenger; and for storage and collection of trash and garbage*."

c. "*Utility areas such as pumping station, electric utility substations and the like*."

Appropriate vegetative buffering will encompass the entire development, in addition to being internally integrated throughout the off-street parking, loading, trash refuse, and other site amenities, for the express purpose of properly screening the development. The professionally prepared landscape plan will evidence requisite regulatory compliance.

(5) Maximum Height - "*No structure shall exceed three stories or 35 feet above grade, as defined in this chapter:*"

Full compliance, as illustrated in the submitted engineered site plan.

(6) Procedural and Design Standards - "*Unless otherwise indicated, the procedural and design standards for improvements in a land development project shall be the same as those set forth in the town subdivision and development review regulations in effect at the time of the application insofar as such regulations are applicable. Waivers may be provided in accordance with the requirements of the town subdivision and development review regulations:*"

Full compliance, as individually addressed in the next section of this report.

Development Regulations - Required Findings

The requisite standards for the granting of the Major LDP approval are detailed in Section 8.6 'Required Findings' of the Development Regulations. The referenced standards are individually addressed below.

Section 8.6. Required Findings. "*For all subdivision or development project applications, the approving authority, whether Administrative Officer or Board, shall address each of the general purposes stated in Article 1 of these Regulations and R.I.G.L. Section 45-23-30, and shall make positive findings on each of the following provisions as they apply to the application under review, as part of the proposed project's record prior to approval. Where all findings are positive, approval may not be withheld by the Board. The requirement to address the purposes of these Regulations and make written findings on each of the following provisions shall also apply in the case of a vote to deny an application.*"

A. Consistency - "The proposed development is consistent with the comprehensive community plan and/or has satisfactorily addressed the issues where there may be inconsistencies."

As has been well detailed throughout this report, a thorough review of the Comprehensive Plan has concluded absolute 'consistency'. The proposed development will not alter the general character of the surrounding area or impair the intent or purpose of either the Ordinance or Comprehensive Plan. The proposed hotel development will not only further a plethora of goals and objectives, but it is also in accordance with the FLUM.

B. Compliance with Zoning Ordinance - "*The proposed development is in compliance with the standards and provisions of the Town's zoning ordinance*."

The proposed land use is permitted as a matter-of-right and realizes full dimensional compliance. It also comports with all requisite LDP standards of review, as evidenced above.

C. Environmental Impact - "*There will be no significant negative environmental impacts from the proposed development as shown on the final plan, with all required conditions for approval*."

D. Buildable Lot - "*The subdivision or development project, as proposed, will not result in the creation of individual lots with such physical constraints to development that building on those lots according to pertinent regulations and building standards would be impracticable*."

The referenced development project will be thoroughly served by requisite public infrastructure and reflect the massing and scale of the Gooding Avenue neighborhood, as evidenced by the results of the personally prepared Neighborhood Analysis. This Consultant is well aware of certain unique site characteristics, and that generally speaking such characteristics are referenced in the Comprehensive Plan. Such site considerations are not unusual, merely necessitating reflection by the respective experts. The following are a summary of applicable site considerations, as excerpted from the Comprehensive Plan, and respective expert responses.

Goal 2. "*Ensure that neighborhoods are livable places*." [Page 4]

Policy C. "*Sidewalks are encouraged for safety and sustainability purposes in new developments*."

Sidewalks are designed along the frontage of Gooding Ave and within the proposed Hotel site to provide for safe pedestrian access to the facility. [Engineering Repose]

Policy E. "*Address the issue of exterior lighting for public and private development, balancing the need for adequate lighting with the need to avoid excessive lighting on nearby residence*s." [Page 5]

Lighting is proposed for safe pedestrian access within the parking lot and within the structure entrance areas to provide for safe pedestrian access. [Engineering Repose]

Policy G. "*Buffer neighborhoods from incompatible land uses*." [Page 5]

Vegetated buffer to the westerly residential property is provided as required by the zoning ordinance. [Engineering Repose]

Goal 1. "*Protect Bristol's natural landscape and resources for present and future generations*." [Page 8]

Policy A. "*Protect Bristol's water, air, soil, plant, and wildlife resources, especially all resources that are identified as being threatened or endangered. Protect and encourage biological diversity. Conserve and manage natural resources in a manner that consistent with the contemporary vision of the town*." [Page 8]

The project design has complied with RIDEM OWR Wetland division regulations. The stormwater management system is designed to improve stormwater quality discharge, and to mitigate stormwater discharge rate and volume to pre development levels. The site development is designed so as to have no adverse impact to the existing flood plain. Soil Erosion and Sediment Control measures are specified to protect wetland resource areas during construction. A stormwater management system operation and maintenance plan is specified for long term performance and permit compliance. The impact to area wetlands is therefore mitigated by the project design, [Engineering Repose]

Goal 4. "*Educate and motivate the public to encourage involvement and increased awareness of every person's responsibility to preserve and protect the natural, historical and cultural character of the town*." [Page 9]

Policy A. "*Regulate growth and development so as to protect natural, historical, and cultural resources for future generations*." [Page 10]

The project site is located in an area zoned as general business where the hotel and associated parking is a permitted use. The project is proposed with frontage on the RIDOT State Right of Way Gooding Avenue. The area of disturbance is limited to 4.5 acres more or less over the 9 acre parcel. The remaining undeveloped area of the parcel are to remain in the natural state. [Engineering Repose]

E. Street Access - "*All proposed development projects and all subdivision lots shall have adequate and permanent physical access to a public street. Lot frontage on a public street without physical access shall not be considered compliance with this requirement*."

The proposed Hotel will have direct and permanent physical access to and from Gooding Avenue.

CONCLUSION

It is this Consultant's professional opinion that the proposed development is consistent with the Comprehensive Plan and furthers the respective Policies, Goals and Objectives of said Plan, and can therefore be fully supported by the Bristol Planning Board. My professional opinion is

based upon the manner in which the development can be incorporated into the overall fabric of the general area. The Planning Board must carefully consider the many benefits posed by the Applicant's development, to include a new economic revenue stream and much-needed Hotel space.

KELLY, SOUZA, PARMENTER & RESNICK, P.C.
think TENACIOUS

Michael D. Resnick, Esq.
mresnick@ksprlaw.com

December 30, 2025

via electronic mail

Bristol Planning Board
c/o Diane M. Williamson, Director of Community Development
Bristol Planning Department
235 High Street, 1st Floor
Bristol, RI 02809
dwilliamson@bristolri.gov

Dear Honorable Members of the Planning Board:

As you are aware, this firm, Kelly, Souza, Parmenter, & Resnick, P.C. ("KSPR"), represents D&M, LLC ("D&M") in connection with D&M's application to construct a Comfort Inn & Suites in the Town of Bristol (the "Town"). This letter serves to provide an overview of the different criteria for the materials that must be submitted for Master Plan Review and Preliminary Plan Review.

The Rhode Island General Laws define a master plan as "an overall plan for a proposed project site outlining ***general, rather than detailed, development intentions***. It describes the ***basic parameters of a major development proposal, rather than giving full engineering details***." R.I. Gen. Laws § 45-23-32(22) (emphasis added). Pursuant to another section, titled "General Provisions—Major Land Development and Major Subdivision Review Stages", it is required that more general information about the project is provided. Specifically, the materials submitted for Master Plan Review include:

> "information on the natural and built features of the surrounding neighborhood, existing natural and man-made conditions of the development site, including topographic features, the freshwater wetland and coastal zone boundaries, the floodplains, as well as the proposed design concept, proposed public improvements and dedications, tentative construction phasing; and potential neighborhood impacts." R.I. Gen. Laws § 45-23-39(c)(1)(ii).

As such, Rhode Island law is clear that the documents and materials submitted for Master Plan Review are conceptual in nature and less detailed than the documents and materials that are submitted for Preliminary Plan Review.

Under Rhode Island law, Preliminary Plan Review requires more detailed documents and materials than those that are required for Master Plan Review. As the Rhode Island Superior Court recently noted, "master plan approval is a conceptual approval, preliminary plan approval ***is more detailed and focuses on particular aspects of the plan***." *The Town of Narragansett v. The State Housing Appeals Bd.*, 2025 WL 520502, at *4 (R.I.Super. Feb. 11, 2025) (emphasis added). The Rhode Island General Laws, define Preliminary Plan Review as "a required stage of land development and subdivision review that generally requires ***detailed engineered drawings***." R.I. Gen. Laws § 45-23-32(32) (emphasis added). The General Laws also state that "requirements for the preliminary plan and supporting materials for this phase of the review include, but are not limited to: ***engineering plans depicting the existing site conditions, engineering plans depicting the proposed development project, and a perimeter survey***. R.I. Gen. Laws § 45-23-39(d)(1)(ii) (emphasis added).

Pursuant to the Town of Bristol's Major Subdivision or Major Land Development Checklist (the "Checklist"), "for items required at the pre-application and ***master plan stage of review, conceptual design and approximate locations of required checklist items is acceptable*** . . . for items required at the ***preliminary . . . stage of review, engineered design and proposed final locations of required checklist items shall be provided***, with certification by Professional Engineer where required." Town of Bristol, RI, Subdivision and Development Review Regulations, App. D, *Major Subdivision and Major Land Development Application and Checklist*, at *3 (Amend. March 2024) (emphasis added) (*hereinafter* "App. D").

Under section D of the Checklist, the Preliminary Plan requires that an applicant provides documents including, but not limited to, the following: (1) a traffic plan; (2) a certification from an RI Land Surveyor that Class I and III surveys have been performed; (3) location and design details for on-site water treatment systems; (4) designs of stormwater management infrastructure prepared by a Registered Engineer; (5) proposed grading plans to show contours at sufficient detail (2-foot intervals); and (6) landscape plans, by a Landscape Architect. App. D § D, at *6-8. According to the section D checklist, the above-listed documents and materials are not required for Master Plan Review.

By contrast, section E of the Checklist requires that the supporting materials for Master Plan Review include, but are not limited to, the following: (1) copies of aerial photograph or satellite image vicinity map showing the subdivision/development parcel; (2) a narrative report; (3) if no wetlands, an affidavit stating there are no freshwater wetlands or buffer areas; (4) copies of RIDEM stormwater or other permits; and (5) written confirmation and/or permits from any additional required federal, state, or local agencies. App. D § E, at *8-11. According to section E, the above-listed requirements are not required at the Preliminary Plan Review stage. These documents are not required for Preliminary Plan Review as the documents are conceptual and do not require any certifications from an engineer or other licensed professional.

Therefore, based upon the above cited General Laws and the Town of Bristol's checklist for a Major Land Development project, it is clear that the documents and supportive materials submitted for Master Plan Review are conceptual in nature. Whereas the documents and materials submitted for Preliminary Plan Review are more detailed and typically require engineered plans and/or documents.

We are of position that the materials we have submitted have satisfied all master plan element requirements. Any and all comments obtained from the Technical Review Committee, Town Staff, Planning Board Members, and/or the Town Community, outside such conceptual review, are appropriate as conditions to preliminary review as a part of a favorable master plan decision and not as materials to consider relative to the findings before this Board under Master Plan review.

R.I. Gen. Laws § 45-23-60 lists the findings required of a planning board:

a) Except as set forth in this section, all local regulations shall require that for all administrative, minor, and major development applications the approving authorities responsible for land development and subdivision review and approval shall make positive findings on the following standard provisions, as part of the proposed project's record prior to approval:

1. The proposed development is consistent with the comprehensive community plan and/or has satisfactorily addressed the issues where there may be inconsistencies;

2. The proposed development is in compliance with the standards and provisions of the municipality's zoning ordinance or has obtained relief from the same, or another provision of this chapter that exempts compliance with a specific provision or standard;

3. There will be no significant negative environmental impacts from the proposed development as shown on the final plan, with all required conditions for approval;

4. The subdivision, as proposed, will not result in the creation of individual lots with any physical constraints to development that building on those lots according to pertinent regulations and building standards would be impracticable. (See definition of Buildable lot). Lots with physical constraints to development may be created only if identified as permanent open space or permanently reserved for a public purpose on the approved, recorded plans; and

5. All proposed land developments and all subdivision lots have adequate physical and permanent physical access to a public street unless there are local zoning ordinance provisions allowing exceptions to this requirement or the applicant has obtained the required relief from this provision.

Please contact me with any questions or concerns.

Sincerely,

Michael D. Resnick, Esq.

December 11, 2023

Mr. & Mrs. Timothy Velleca
20 Dixon Avenue
Bristol, RI 02809

Mr. Martin D Wencek, Permitting supervisor
Office of Water Resources/Permitting Section
Freshwater WEtlands Program
235 Promenade Street
Providence, RI 02908-5767

DEC 15 2023

RE: **Wetland Application No. 22-0264, Mainstay/Sleep Inn Hotel, Gooding Avenue, Bristol RI 02809.**

Dear Mr. Wencek,

We are writing this letter to object to the Rhode Island Department of Environmental Management RIDEM granting a wetland alteration permit for **Wetland Application No. 22-0264, Mainstay/Sleep Inn Hotel, Gooding Avenue, Bristol RI 02809.** This land is a valuable mature wetlands and a habitat to wildlife. Wetlands serve to protect people and properly from flooding during bad storms.

Streams run through these wetlands and continue to flow to Mt. Hope High School, the creek on Chestnut Street, south to other neighborhoods, and finally into Silver Creek on HOpe Street. We have severe flooding problems in this area of Bristol. Many times during heavy rains on Chestnut Street and Hope Street at Silver Creek become impassable to traffic. Further, both Mount Hope High School and Guiteras Elementary School have been subject to both sewer and water back ups both in the past and as recently as last week. Recently, a bond has passed in our town to permit the building of a new high school, all within a mile of this proposed hotel project. What effect will this hotel have on our new school, when our old school already has water issues. The field in which this new school is proposed to be built is already sopping wet.

We live at 20 Dixon Avenue and when our house was constructed in 2004 we had to comply with all the water runoff regulations. Yet, during heavy rains we suffer from basement flooding and our dry well overflows. Recently, we had to install a sump pump to handle the increase in our water table. I have had to call the town every winter to come and salt Murgo Lane due to excessive pooling water that freezes over in the winter and causes a driving hazard in our neighborhood. Our front yard used to be the

driest point of our land. In recent years and especially since the applicant cleared the hotel sikte in 2021, my front yard is always squishy and wet. Dixon Avenue has had to have potholes repaired multiple times only to have the repairs be dislodged due to excessive water. We feel that altering these wetlands will only add to the flooding issues and cause more harm to us, our neighbors, and the residents of Bristol.

Even though Flooding is a major concern for us and our neighbors, we must also consider the animals who live in these wetlands. There are skunks, coyotes, bats, deer, and turkeys all living in these wetlands. Since the applicant cleared the land in 2021, there has been an increase in the wildlife throughout our neighborhood. We currently have a family of skunks living under our deck. Not a night goes by where I don't see deer on our lawn eating our shrubs. In the summer, the deer are out there each night eating the pears from our pear tree. When I walk on Naomi street there are deer literally in plain view in the bank parking lot. Several times I have walked at night and seen coyotes running through my neighbors yards. Destroying what is left of the wetlands on Gooding Avenue in order to build a hotel is reckless and careless and stands to destroy the little of what is left for homes for these animals.

Please save our wetlands and wildlife's habitats, and help prevent more harmful flooding. Do not issue a permit to alter wetlands, specifically **Wetland Application No. 22-0264, Mainstay/Sleep Inn Hotel, Gooding Avenue, Bristol RI 02809.** Enforce The Freshwater Wetlands Act. There are other properties available in Bristol for a hotel.

Sincerely,

Timothy Velleca
Melissa Velleca
20 Dixon Avenue
Bristol, RI 02809

RI [illegible] Management
[illegible]2023
Office of [illegible]es

December 6, 2023

Mr. Martin D. Wencek, Permitting Supervisor
Office of Water Resources/Permitting Section
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI 02908-5767

RE: DEM Wetland Application #22-0264 Request to Alter Wetlands on Plat 111/Lot 1 located on Gooding Avenue, Bristol, RI.
Applicant/Organization name: KenDan, LLC
Proposed Project: To build Mainstay/Sleep Inn

Dear Mr. Wencek:

This letter is written **in objection** to Rhode Island Department of Environmental Management (DEM) in issuing a permit to Alter Freshwater Wetlands on Plat 111/Lot 1 located on Gooding Avenue, Bristol, RI. The objection is based on:

"We oppose the granting of this application because it is our opinion: that it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek …. The preservation of wetland is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets." (Petition Against 2023)

I have resided in Bristol my entire life, as have many of my neighbors, and have lived at 35 Dartmouth Street for more than 50 years. I am very familiar with this area of Bristol, especially the wooded wetlands, which border Andrew's Court, Dixon Avenue, and Dartmouth Street. I believe it is necessary for DEM to hear personal accounts of our wetlands and flooding problems.

The Petition in Opposition to the Proposed Development

In 2015, I submitted to DEM a Petition in Opposition to the proposed hotel on Plat111/Lot 1 with 28 signatures of my neighbors on Andrew's, Dixon, and Dartmouth. Today, I present a Petition with more than 100 signatures of neighbors who are affected by flooding and oppose the filling in and alteration of these wetlands. The petitioners are worried that a bad flooding situation will become worse with the filling in of wetlands caused by this project. My neighbors have personally expressed their concerns to me and wanted to convey them by signing the Petition (Attachment A: Petition Against 2023). In addition, the following are some of their comments of concern:

"Cutting down trees leads to flooding because these trees absorb water."

"She would like to sign the petition but is afraid DEM would put her in a floodplain making her purchase flood insurance."

"He's not only worried about flooding because of wetland filling, but the impact of the rise in sea level on flooding."

"In the storm of 2021, I experienced flooding of garage walls and flooding of basement."

"She knows the seriousness of flooding and its economic consequences particularly high insurance rates."

"Building in wetlands would never happen in Massachusetts."

"Had to run two sump pumps, and water was still going into the basement."

Gooding Avenue, Site of Proposed Mainstay/Sleep Inn

Most of this land (Plat 111/Lot 1) for the proposed development is wetlands and has been identified as such by qualified biologists hired by the Applicant and reviewed by DEM. The land east of Plat 111/Lot 1 to Metacom Avenue is mapped wetlands, and the land south of Plat 111/Lot1 to Mt. Hope High School is mapped wetlands. This Plat also borders the 100 -Year Flood Zone. (FEMA (100 Year Flood Zone Map) This wetland area is part of the Eastern Branch of the Silver Creek Watershed. (Silver Creek Drainage Study, Beta Engineers-Scientists, November 2007). Mr. Ed Tanner, Bristol Town Planner, called this watershed massive encompassing schools, nursing facilities, and about 100 homes. (Bristol Phoenix January 30, 2020. p. 3)

Wetlands Function and Values

I realize that wetlands serve a valuable function of storing rainwater and snowmelt, and for allowing the water to run at a slower rate to prevent harmful flooding. The trees and vegetation within wetlands absorb water; thus, the elimination of such leads to flooding. The wetland areas are wildlife habitats. Disturbance of the habitats forces these animals into other areas such as our yards. Our yards are not a suitable habitat for wildlife, which can affect their mortality. The wetland areas also provide for recreation, such a nature trail or controlled hunting.

Flooding Concerns Increasing

My neighborhood abuts this watershed. During heavy rains my yard, as well as my neighbors' yards are susceptible to surface ponding and flooding. We all have sump pumps to control basement flooding, but flooding still occurs. There is flooding on our streets. Moreover, what I have experienced these past few years is an increase in the intensity and occurrence of flooding. As I went around the neighborhood with the petition, neighbors expressed the same concern. What is more alarming is that there is now pooling of inches of water in our yards even after a rainstorm with a short duration. (Attachment B: Photos August 18, 2023). The soils in this area are hardpan that permits very little infiltration; thus, the rainwater just stays on the surface. Filling in wetlands, will exacerbate the problem of ponding of water in our yards. The soil can't absorb the water, the wetlands are eliminated so the rainwater must go somewhere and that

somewhere is our yards. Additionally, neighbors are reporting water in their basements, even with sump pumps working.

September 2, 2021 Major Flooding throughout the Eastern Branch of the Silver Creek Watershed

As described by Mr. Tanner, this watershed covers a good part of the interior of Bristol. (Bristol Phoenix January 20, 2020. p. 3) And as mentioned before, the proposed development lies within this watershed. The land south of the proposed development floods. Mt. Hope High School and Guiteras Elementary School flood. The river flows through a series of culverts, which restrict the passage of flood water, at Mt. Hope High School causing overflow onto Chestnut Street and thus flooding of the street. The flood waters prevent vehicles from using the roadway. Culverts under Hope Street also overflow; and the areas of Hope, Washington, and Thames Streets were under 3 to 4 feet of water. (Providence Journal September 3, 2021, p.12A) It is important to note that on September 2, 2021, we did not suffer from a storm surge at the harbor. If there were a storm surge, interior flooding within this watershed would have been far more extensive. Rivers flowing from this watershed enter Silver Creek on Hope Street, and then exit into Bristol Harbor. A storm surge and sea level rise would create a perilously wide flooding situation throughout the watershed. As one person who signed the petition said, he/she may not suffer from problematic flooding now but fears the real potential if the proposed development eliminates over 50,000 square feet of wetlands coupled with sea level rise.

Added to the damage of flooding of homes, yards, and schools is the real concern of street closures and its effect on our neighborhood. Traffic is detoured through Naomi Street, a very narrow residential roadway connecting Chestnut and Gooding Avenue. Naomi St. is the only exit for the residents of the 60 plus homes on Andrew's Court, Dixon Ave, and Dartmouth St. These streets dead end in wetland areas of Silver Creek. Traffic backup on Naomi St. poses a serious problem for immediate rescue or evacuation of my neighbors.

The Effects of altering/clearing of wetlands on Plat 111/Lot 1

In August 2021, the applicant/owner Kendan began to clear a portion of Lot 1. Trees were axed and vegetation removed. Several weeks later, on September 2, 2021, as already described, there was significant property flooding downstream of this watershed. Today, we have more basement flooding and pooling of water in our yards than ever before. Our yards have become homes to skunks, rabbits, and deer. The fox and pheasant are no longer seen.

It is our opinion expressed by the Petition, that the balance of nature has already been disturbed and our property has since experienced more flooding by the minimal clearing on Lot 1 in August of 2021. The applicant has a right to develop his/her land within the parameters of laws. However, he/she does not have the right to develop that would result in harm to others. Rhode Island's Wetland Act of 1971 recognizes the value and function of wetlands and the need to preserve them. The applicant's proposal is to alter this wetland area, and as such will cause financial hardship for property owners, erase potential recreational property, and destroy wildlife

habitats. We believe that we have already begun to witness the effects of altering this wetland area; therefore, we are very concerned about increased flooding that could occur if over 50,000 square feet of wetland is covered by impervious area.

For the reasons stated above it is my opinion that RIDEM should deny the permit application #22-0264 to alter Wetlands on Plat 111/Lot 1 located on Gooding Avenue in Bristol, RI.

Sincerely,

Emily Spinard

Emily Spinard
35 Dartmouth Street
Bristol, RI 02809

Attachments: Attachment A Petition 2023
Attachment B Photographs

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Emily Spinard	Emily Spinard	35 Dartmouth St	espinardc@yahoo.com
Edward Spinard	Edward Spinard	35 Dartmouth St	Espinard@gmail.com
Noelle Mello	Noelle Mello	24 Dixon Avenue	nmmello19@yahoo.com
Thomas Mello		24 Dixon Avenue	thinri@yahoo.com
Robert DaPonte	Robert DaPonte	36 Dartmouth St	robertdaponte3@gmail.com
DOUGLAS CAVALIERI		38 Dartmouth St	DRC4165@GMAIL.COM
Doris DaPonte	Doris DaPonte	36 Dartmouth St	daponteddl@gmail.com
Melissa Velleca		20 Dixon ave	mminri@yahoo.com
Tim Velleca		20 Dixon Ave	TJV Painting@yahoo.com
Sandra Greer	Sandra Greer	16 Leila Jean Drive	sandragreer519@gmail.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Patti Cirillo	Patti Cirillo	37 Dartmouth	patticiri1004580@gmail
Patricia Cirillo	Patricia Cirillo	37 Dartmouth St	bjcdpc@gmail.com
Peter Cirillo	Peter Cirillo	37 Dartmouth St	
Arthur Cirillo	Arthur Cirillo	32 Dartmouth ST	
Matt Benson		8 Leila Jean	
Celeste Bernardin	Celeste M Bernardin	"	
Edwin Huggins	Edwin Huggins	8 Alan Dr.	ehuggins@aol.com
Melissa Pacheco	Melissa Pacheco	6 Alan Drive	melissa.pacheco85@yahoo.com
Greg Pacheco		6 Alan Dr.	
Stefanie McCormick	Stefanie McCormick	11 Alan Dr.	ssm1020@gmail.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Lucille Palmieri	Lucille Palmieri	25 Dartmouth St	Palmic1@cox.net
Marilyn McFadden	Marilyn McFadden	28 Dartmouth St	R.mcfadden4@cox.net
Robert McFadden Jr	Robert McFadden	28 Dartmouth St	" " "
PATRICIA J. PINSKEY	Patricia J. Pinskey	12 CORTE REAL DRIVE	PJYEKSNIP@AOL.COM
VERONICA TUCKER	Veronica Tucker	40 Congregational St	peacebaby53@GMAIL
Raymond Payson	Raymond Payson	131 Ferry Rd	ray-payson@earthlink.net
Margaret Godwin	Margaret Godwin	40 Terrace Dr	Mmjgodwin@aol.com
PAUL SOUSA	Paul Sousa	31 Dixon Ave	Careman7@yahoo.com
Patricia Chalmers	Patricia E Chalmers	21 Bristol Woods Dr.	pchalmers@yahoo
Megan Ferreira	MF	37 Andrews Ct	MJFerreira82@gmail.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

	Name (Print)	Signature	Address	email address
1	MIKE PROTO		245 CHESTNUT ST BRISTOL, RI	MIKEPROTO218@GMAIL.COM
2	Sue Proto		245 Chestnut Bristol RI	
3	Lydia Garvin		249 CHESTNUT BRISTOL RI.	
4	Gail Garvin		249 Chestnut St. Bristol	
	Brian Gouveia		24 Joseph Bristol,	
	Richard Schenck		5 Butterworth Dr Warren	
	Michael Edwards	M.J. Edwards	6 Stoneham Dr. Riverside RI 02915	
	John Scuttillo		181 KING PHILIP ST Portsmouth RI 02871	
	Don Clokey		173 Heidi Dr Portsmouth RI 02871	
5	Victoria Farrell	Reed Vickie Farrell	9 Karen Ann Dr Bristol 02809	
6	Cecilia Vallee	Cecilia Vallee	6 Marie DR. BRISTOL, RI	CVallee1@COX.NET
	Madeline Torres	Madeline	80 Watuppa Ave Tiverton RI	

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address

intentionally left blank

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
David Halligan	David Halligan	27 Dixon Ave	DKHalligan@gmail
Pamela Halligan	Pamela Halligan	27 Dixon Ave	pamhalligan@aol.com
Dana Card	Dana Card	23 Dixon Ave	Card35@gmail.com
Ray Card	Ray Card	23 Dixon ave	bristolplumbing@yahoo.com
Charles Canario	Charles Canario	17 Dixon Av.	Sadets@cox.net
PAULA MADDEN	Paula Madden	34 Dartmouth St	pepere7398@aol.com
Kimberly Madden	Kimberly Madden	34 Dartmouth St.	Kimberly-Madden@hotmail.com
LINDA K EGAN	Linda K Egan	5 Dartmouth St	EganLK1@gmail.com
Jeffrey Simons	Jeff Simons	78 Gooding Ave	JFS@AMS.org
Pamela DeCosta	Pamela DeCosta	72 Gooding Ave	DeCostapamela@gmail.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
MARK POULIOT	Mark Pouliot	359 Wood St. Bristol	mpouliot@arnoldlumber.com
Gail Sweeney	Gail Sweeney	D-8 Bristol W. Dr.	Gjohnsong@aol.com
KEVIN MCCARTHY	Kevin McCarthy	41 Thayer ST	
MARIAN McCARTHY	Marian McCarthy	4/6 Monroe Ave Bristol RI	DRAKE1@COX.NET
CHERYL Kenney	Cheryl Kenney	91 AARON AVE Bristol	cheryl1akenney@yahoo
James M Ricci	James M Ricci	91 Aaron Ave, Bristol, RI	jamesmricci@yahoo.com
MARIE CLAUDE ROSSI	Marie Claude Rossi	E-3 Bristol Woods	mrossi@polchannel.net
LANA M LAW		E-6 Bristol Woods	LDLaw@gmail.com
Deborah WALKER	Deborah Walker	E6 Bristol Woods Dr Bristol RI	debbiew@fullchannel.net
JOHN BELLAFATTO		E6 BRISTOL Woods BRISTOL, RI	JBELLAFATTO@HOTMAIL.COM

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
ALAN FERREIRA		37 Andrews Ct	AFerreira982@yahoo.com
Mark Reinhart		38 Andrews Ct	markreinhart2@cox.net
Maria Botelho		35 Andrews Ct	Mibotelho5100@gmail.com
Maria Sara Barbosa		42 Andrews Ct	" "
Jordan M Botelho		35 Andrews Ct	JORDAN botelho07@yahoo.com
Neil Thompson		30 Andrews Ct	NTHOMP461@GMAIL.COM
Hildeberto DeLima		18 Andrews Ct.	
Judith da Silva		32 Andrews Ct.	jad2353@fctvplus.net
Joseph da Silva		32 Andrews Ct.	jad2353@fctvplus.net
Laurie E. D'Arcangelo		36 Andrews Ct	michliad5a@gmail.com
Michelle Sousa	Michelle Sousa	36 Andrews Ct.	MitchLO109@gmail.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans*. The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Maria H. Aguiar	M. H. A.	30 Dixon Ave	
FRANK AGUIAR	ERIC AGuiar	30 DIXON AV BRISTOL	
Richard Jenness	Richard Jenness	2 Dixon Ave Bristol	
Kerry Jenness		2 Dixon Ave Bristol, RI 02809	kerryjenness@cox.net
Anthony Cardoza	Anthony Cardoza	31 Dixon Ave Bristol	weatherfreek@yahoo.com
Assle Amarade		24 NAOMI STREET	assiefamarade@gmail.com
Margarida Dias	14 Andrews ct		
ANTONIO DIAS	Antonio Dias	14 ANDREWS CT.	

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
ELISABETH RIDDER	Elisabeth Ridder	D4 Bristol Woods Bristol, RI 02809	Dr. Chairdust8@gmail.com
Frank & Brenda Gerardo		D3 Bristol Woods Drive	brenda gerardo@yahoo.com
JACQUELYN BILOTTI	Jacquelyn Bilotti	C3 BRISTOL WOODS DRIVE	Jbilotti1019@gmail.com
Sandra Jones	Sandra Jones	D6 Bristol Woods D.	Sandrajones4550@gmail.com
Leslie F. Costa	Leslie F. Costa	E10 BRISTOL WOODS DRIVE - BRISTOL, RI 02809	CAM625@EMAIL.COM
Deborah A. Hart-Vieira		E2 Bristol Woods Bristol, RI Drive	dhartvieira@gmail.com
George M. Vieira		E2 BRISTOL Woods	GV5977@GMAIL.COM
Peter Hopps	Peter Hopps	C6 Bristol Woods Dr	phopps@comcast.net
Steven Silvia		C5 BRISTOL WOODS BRISTOL RI DRIVE	
Angelo Calandro		B12 Bristol Woods Dr #12B Bristol, RI	

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Kathleen Calandro		B12 Bristol Woods Dr. #12B Bristol RI 02809	Callcc2009@mail.com
Rich Hudson		B2 Bristol Woods Dr 02809	rich@rihudson photo.com
Lisa Judge		B2 Bristol Woods Dr Bristol, RI 02809	lilajudge@gmail.com
Rose Tirlonfold		E1 Bristol Woods Bristol RI 02809	superoky1@hotmail.com
Harold Melto		A7 Bristol Woods Bristol RI 02809	Boxer516.AOL.com
How Jones		D6 Bristol Woods 02809	Bostontaffe@msn.com
Phyllis Poisson		C2 Bristol Woods Bristol RI 02809	phyl0921@gmail.com
William Sweeney		D8 Bristol Woods Bristol, RI 02809	WBSZT2@aol.com
Susia Hurley		B-4 Bristol Woods Drive	Hurley Re Site @yahoo.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Brian McCarthy	Brian McCarthy	118 Bradford St	
BETH MCarthy	Elizabeth M Carthy	32 Central	
Dorothy Chmielewski	Richard Chmielewski	33 Central	
Mark Moreira		36 Narrows	
Gina Moreira	Gina Moreira	36 Narrows	
Lynn Feri	Lynn Feri	40 Thayer St	
[illegible]	[illegible]	42 Thayer St.	
Julie Cavalieri	Julie Cavalieri	43 Thayer St	
Alicia Smith	Alicia Smith	34 Thames St, Fl 2	
Anthony Bruno	ANTHONY BRUNO	52 Constitution	

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Wayne Zina	Wayne Zina	74 Gooding Ave	W.Zina@aol.com
Amber Marrocco		74 Gooding Ave	—
James Singleton Jr	James Singleton Jr	28 Andrews Ct	jjrussSingleton11@gmail.com
Danielle' Stroessner	Danielle Stroessner	28 Andrews Ct	Danielle5199@yahoo.com
Susan Winokur	Susan Winokur	23 Andrews Ct	SWinokur11@gmail.com
Jonathan Winokur	Jonathan Winokur	23 Andrews Ct	—
MICHELA SACCO		27 ANDREWS CT	GABRIEL1964@GMAIL.COM
Diane Belanger	Diane Belanger	27 Andrews Ct	diane6197@gmail.com
	Kate Sylvia	41 Sherry Ave	katemsylvia@gmail.com

PETITION AGAINST

Flooding Impacts caused by proposed Mainstay/Sleep Inn (2023)

The applicant's KenDan, LLC (DEM Wetland Application #22-0264) request to ALTER WETLANDS by filling in 66, 215 square feet of wetland areas (Plat 111/Lot1) along Gooding Avenue, Bristol, RI to build an 80 plus room Mainstay Extended Stay/Sleep Inn.

We **oppose** the granting of this Application because it is our opinion that: it will increase the already problematic flooding in our neighborhoods; it will degrade Silver Creek; it is not consistent with *Bristol's Comprehensive Plan, Silver Creek Drainage Study, and Open Space, Storm Water Management, and Natural Hazard Mitigation Plans.* The preservation of wetlands is crucial to provide flood storage to mitigate flooding of our homes, schools, nursing facilities, and streets.

Name (Print)	Signature	Address	email address
Cynthia Cole	Cynthia J. Cole	321 High St. Bristol	cynd.cole@hotmail.com
William Cole	William Cole	321 High ST Bristol	—
Kristen Conway	Kristen	24 Court st Bristol	—
Chi Cates	Chi Cates	21 Charlotte Dr Bristol RI	—
Kristine Cates	Kristine Cates	21 charlotte dr Bristol	
Manuel DaSilva	Manuel DaSilva	5 Larson Court Bristol	—
William Wyatt	William Wyatt	27 Clipper Way	—
Christine DaSilva	Christine DaSilva	31 Brooks Farm Dr. Bristol RI.	
Katelyn DaSilva	Katelyn DaSilva	31 Brooks Farm Drive Bristol RI	
Gwen DeGray	Gwen DeGray	115 Hope St	

rts of Hope Street in Bristol were under 3 to 4 feet of water Thursday. DAVID DELPOIO/THE PROVIDENCE JOURNAL

9/2/21

FP1251825472631#48-48 27-18300 C1 09/13
FreePrints.com - 09/03/2021

Sept. 2, 2021

Summer 2023
after a brief rain

Summer 2023
after brief rain

December 7, 2023

RI Environmental Management
DEC 1 2023
Office of Water Resources

To: RIDEM Freshwater Wetlands Program
Martin Wencek, Program Supervisor
From: The Bristol Conservation Commission
Re: Application 22-0264

Dear Mr. Wencek;

The Bristol Conservation Commission has reviewed the noted application to alter freshwater wetlands in order to build a hotel on Gooding Avenue in Bristol. After extensive review, we have concluded we cannot support Application 22-0264 as currently proposed.

In our view, the proposal to build on almost 50,000 square feet of swamp and wetlands would seriously and negatively impact the function and value of that wetland, as it will no longer protect the subject property, nor properties downstream (Silver Creek runs just to the East). Significantly, one of those properties is the location of the current and future Mount Hope High School.

The extensive engineering work proposed, in our view, doesn't mitigate wetlands impact, it effectively destroys that portion of the wetlands it will be constructed in. It is also not clear that, with storm frequency and intensity increasing, it will sufficiently handle extreme events. The potential for the man-made system to be regularly overwhelmed would create an ongoing hazard for downstream properties.

We have, therefore, concluded that the risk of this alteration, effectively a "re-architecting" of nature, to adversely impact a wetland and surrounding properties is far greater than any benefit it may promise. Protection of our wetlands, and their benefits, is of paramount concern. We are very concerned this proposal not only doesn't protect or even "alter" a wetland, it destroys a large portion of it and, with it, will cause more problems downstream.

Respectfully,

The Bristol Conservation Commission
Tony Morettini, Chair

Mr. Martin Wencek, Program Supervisor
RI Department of Environmental Management
Office of Water Resources
235 Promenade St.
Providence, RI 02809

RI Environmental Management
DEC 22 2023
Office of Water Resources

December 19, 2023

Re:
Wetland Application #22-0264
Mainstay/Sleep Inn Hotel
Gooding Avenue, Bristol

Dear Mr. Wencek,

I am writing this letter to object to RI DEM granting a wetland alteration permit for the referenced application #22-0264.

The Gooding Avenue area is part of the Silver Creek Watershed. Wetlands are vital for flood storage and the mitigation of flooding. There is no question about global warming. It's happening, and storms are becoming more severe with increased flooding and devastation.

The neighborhoods along the Silver Creek Watershed are frequently flooded. We need more wetlands in Bristol, not less. The proposed hotel development would displace 50,000 square feet of wetlands. The thought of building on any wetlands is extremely shortsighted, especially in a coastal town. Once our wetlands are gone, they are gone for good.

I lived in an area in Bristol where shortsightedness enabled building on wetlands. During heavy rains, the backyards in my neighborhood turned into one giant lake, a river crossed Mount Hope Avenue, and we could not flush our toilets for days.

I am hoping that RI DEM will consider the impact of the proposal, have foresight, and not allow a 50,000 square foot hotel to be built on our valuable wetlands.

Sincerely,
Patricia E Chalmers

Patricia E. Chalmers
D2 Bristol Woods Drive
Bristol, RI 02809

RI Environmental Management
DEC 13 2023
Office of Water Resources

Paul Sousa
31 Dixon Avenue
Bristol, RI 02809

Mr. Martin Wencek
Program supervisor
R.I. DEM/ Office of Water Resources
235 Promenade Street
Providence, RI 02908–5767

Re: Request to alter wetlands (#22-0264) in Plat 111/lot 1 on Gooding Avenue in Bristol Rhode Island.

Dear Mr. Wencek

I am writing this letter to you in response to the proposed wetlands alteration application above, put forth by KendDan LLC and LaFrance Hospitality, to build a Mainstay/Sleep Inn Hotel.

As an owner of a directly bordering property, I need to expressed the concerns that I have regarding the flooding that exists around my home, which lies south of the proposed site at a lower elevation. Since purchasing our home in the spring of 2012, we have experienced numerous flooding episodes, especially at the base of Dixon Avenue. When it rains, rain water filters into the wetlands, that lie east of my property, and when the ground is saturated, the water rises to a level that blocks my driveway. Building a hotel with a large parking lot, I fear will further exacerbate the problem and negatively impact the already damaging flooding issues that plague this neighborhood by decreasing the surface area that is needed to absorb the rainfall. Because of the extreme flooding problem, all the homes in the area are required to have numerous sump pumps to maintain a dry basement, which in my case is constantly running during the rainy season, let alone when large, long lasting rains occur which cause massive widespread flooding like what happened in 2010 and then the fall of 2021. The last thing we need is to cause further flooding and increase the already high level of fear and anxiety we have for damage to our homes.

As a lover of nature, I am equally concerned with the continuous shrinkage of the national forest, in terms of various animals, habitat loss, such as deer coyote, fox and turkey, as well as many others. It is just not fair to force these creatures into smaller and smaller areas to live their lives. Just the lot undergrowth having been cleared on the proposed site over a year ago, has created an increase of rabbits living on our property.

The flooding issues that I wrote about remains paramount, but what about all the other problems that will surely arise out of this project? Who will be left holding the bag when problems occur? Us, the victims of this ridiculous proposal. Let's not exacerbate the damage that nature can already deliver. Why build a hotel in an area that is so fraught with problems? Put a stop to this preposterous plan now and let the wetlands be…

I had to express my feelings about this project. I truly hope my voice matters. Poor decisions made today will surely affect many generations to come.

In conclusion, I ask you to please take into consideration my objections to this project and make the right decision. Thank you for your time and the contemplation of the negative consequences this wetlands alteration could potentially cause.

Sincerely,

Paul Sousa

Above photos represent what happened in September 2021 to the Silver Creek when it flooded the High School property.

Above photos represent the flooding that occurs during winter and the freezes, very dangerous to walk on.

Mr. Martin Wencek, Program Supervisor
RI Department of Environmental Management
Office of Water Resources
235 Promenade St.
Providence, RI 02809
December 19, 2023
Re:
Wetland Application #22-0264
Mainstay/Sleep Inn Hotel
Gooding Avenue, Bristol

RI Environmental Management
DEC 22 2023
Office of Water Resources

Dear Mr. Wencek,,

I am writing this letter to object to RI DEM granting a wetland alteration permit for the referenced application #22-0264. While I understand the potential economic benefits such a development may bring, I believe it is crucial to consider the long-term environmental impact and the risk of increased flooding in our community.

Wetlands play a vital role in maintaining ecological balance by serving as natural habitats for diverse wildlife and contributing to water purification. Disturbing these sensitive ecosystems could lead to irreversible damage, affecting not only the local flora and fauna but also the overall biodiversity of our town.

Furthermore, constructing on wetlands raises significant concerns about increased flood risk. Wetlands act as natural buffers during heavy rainfall and storms, absorbing excess water and reducing the likelihood of flooding. Disrupting this natural function may expose our community to heightened flood risks, jeopardizing both residents' safety and property.

In addition to these environmental concerns, I cannot ignore the distressing perception that corporate greed is undermining the beauty of the town we call home. Our community thrives on its natural charm, and prioritizing profit over preserving our unique environment risks eroding the very essence that makes our town special.

I urge you to reconsider the proposed hotel location and explore alternative sites that do not involve encroaching upon our precious wetlands. Sustainable development practices should be a priority, ensuring that economic growth aligns with environmental preservation.

I would appreciate your attention to these concerns and request that you engage in transparent communication with the community, providing detailed information about the potential environmental impact assessments and flood risk mitigation strategies associated with the proposed project.

Thank you for considering the well-being of our town and its environment. I look forward to hearing more about the steps being taken to address these concerns.

Sincerely,

Nicole Carvalho-Ahmed
16 Dimond Ave
Bristol, RI 02809

DEC 27 2023

December 18, 2023

Mr. Martin Wencek, Program Supervisor
Rhode Island Dept of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908

Re: Wetland Application No. 22-0264
Mainstay/Sleep Inn Hotel Gooding Avenue Bristol, RI

Dear Mr. Wencek:

I am writing this letter to inform you of my opposition to the RI Dept of Environmental Management granting a wetland alteration permit for the above referenced application.

It is my opinion that Bristol cannot afford to lose any more of our wetlands. One of the major functional values of wetlands is flood storage and mitigation of flooding. This proposed hotel would occupy a site that is predominately made up of wetlands. This project would fill in over 66,000 sq ft of wetland area and the construction would create more devastation. Considering the flooding issues that Bristol has endured for years, we cannot lose this land to development.

I personally have experienced flooding here on Terrace Drive along with my neighbors. On occasion we have experienced water in our garage and family room. Every time more wetlands have been filled in our situation has gotten worse. I am enclosing photos of Terrace Drive.

As RI DEM supervisor, please consider my concerns when reviewing this application to alter the wetlands on this precious parcel of land. Once land has been developed it is lost forever. It is evident to me that this application to alter the wetlands should be denied.

Sincerely,

Margaret M. Godwin

Margaret M. Godwin
40 Terrace Drive
Bristol, RI 02809

Looking East
Terrace Dr Bristol

Drikeway
Terrace Dr Bristol RI

Item C1.

Backyard TerraceDr Bristol RI

This is the Silver Creek Bridge during a most recent storm

Bristol RI

OfficeMax
Commercial Solutions

Looking West
Terrace Dr. Bristol

December 20, 2023

Mr. Martin Wencek, Program Supervisor
Rhode Island Dept of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908

Environmental Management
DEC 27 2023

Re: Wetland Application No. 22-0264
Mainstay/Sleep Inn Hotel Gooding Avenue Bristol, RI

Dear Mr. Wencek:

We are writing this letter to inform you that we disagree with RI Department of Environmental Management granting a wetland alteration permit for the above referenced application.

We care about what happens in Bristol. There has been so much building going on which has created more flooding problems for Bristol residents. Filling in wetlands is a disaster to what mother nature created for us. We are enclosing photos of a construction site at the end of Gloria Street. As you can see there is a pool of water at this construction site and this water will run downstream to our neighborhood.

As RI DEM supervisor, I hope you will consider our concerns when reviewing the application for wetland alteration for this parcel of land.

Sincerely,

Patricia J Pinskey
Earl T. West

Patricia J. Pinskey
Earl T. West
12 Corte Real Drive
Bristol, RI 02809

Item C1.

End of Gloria St
Bristol RI

Item C1.

End of Gloria St
Bristol, RI

Denise Duarte
30 Valley Drive
Bristol RI 02809
401-835-1237
denisegduarte@yahoo.com

Martin Wencek
Program Supervisor
Office of Water Resources
235 Promenade Street
Providence RI 02908

December 20th, 2023

DEC 27 2023

Re: Wetland Application #22-0264
Mainstay/Sleep Inn Hotel
Gooding Avenue, Bristol RI

Dear Mr. Wencek,

I am writing to strongly object to the RI DEM granting a wetland application as referenced above. This area is part of the Silver Creek watershed area. I am an adjacent resident, and our street (and neighbourhood) already has flooding problems; I cannot imagine the problems and irreversible harm that destroying these wetlands will have.

In light of prior short-sighted construction decisions that have been made in Bristol, I insist that the RI DEM refrain from granting approval for this hotel development. Not only would it be short-sighted for the people in the surrounding areas, but for the ecology and environment.

Please reconsider this, especially after Monday's storm, the likes of which are becoming the norm.

Sincerely,

Denise Duarte

To: Martin Wencek, Program Director
RI Department of Environmental Management
Office of Water Resources
235 Promenade Street, Providence RI

Wetland Application No. 22-0264
Mainstay/Sleep Inn Hotel
Gooding Avenue Bristol RI 02809

I am writing this letter to object to Rhode Island Department of Environmental Management (RIDEM) granting a wetland alternation permit for the above referenced application.

DEM's public notice for comments says that "objections must relate to the proposed project and its impacts upon freshwater wetland functions and values provided by freshwater wetlands to be altered. Such functions include but are not limited to: protection of life and property from flooding...,providing and maintaining valuable wildlife habitats, providing and maintaining high value recreation areas, protecting water quality, and providing and maintaining surface and/or groundwater water supplies by acting as a recharge/discharge area.

I have lived and owned my property for 21 years so know very well how my property and neighborhood deals with water. My entire neighborhood and personal property have flooding problems. In fact, my property is severely affected and is sinking. The roots of my trees are coming through the ground, my property is slanting and even with the slightest rain, the ground is soaked, water pools and doesn't absorb or dry like it should. I never had these issues in the past. My lawnmower gets clogged in the summer because the grass is constantly wet. It is getting worse over the past couple of years and my fear is this hotel will cause things to become even worse. I had to redo my entire driveway as the rain water flowing down my road was so bad that it was flowing into my yard and killing all my lawn. The fact that this proposed hotel occupies wetlands is extremely worrisome to me. As stated, since the site was somewhat cleared in 2021, my property has greatly been affected. It is evident that wetlands are supposed to assist with flood storage and since the area started clearing, I have been impacted as well as my neighbors. Furthermore, I have had to spend so much money in the past 2 years on rodent control. I have more deer, rabbits, voles, skunks and wild turkey's in my yard than ever before. Most are destructive and maintenance to make my property look presentable while these animals should be in their areas have been cleared. Our roads are flooding and this causes delays in traffic. I love my home. I do not want to move. I want peace at home and want to put the daily stress I have when I look outside at my sinking yard to be a thing of the past. Lastly, my neighbors all have increased flooding and rodent issues. Even neighbors that never had water issues now do since the property was somewhat cleared.

Please consider all my above concerns. If you or your family lived in this neighborhood, you would feel the exact same way. For these reasons, the application to alternate wetlands should be denied.

Environmental Management
DEC 27 2023
Office of Water Resources

I have MANY videos and pictures of my property. I have enclosed a few for reference.

Respectfully,

Susan Pasqual
8 Dartmouth St
Bristol RI 02809

Environmental Management
DEC 27 2023
Office of Water Resources

Item C1.

Item C1.

Susan Pascual
8 Dartmouth St Bristol

2' pit filled
w/ water after
rain.

8 Dartmouth St.
Bristol RI

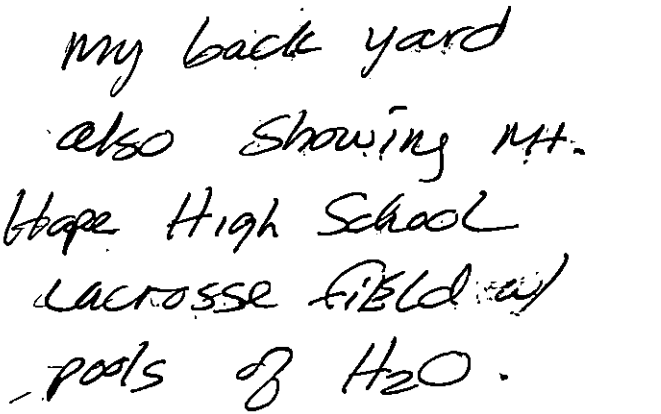
my tree Roots
are exposed &
ground is sinking.

This was never an
issue in the
past.

Item C1.

Item C1.

Laura Pascual
8 Dartmouth St
Bristol



Item C1.

Susan Pasquale
8 Dartmouth St
Bristol

My front yard

advice FOR LIFE®

by Your True Nature®

MYADVICEFORLIFE.COM

ADVICE FROM A SEA TURTLE™ IS A TRADEMARK OF
YOUR TRUE NATURE, INC. © ILAN SHAMIR

Advice from a SEA TURTLE™

Swim with the current
Be a good navigator
Stay calm under pressure
Be well traveled
Think long term
Age gracefully
Spend time at the beach!

Jan. 6, 2024

Dear Mr. Wenczak

Regarding the application #22-0264 for a hotel to be built on Gooding Ave., Bristol, RI., I am opposed to this construction.

This piece of property is a wetland and would disturb its natural habitat if a hotel were built.

Flooding would also be caused by any type of construction.

I would appreciate your department supporting my request.

Thank you kindly,

Nancy Dolce
38 Sullivan Lane
Bristol, RI 02809

RI Environmental Management
JAN - 4 2024
Office of Water Resources

57 Annawamscutt Drive
Bristol R I 02809
December 30, 2023

Mr. Martin Wencek
Program Supervisor
Office of Water Resources
Rhode Island DEM
235 Promenade Street
Providence RI 02908

Dear Mr Wencek:

I am writing you today regarding Wetland Application #22-0264. There are 50,000 square feet of wetlands on the site proposed for the MainStay/Sleep Inn Hotel. The wetlands are located on Gooding Avenue, Bristol Rhode Island. This is not a new idea on behalf of developers.

I would find approval of this Application to be extremely detrimental to those living in Bristol. We have had multiple flooding issues and this area is no different. DEM IS responsible for the sustainability of the wetlands in Rhode Island. Approving this application would send a very poor message to the entire state.

It is my sincere hope that the 50,000 sf remain wetlands especially for the protection of properties adjoining this area.

Sincerely,

Linda M Jackson

Linda M Jackson

RI Environmental Management
JAN 02 2024
Office of Water Resources

Mr. Martin Wencek, Program Supervisor December 29, 2023

Rhode Island Department of Environmental Management

Office of Water Resources

235 Promenade Street

Providence RI 02908

Regarding Wetlands Application No. 22-0264

Mainstay/Sleep Inn Hotel

Gooding Ave. Bristol RI

I am writing this letter to object to Rhode Island department of Environmental Management granting a wetland alteration permit for the above referenced application.

As a concerned citizen of Bristol and a board member of the Bristol Land Conservation Trust I wish to express my grave concern regarding the proposed construction of a hotel on our local wetlands. The building of a hotel in such a sensitive area poses several risks and detrimental impacts.

Wetlands are home to diverse species of flora and fauna. Filling in wetlands of any size will disrupt this habitat leading to a loss of biodiversity. The natural filtration system provided by wetlands which purifies our water supply will also be compromised.

Wetlands act as natural barriers against flooding. This destruction could increase the vulnerability of Bristol to further flooding putting more properties and lives at risk, especially in the face of climate change. We have seen all too well the current flooding as late as the last big rain storm in the middle of Dec. 2023.

While the hotel may bring temporary economic gains, it overlooks the long term costs. The environmental degradation could impact other local businesses, especially those reliant on the natural beauty and resources of Bristol. The flooding in that neighborhood impacts many residents now and also directly impacts the High School, which has a planned new high school on the same property .

Please consider my concerns regarding this very sensitive and important piece of land.

The Bristol Land Conservation has several parcels of wetlands very close to the property in question. We are well aware of the flooding in that neighborhood and the entire town. We are looking at restoration to our wetlands. Destroying an inch more would be detrimental to our future generations.

Sincerely yours,

Veronica A. Tucker

Veronica A. Tucker

40 Congregational St.

Bristol RI, 02809

Board Member, Bristol Land Conservation Trust

Wencek, Martin (DEM)

RI Environmental Management
JAN – 4 2024
Office of Water Resources

From: Alex Van Buren <alexandravanburen@gmail.com>
Sent: Thursday, January 4, 2024 2:53 PM
To: Wencek, Martin (DEM)
Cc: Gagnon, Ron (DEM); Gray, Terry (DEM)
Subject: Re: Wetland application 22-0264
Attachments: Bristol letter.pdf

This Message Is From an External Sender
This message came from outside your organization.
Report Suspicious

Dear Sirs,

Hello. I'm a Bristol citizen and a reporter for national publications. My **signed** objection to wetland application 22-0264 is attached. (Please note that your own **published regulations** permit signed emails on this matter.)

This correspondence remains on the record. Thanks for your time and service.

Sincerely,
Alexandra Van Buren
19 Manchester Street
Bristol, RI 02809

CC: Office of the Governor

On Thu, Jan 4, 2024 at 1:33 PM Alex Van Buren <alexandravanburen@gmail.com> wrote:

THank you. I see nothing in the following that stipulates that signed correspondence can't be emailed. Is there a different address to which citizens should address concerns?

You took so long to get back to my email from mid-December that you have made it unlikely for a signed letter to arrive to you before the public comment period ends.

Sincerely,
Alex Van Buren
she/her

C.Public Comments

1.Comments filed with the Department will be considered and reviewed if they are in writing, are legible, contain a discernable name and address of the objector, are signed and are received during the forty-five (45) day notice period. The commenter must identify the application number noted in the public notice or must otherwise identify or reference the project about which they are objecting. The Department will not consider or review comments to projects which do not contain sufficient information to properly relate the objection to a specific application.

2.A comment will be considered timely filed if received within the forty-five (45) day public comment period. If the last day of the forty-five (45) day notice period ends on a

weekend or holiday, the end of the public notice period will be extended through the next working day.

3.The Department shall determine whether a comment is an objection of a substantive nature. Pursuant to R.I. Gen. Laws § 2-1-22, a determination that a comment is a substantive objection will necessitate a public hearing. All comments received by the Department will remain part of the application file. An objection of a substantive nature is any written comment offered in opposition to a project that:

a.Relates to the functions and values of the freshwater wetlands, buffers, floodplains, areas subject to flooding or areas subject to storm flowage;
b.Has not been clearly addressed by the applicant in his or her application;
c.Has not been assessed by the Department during its review of the application; and
d.Cannot be resolved by the Department's evaluation of the application.

On Thu, Jan 4, 2024 at 1:27 PM Wencek, Martin (DEM) <martin.wencek@dem.ri.gov> wrote:

Mr. Van Buren,

The Rules pertaining to this can be found on the DEM web site (Water Resources, Wetland Regulations) and are filed with the RI Secretary of State (250-RIRC-150-15-3).

Martin

From: Alex Van Buren <alexandravanburen@gmail.com>
Sent: Thursday, January 4, 2024 11:50 AM
To: Wencek, Martin (DEM) <martin.wencek@dem.ri.gov>
Subject: Re: Wetland application 22-0264

Thank you for informing me.

Please consider this correspondence on the record. I am a journalist for national publications as well as a Bristol resident.

Where is this posted publicly, the stipulations that these comments must be signed? Please direct me to any relevant publicly posted notices as soon as possible.

Thank you.

On Thu, Jan 4, 2024 at 11:36 AM Wencek, Martin (DEM) <martin.wencek@dem.ri.gov> wrote:

January 4, 2024

To whom it may concern,

Thank you for your interest in this application. Please be advised that email comments received by this Program pertaining to Application Number 22-0264 cannot officially be taken into consideration as described by the Rules. All comments received during a Wetland Program Public Notice must be in writing, legible, contain your name and address and be *signed* by you. Your letter must be received (or at the very least, be post-marked) by the end of the Public Notice for this application (which is January 8, 2024). Once a hard-copy of your comment is received in a timely manner, any issues raised shall be reviewed and assessed by this Program.

Martin Wencek, Supervisor

Freshwater Wetland Program

Office of Water Resources

From: Alex Van Buren <alexandravanburen@gmail.com>
Sent: Tuesday, December 19, 2023 9:46 PM
To: Wencek, Martin (DEM) <martin.wencek@dem.ri.gov>
Subject: Wetland application 22-0264

Dear Mr. Wencek,

I urge you to deny Mainstay Hotel its application to build a hotel in the protected Silver Creek Watershed area in Bristol.

Flooding is already an enormous, expensive problem in our coastal town. Global warming is a reality; floodwaters need a place to go. Building a hotel on protected wetlands will exacerbate the ferocious flooding in the area so many of us already experience.

Thank you for your service and your consideration of this letter.

Sincerely,

[google.com]

[google.com]

[google.com]

Alex Van Buren

19 Manchester Street [google.com]

Bristol, RI 02809 [google.com]

Alex Van Buren

Writer · Editor · Content Strategist

site & portfolio [alexvanburen.com]

--
Alex Van Buren
Writer · Editor · Content Strategist
site & portfolio [alexvanburen.com]

--
Alex Van Buren
Writer · Editor · Content Strategist
site & portfolio [alexvanburen.com]

ALEX VAN BUREN

347-276-9977 • alexandravanburen@gmail.com • alexvanburen.com • @alexvanburen

Mr. Terrence Gray
Mr. Martin Wencek

RE: Wetland application 22-0264

Dear Mr. Gray and Mr. Wencek,

I write as a Bristol resident and mother. I urge you to deny Mainstay Hotel its application 22-0264 to build a hotel in the protected Silver Creek Watershed area in Bristol.

Flooding is already an enormous, expensive problem in our coastal town. Global warming is a reality; floodwaters need a place to go. Building a hotel on protected wetlands will exacerbate the ferocious flooding in the area so many of us already experience.

Additionally, I urge you to consider every email from Bristol residents—signed and unsigned—that arrives on your desks about this matter. Nothing in the posted regulations suggests that emails can't be taken into account on this matter.

Thank you for your public service and your consideration of this letter.

Sincerely,

Alexandra Van Buren
19 Manchester Street
Bristol, RI 02809

RI Environmental Management
JAN - 4 2024
Office of

TO: RIDEM Freshwater Wetlands Program
Martin Wencek, Program Supervisor
FROM: Bristol Land Conservation Trust
RE: Application 22-0264
Mainstay/ Sleep Inn Hotel
Gooding Avenue, Bristol

January 4, 2024

Dear Mr. Wencek:

The Bristol Land Conservation Trust (BLCT) has reviewed the plans for the Mainstay/ Sleep Inn Hotel on Gooding Avenue in Bristol, R.I. to alter freshwater wetlands and do not support Application 22-0264. Close to 50,000 square feet of swamp and wetlands will be effected by the construction and that is over an acre of wetland. In a Town the size of Bristol that is a significant amount of wetland loss, particularly in light of the flooding that now occurs. Just recently a December storm brought significant flooding downstream and the flooding was exacerbated by 2-3 inches of rain coupled with a high tide.

This parcel of land is situated in the Silver Creek Watershed and because the watershed floods easily with just 2-3 inches of rain, any amount over that will drastically burden the drainage outflow. RIDEM should know by now that Bristol has a big flooding problem in this watershed (and elsewhere) and even though tidal flow (in/out) was improved modestly several years ago by modifying the Route 114 bridge on Hope Street, there is a significant backup during a high tide storm, as well as traffic backup/ altering for many hours. It is important to note that during the Fall of 2023 alone there were several Weather Bureau Flash-flood Warnings for all of Rhode Island. The purpose of maintaining and having a watershed is to minimize flooding damage to residences, private properties, and businesses. When we bit by bit decrease the "sponge effect" of our peripheral watershed land, we can increase the water damage. Incidentally, the BLCT owns 1.5 acres of land just downstream of this project, the closest part of which is just 70 feet away. That land is mostly wetland and will become even wetter.

What is most interesting is, if one looks at the January 2016 "Supervisor's Determination" of the then Wetland file #15-0033, one reads over and over again about the "negative impacts" to wildlife and their habitats. In the current situation a sophisticated underground detention system is supposedly mitigating the "negative impacts" to the wetlands/ habitat/buffer zone that is being disturbed. We, then refer to R.I. Gen. Laws para. 2-1-19 "Freshwater Wetlands!" "It is the public policy of the state

RI Environmental Ma... Office of ... ces
JAN - 4 2024

to preserve the purity and integrity of the freshwater wetlands, buffers, and floodplains of this state. ..." The BLCT's mission is to conserve and protect open space in perpetuity, and obviously is very interested in preserving this part of Bristol's wetlands and buffers.

Bottom line: If we take Climate Change seriously and look at the Big Picture for this watershed, and knowing there may be several rain falls of several inches or more, we need to protect the remaining wetland we have! By properly maintaining healthy wetlands, we protect both nature/wildlife/habitat and the Town! In other words, there is great cost savings when we manage our wetlands properly and wisely. In our opinion these plans greatly alter the land and nature. We cannot support this project!

Raymond P. Payson

Raymond P. Payson
President
ray_payson@earthlink.net
tel: (c) 401-225-4903

RI Environmental Management
JAN - 8 2024
Office of Water Resources

January 1, 2024

Mr. Martin Wencek, Program Supervisor

Rhode Island Department Of Environmental Management

Office Of Water Resources

235 Promenade St.

Providence, RI 02908

Re: Wetland Application No. 22-0264

Mainstay/Sleep Inn Hotel

Gooding Ave. Bristol, RI 02809

Dear Mr. Wencek:

I am writing to express my objection to the Rhode Island Department of Environmental Management granting a wetland alteration permit for the above referenced application. I have been a resident of 245 Chestnut St. for almost 42 years, a neighborhood which is just south of this proposed hotel, and I would like to share with you my experiences with flooding at my home during the time I have owned my home.

When I purchased my home in 1982, I had very few problems with flooding, both in my yard and in my basement. But over the years, every time land was cleared, and a new structure was built, such as the Dawn Hill Nursing Home, Stop And Shop grocery store, and Bristol Industrial Park just to name a few, my yard and basement, along with

those of dozens of my neighbors became a swamp. I have not been able to use my back yard for years due to severe persistent flooding, and my neighbors and I have been forced to install sump pumps in our basements, which only marginally improves the water intrusion problems.

While we cannot turn back the hands of time and prohibit the previous building and altering wetlands in this environmentally sensitive watershed area, I urge you to reject the permit for building a large hotel in this area, as it will only exacerbate the flooding problems that are already plaguing this area.

The area where this hotel is proposed to be built should be preserved in its original natural state, and I hope you will take these factors into consideration and deny the permit for this hotel, which will ruin this natural habitat and watershed for generations to come.

Thank you for your consideration, and if you need any additional information, please do not hesitate to contact me.

Sincerely

Mike Proto

245 Chestnut St.

Bristol, RI 02809

(239)877-7337-cell

mikeproto218@gmail.com

Coastal Resources Management
JAN - 8 2024
Office of Water Resources

January 4, 2024

To: Martin Wencek

Subject: Wetlands Application No 22-0264

Mainstay/Sleep Inn Hotel
Gooding Ave. Bristol RI

We encounter water flooding whenever there is a significant rain fall. The perimeter of our property gets flooded and we feel it's gotten worse since the applicant cleared some of the hotel site in 2021.

We have invested much money to try to elevate our flooding problems with underground pipes and landscaping swirls.

We do not think the soil in our yard infiltrates water and the result is surface ponding of water after rainstorms.

Our grandchildren's playground was never flooded with water until the last few years. There is an underground stream across our road between our house and our neighbors. Water accumulates along the entire front of our house and pools at the end of our property making it impassable and dangerous when it freezes over in the winter.

The town has tried on numerous occasions to correct this water problem but it seems good for a short period and then returns.

We believe that the land they want to build this hotel on is predominantly made up of wetlands and filling it in and changing the land will cause our homeland even more flooding problems!

Please deny this application!

Thank you
Patti Cirillo Arthur Cirillo

Patti and Arthur CIRILLO
37 Dartmouth Street
Bristol, RI 02809
Tel 401-225-8170

Mr. Martin Wencek
Freshwater Wetland Program
Office of Water Resources
235 Promenade Street
Providence, RI 02908-5767

Jan 4, 2024

Dear Mr. Wencek,

I am writing to you in regards to Wetland Application #22-0264/Mainstay/Sleep Inn Hotel on Gooding Avenue in Bristol, RI.

Please do not allow this application to go forward. The proposed hotel development would displace 50,000 square feet of wetlands. It would aggravate flooding due to wetland destruction.
Thank you for your consideration.

Jane Teixeira & Clifford Teixeira.

Jane and Clifford Teixeira
405 North Lane
Bristol, RI 02809

RI Environmental Management
JAN - 8 2024
Office of Water Resources

December 28th, 2023

Opposition to Wetlands Application #22-0264

Dear Mr. Wencek,

I hope you had a nice holiday.

I am writing to you and RI DEM to passionately oppose the Wetland Application #22-0264 proposed for Gooding Avenue in Bristol, RI.

There are so few healthy remaining wetlands, and they are polluted and destroyed daily. As you know, they are such a valuable resource. Once destroyed, they will be gone forever.

When reviewing, please do what RI DEM is tasked with doing. Protecting our fragile environment and ecosystem.

If there is anything we can do to help in the process, please reach out. There are many in Bristol opposed, and we would be happy to assist you in standing for environmental and wetlands protection.

Thank you in advance,

Maureen McManus
20 Beach Road
Bristol, RI

RI Environmental
JAN – 8 2024
Office of

Mr. Martin Wencek, Supervisor
Freshwater Wetland Program
Office of Water Resources
235 Promenade Street
Providence, RI 02908-5767

January 4, 2024

Dear Mr. Wencek,

this message is in regards to **Wetland Application #22-0264/Mainstay/Sleep Inn Hotel** on Gooding Avenue.

Please do not allow this application to go forward. The proposed hotel development would displace 50,000 square feet of wetlands. It would aggravate flooding due to wetland destruction. Cement does not absorb water, and storms are getting more severe.

Thank you for your consideration.

Maria Franzen

Maria Franzen
406 North Lane
Bristol, RI 02809

RI Environmental Management
JAN - 8 2024
Office of Water Resources

1/5/2024

Hello Mr. Wencek,

I am in strong opposition of the proposed Wetland Application #22-0264/Mainstay/Sleep Inn Hotel on Gooding Avenue in Bristol RI. Removal of wetland for this project is unacceptable to our community and the natural environment that needs this wetland to remain a wetland. There are much more suitable sites in Bristol (former Benny's and Bristol Toyota properties on Rt. 136) for such a hotel being considered. These and other sites should be investigated.

The proposed hotel development would displace some 50,000 square feet of wetlands. This is a bad idea and should not be considered. Bristol residents including myself, are very concerned about flooding due to wetland destruction and this project will only add to the immense concerns we all have. Cement and asphalt does not absorb water and storms are getting more severe and more frequent. The natural world that relies on this wetland will be destroyed (we cannot continue to decimate the natural world in favor of more development). We need more (not less) wetlands and the natural world that inhabits this space.

Please reject this application and keep the wetlands in place.

Thank you,
George Voutes
Shore Rd, Bristol RI

George Voutes

RI Environmental Management
JAN - 8 2024
Office of Water Resources

1/5/2024

Hello Mr. Wencek,

I am in strong opposition of the proposed Wetland Application #22-0264/Mainstay/Sleep Inn Hotel on Gooding Avenue in Bristol RI. Removal of wetland for this project is unacceptable to our community and the natural environment that needs this wetland to remain a wetland. There are much more suitable sites in Bristol (former Benny's and Bristol Toyota properties on Rt. 136) for such a hotel being considered. These and other sites should be investigated.

The proposed hotel development would displace some 50,000 square feet of wetlands. This is a bad idea and should not be considered. Bristol residents including myself, are very concerned about flooding due to wetland destruction and this project will only add to the immense concerns we all have. Cement and asphalt does not absorb water and storms are getting more severe and more frequent. The natural world that relies on this wetland will be destroyed (we cannot continue to decimate the natural world in favor of more development). We need more (not less) wetlands and the natural world that inhabits this space.

Please reject this application and keep the wetlands in place.

Thank you,
Lisa Voutes
Shore Rd, Bristol RI

Lisa Voutes

RI Environmental Management
JAN - 8 2024
Office of Water Resources

January 4, 2024

Deborah T. Schmeller
19 Foxhill Ave.
Bristol, RI 02809

To: martin.wencek@dem.ri.gov
Subject: Wetland Application #22-0264/ Mainstay/ Sleep Inn Hotel

Dear Mr. Wencek,

I am writing regarding the Wetland Application 22-0264 Mainstay/Sleep Inn Hotel proposal for Gooding Ave. in Bristol, RI. I am a lifetime Bristol resident and long-time property owner and tax payer. The recent heavy rains, shortly before Christmas, is evidence of continuing issues with wetlands conservation and related flooding issues. I have family members who reside at Sliver Creek Manor. In late fall, there were major flooding issues there with the creek during high tide and heavy rains. Many residents had to be removed from their rooms on the lower level due to the flooding that occurred there. There have been long term issues with flooding at the current high school location due to the fact that its design over 50 years ago did not take into account the creek and surrounding wetlands. Now, as a town tax payer, I will be forced to share the burden of the cost of constructing a new high school because the wetlands issue was not properly handled the last time.

Wetlands in Bristol must be conserved at all cost! Silver Creek and the surrounding wetlands play a critical role in managing floodwater storage and in mitigating flood damage, especially in the neighborhoods surrounding Bristol Harbor. These wetlands serve a very important purpose in the ecosystem and need to be properly conserved.

The Gooding Avenue location is a less than ideal location for a hotel. There are other properties that are better suited and better situated for the location of a hotel and would have less impact on our wetlands.

I strenuously object to the RIDEM granting a wetland alteration permit for the referenced application #22-0264.

Sincerely,

Deborah Schmeller

Deborah Schmeller

RI Environmental Management
JAN - 8 2024
Office of Water Resources

Dear Mr. Wencek,

I am writing this letter to object to RI DEM granting a wetland alteration permit for the referenced application #22-0264.

The Gooding Avenue area is part of the Silver Creek Watershed. Wetlands are vital for flood storage and the mitigation of flooding. There is no question about global warming. It's happening, and storms are becoming more severe with increased flooding and devastation. The neighborhoods along the Silver Creek Watershed are frequently flooded. We need more wetlands in Bristol, not less. The proposed hotel development would displace 50,000 square feet of wetlands. The thought of building on any wetlands is extremely shortsighted, especially in a coastal town. Once our wetlands are gone, they are gone for good.

I lived in an area in Bristol along the Silver Creek. During heavy rains, the backyards in my neighborhood are completely under water and are basements are filling with water.
I am hoping that RI DEM will consider the impact of the proposal, have foresight, and not allow a 50,000 square foot hotel to be built on our valuable wetlands.

Sincerely,

Kayla Barrett

Kayla Barrett
5 Carol Ave
Bristol, RI 02809

SAVE THE BAY®
NARRAGANSETT BAY

Save The Bay Center
100 Save The Bay Drive
Providence, RI 02905

P: 401-272-3540
F: 401-273-7153
SAVEBAY.ORG

RI Environmental Man... Unit
JAN – 8 2024
Office of Water Res...rces

January 3, 2024

RIDEM Freshwater Wetlands Program
Attn: Martin Wencek
235 Promenade Street
Providence, RI 02908

Re: 22-0264 KenDan, LLC Application to Alter Wetlands

Dear Mr. Wencek,

Save The Bay objects to the proposed application to alter freshwater wetlands for the construction of an 80 room hotel and associated parking area, retaining wall, stormwater mitigation systems, and utilities. The work will permanently alter approximately 0.11 acres of swamp and over 1 acre of perimeter wetland. These wetland resources are associated with Silver Creek, located approximately 600 feet to the east of the proposed project site.

Save The Bay has been working with the Town of Bristol on habitat and water quality improvement projects in the Silver Creek watershed since 1999. The Town of Bristol, Save The Bay, the Natural Resource Conservation Service and other federal partners have conducted salt marsh and buffer restoration along the tidally influenced portion of Silver Creek, stormwater management through rain garden installation at Mount Hope High School, and most recently, freshwater wetland and riparian restoration at the Bristol Golf Course, immediately upstream of the proposed development. We are invested in improving the health and function of the wetlands in this watershed.

We are aware that a project similar to this application was denied in March 2016 and we urge the Department to deny this proposal, especially in light of more severe storms and the heavy rainfall that accompanies them. The Silver Creek watershed is subject to flooding under current conditions and the Town has identified downstream road crossings in their 2023 Hazard Mitigation Plan as critical infrastructure that is subject to flooding, including Chestnut Street and Hope Street. Loss of wetlands and their associated buffers and increased impervious surface in the watershed will worsen existing flooding of low-lying public infrastructure. Silver Creek's watershed has a relatively high percentage of impervious cover. In the larger Bristol Kickemuit watershed, impervious surfaces cover 18% of the land area. As you know, there is a clear link between the amount of impervious area in a watershed and a decrease in water quality. Water quality impacts can occur when impervious surfaces are as little as 10 percent of a watershed. Adding to the impervious surfaces in this watershed, especially within swamp and perimeter wetland, degrades more than just the wetlands that would be physically altered by this proposed project.

The proposed physical alterations to freshwater wetlands include at least clearing, filling, grading, construction, paving, and landscaping. These alterations will result in the permanent elimination of swamp, perimeter wetlands, and forested habitat and will negatively impact wildlife species presently using the site. The site provides habitat for resident and migratory wildlife including a wide variety of birds, amphibians, reptiles, mammals, and insects. The property is mapped within a Rhode Island Natural Heritage Area, indicating the habitat is of high enough quality to support rare and unusual species. The direct loss of habitat will eliminate perching sites, nesting and brood rearing areas, sheltering cover, feeding sites, sources of food, roosting areas, and narrow an important wildlife travel corridor through central Bristol. This will have a detrimental effect on the wildlife communities occurring in these wetland areas. Wildlife inhabiting the remaining wetland habitat south and east of the proposed development will experience stress and increased competition, as resources become more constrained.

In addition to these direct, physical impacts to wetlands, the indirect impact of the project will result in further fragmentation of the swamp and increased edge effect in the forest. The project will create a new, cleared edge encroaching into the forest. This new edge includes a buffer that ranges from 0 to 10 feet in width, which is virtually useless in mitigating stormwater pollutants including phosphorus, nitrogen and sediment. This very narrow buffer and new edge will allow disturbances, including noise, light, and general human activity, to penetrate hundreds of feet further into forested areas of the wetland. This exposes wildlife to increased predation (through reducing cover), and invites non-native invasive plant species to colonize disturbed soils, lowering habitat value for many wildlife species. This aspect of the project does not meet review criteria outlined in Rule 1.10 (E)(3)(a) and (f).

Since the project will eliminate wildlife habitat, opportunities for members of the public to engage in active and passive enjoyment of wildlife and the natural area will be reduced. A loss of shade from trees on Gooding Avenue may make this road less walkable and bikeable. Fewer perching sites will mean less birdsong.

The size and scope of the project compared to the extent of wetland resources on the property results in unnecessary, avoidable, and significant detrimental alterations of the functions and values of these wetlands. There is room on this site, perhaps, to develop a single family residence similar to those immediately adjacent to the site on Gooding Avenue. There is not room on this site, 90% of which is wetland, to develop an 80 room hotel with a large parking lot. Since there are opportunities to avoid and minimize physical alterations to freshwater wetlands to access upland areas, this project is random, unnecessary and undesirable, and therefore does not meet review criteria outlined in Rule 1.10 (E).

We ask that you deny the application, finding that these alterations have not been avoided, or minimized, and thereby cannot be granted a permit under the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act.

Thank you for your time and consideration.

Sincerely,

Kate McPherson
Professional Wetland Scientist
Narragansett Bay Riverkeeper
kmcpherson@savebay.org

RI Environmental Management
JAN 10 2024
Office of Water Resources

34 Sullivan Lane
Bristol, RI 02809
Jan. 6, 2023

Martin Wencek, Supervisor
Freshwater Wetland Program
Office of Water Resources
RI DEM
235 Promenade St.
Providence, RI 02908

Dear Mr. Wencek:
I am writing to request that DEM deny the application #22-0264 to alter wetlands in Bristol to build an unnecessary hotel on Gooding Ave. Such an ill-conceived plan will increase the risk of flooding to this community. Please adhere to DEM's mission to protect fragile habitat and resist this for-profit development- at the expense of the environment. Please join the citizens of Bristol in opposing this misguided application. Thank you.

Sarah J. Weedon

RI Environmental Managem
JAN 10 2024
Office of Water Resources

34 Sullivan Lane
Bristol, RI 02809
Jan. 5, 2023

Martin Wencek, Supervisor
Freshwater Wetland Program
Office of Water Resources
RI DEM
235 Promenade St.
Providence, RI 02908

Dear Mr. Wencek:
I am writing to request that DEM deny the application #22-0264 to alter wetlands in Bristol to build an unnecessary hotel on Gooding Ave. Many of in this community would like to DEM's enforce its mandate to protect fragile habitat and resist for-profit development at the expense of the environment. Please join the citizens of Bristol in opposing this misguided application. Thank you.

Deirdre Robinson

January 4, 2024

RIDEM
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908

Environmental Management
JAN 09 2024
Office of Water Resources

Dear Supervisor Wencek:

We are contacting you regarding Wetland Application #22-0264/Mainstay/Sleep Inn Hotel on Gooding Avenue in Bristol.

As residents of Bristol and property owners whose property will be impacted by the development, we are strongly opposed to development in this location and request that you also oppose it. Please take any and all steps within the scope of your public service position to block this hotel plan, including not issuing permits and releasing public statements that will explain why the loss of wetlands will be harmful to human wellbeing, economic issues, and environmental health. Another idea is to work with the town or Bristol and developers to plan for land swaps that result in conservation of greenspace while allowing construction on more suitable properties, including the many empty buildings in Bristol.

Bristol's wetlands are crucial to mitigating flooding and water quality in Narragansett Bay, including Bristol Harbor. Too much infill development has been happening in recent years; we are losing more and more undeveloped greenspace, making what remains ever more precious and essential to conserve.

In addition to the larger conservation concerns for Bristol, we are personally opposed to this planned hotel because we live directly downstream of it; the Silver Creek marsh is part of our backyard. During large storms, flood waters come into our yard, as happened just a few weeks ago. The personal flooding risk to our property and home will increase with filling in wetlands and increase in pavement, even with mitigation measures on the property. We consider this to be an unacceptable outcome of such property development, one that the DEM has a responsibility to prevent.

Given the growing risks of climate change and rising sea levels, it will be enormously irresponsible for the DEM and town to allow further development of greenspace and unpaved soils and wetlands. The priority should be to remove pavement in the Bristol peninsula, not add more especially in valuable and irreplaceable wetlands, such as those that this hotel construction would fill in.

Sincerely,

Mr. Loren Byrne
4 Paull St
Bristol, RI 02809
lbyrne@rwu.edu
814-777-5250

Ms. Kim Seymour
4 Paull St
Bristol, RI 02809

1/5/24

ABIGAIL DEMOPULOS

Dear Mr. Wencek
Attached is a
signed hard
copy of email
correspondence

Abigail
Demopulos

From: Abigail Dem ılos ademopulos@yahoo.com
Subject: Wetland Application #22-0264 Mainstay/Sleep Inn Hotel
Date: Dec 31, 2023 at 9:24:12 AM
To: martin.wencek@dem.ri.gov

JAN 09 2024

Dear Mr. Wencek,

I am writing regarding the Wetland Application #22-0264 Mainstay/Sleep Inn Hotel. As a long-time Bristol property owner who sees the impact of Silver Creek flooding closer to the harbor, and whose property taxes will have to cover the cost of a reconstructing the high school because it was not designed to take into account the creek and wetland the first time, I object to the RI DEM granting a wetland alteration permit for the referenced application #22-0264.

The Silver Creek watershed and wetlands are important for for floodwater storage and flood mitigation which becomes acute as the creek empties into the harbor. The DEM and the town should learn from past mistakes and take climate change seriously and properly value the ecosystem services that the wetlands provide.

There are several commercial vacant properties in Bristol where a hotel could comfortably fit.

Sincerely,

Abigail Demopulos
17 Constitution St.
Bristol, RI 02809

Abigail M Demopulos

Sent ~~from my iPad~~
and via US Mail Jan 5, 2024

Environmental Management

JAN 12 2024

Permit Application Center

Mr. Martin Wencek, Program Supervisor
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02806

Wetland Application No. 22-0264
Mainstay/Sleep Inn Hotel
Gooding Ave. Bristol, RI

Thank you for the opportunity to comment on the proposed development on Gooding Ave, especially as it relates to the protection of life and property from flooding.

Since 2018, I have served as one of five members of the Bristol Town Council. During this time I have had opportunities to discuss with constituents the flooding issues that affect properties that will be affected by the construction of a hotel that is situated in an area that provides water storage and flood mitigation. Since serving on our council, it is my observation that concerns and complaints about flooding in this area have increased over time. That is why I am using this opportunity to publicly comment on the proposed development to clarify and expand on remarks that I made at our town council meeting of 12/06/2023 regarding this proposed development.

At that meeting I described having worked with constituents to address public safety concerns related to flooded roads. One of my first experiences with the problem of flooding in this area relates to a concern that was brought to me by a constituent living at 37 Dartmouth St. On March 4, 2019 I informed our town administrator about issues of flooding at the end of this street. Either that spring or summer, the road was engineered and repaved, but by July 27 the resident informed me that our efforts to improve the flooding problems on this street had not worked. At that time some additional work was done to the road and the constituent informed me in September 2020 that the flooding issue had improved. However, by November 2021 and December 2022 I received two additional complaints from the resident about pooling of water on Dartmouth St., which later froze and caused accessibility and safety concerns for his family. I have continued to receive complaints from constituents about the road conditions in this area, with the most recent correspondence being Jan. 3, 2024.

It is my hope that the Office of Water Resources will carefully and comprehensively examine and evaluate the impact of infill development in this area alongside our town's experience of increased storm and precipitation intensity, as well as flooding. As we experience greater storm and precipitation intensity, our municipality be required to carefully balance tradeoffs due to the limited resources we have for investing in road and drainage infrastructure, while downstream residents and property owners are borne with the additional burden of internalizing impacts relating to this development.

Thank you again for the opportunity to comment on this application for new development in this wetland area.

Sincerely,

01/08/2024

Aaron J. Ley, Ph.D.
15 Birchwood Dr.
Bristol, RI 02809

Environmental Management

JAN 12 2024

Permit Application Center

January 2, 2024

24 Dixon Avenue
Bristol, RI 02809

Mr. Martin D. Wencek, Permitting Supervisor
Office of Water Resources/Permitting Section
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI 02908-5767

RE: DEM Wetland Application #22-0264 Request to Alter Wetlands on Plat 111/Lot 1 located on Gooding Avenue, Bristol, RI.
Applicant/Organization name: KenDan, LLC
Proposed Project: To build Mainstay/Sleep Inn

Dear Mr. Wencek,

We oppose this application, #**22-0264**, to alter wetlands on Gooding Avenue. This is a mature wetland area and serves a very valuable function, mainly to protect us from harmful flooding. In addition, this wetland area is a habitat for wildlife such as turkeys, bats, coyotes, deer, rabbits, skunks, and pheasants. When wetlands are destroyed, the habitats of these animals are eliminated. Wildlife becomes endangered and the ecosystem of the wetlands is threatened. We need to protect our wetlands because wetlands protect us, animal life, and our environment.

This wetland area is part of the eastern branch of the Silver Creek Watershed. We believe that filling in and altering some 50,000 square feet of this wetlands will increase the flooding problems that already exist on all the downstream properties, which include hundreds of homes, nursing facilities, our schools, and streets. Flooding is a serious concern not only for our immediate neighborhood but also for the Town. It is costly.

In 2012, my wife and I built our house at 24 Dixon Avenue. To determine the water table, we had the soil tested. On the southeast corner of the property, where our foundation now sits, the high-water mark was only 18 inches below the surface. To avoid having the bottom of our house's foundation below the water table, we purchased and trucked in thousands of cubic yards of gravel. We also installed a drainage system that not only complies with but exceeds the Town of Bristol's soil, runoff, and sediment control ordinances. The point being, Dixon Avenue is a very wet area with a very high-water table. The soil is clay-like and does not absorb rainwater readily. Any disruption to the adjacent wetlands could make an already existing water and flooding problem worse.

Moreover, in the past several years we have witnessed increased flooding in our neighborhood. In late summer of 2021, the applicant bulldozed and cleared a portion of this wetland area. Within a month (September of 2021) we felt the effect of this wetland's disruption. The river within this wetland overflowed and flooded at Mt. Hope High School, Chestnut and Hope Streets. Traffic was disrupted and redirected through Naomi Street, which is the only access

street for the residents of Dartmouth, Dixon, and Andrew's Court to evacuate or to receive emergency care. Flooding is not only costly it can result in serious harm.

With rainstorms occurring more frequently and more intensely, preserving wetlands is paramount. We are experiencing more flooding occurrences than ever before. When we first moved into our home, the sub pump hardly ever ran; now it run constantly. There is pooling of water in my yard after rainstorms that never happened prior. We have wildlife in our yards because their habitat has been destroyed.

For the reasons stated above it is our opinion that RI Department of Environmental Management should deny the permit application #22-0264 to alter Wetlands on Plat 111/Lot 1 located on Gooding Avenue in Bristol, RI.

We appreciate the opportunity to express our concerns to the Department of Environmental Management regarding this application. Our wetlands need to be protected to safeguard our lives and property, wildlife, and the environment.

Sincerely,

Noelle Mello

Noelle and Thomas Mello

December 13, 2023

Mr. Martin Wencek, Program Supervisor
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02809

Environmental Management
DEC 15 2023

RE: Wetland Application No. 22-0264
Mainstay/Sleep Inn Hotel

Dear Mr. Wencek:

I have reviewed the recent submittal by D&M BOCA Development LLC dated May 2023 to the R.I. Department of Environmental Management seeking a Permit to Alter Freshwater Wetlands. On behalf of the residents of the neighborhoods downstream of the proposed development, it is our opinion and we respectively request that the RIDEM **deny the issuing of the wetland permit** since **essential information has not been provided and what has been provided contains incomplete and inaccurate information leading to unsubstantiated and false conclusions.**

The facts of the case have not changed since the original submittal in September 2015.
The facts of the case are:

- There is a bad flooding problem downstream of the proposed development that affects neighborhoods, Mount Hope High School, Gooding Avenue and Chestnut Street.
- The flooding issue is a concern of the neighborhood, as expressed in the Petition signed by over 100 residents (see letter to Mr. Martin Wencek, Program Supervisor from Emily Spinard dated December 7, 2023).
- One of the major functional values of wetlands is flood storage and mitigation of downstream flooding.
- The Town of Bristol had commissioned a flood study, *Silver Creek Drainage Study*, Bristol RI (Beta Engineers-Scientists, November 2007) to identify the flooding problem and recommend mitigation measures.
- The Rhode Island Stormwater Design and Installation Manual (RDEM and CRMC, 2015) has increased the rainfall amount associated with the 100-year Storm Event.
- The Petition signatures have expressed their belief that flooding has increase since the Applicant cleared the hotel site in 2018.

The Applicant needs to seriously consider the potential impacts of their development by completing a comprehensive and sincere assessment. **This assessment needs to include**:

- ❖ Using **the appropriate infiltration rate (lower)** as identified by the National Resources Conservation Service (NRCS). Also, the effect of sea level rise on increasing flood level elevations needs to be considered.

- **A flood analysis of the downstream effects** of the proposed development on the already programmatic flooding problem by using the appropriate method developed by the Army Corp of Engineers and utilized by Beta in their *Silver Creek Drainage Study.* Also, the effect of sea level rise on increasing flood level elevations needs to be considered.
-
- **An assessment of shadow effect on wetlands**. The finish floor elevation of the hotel at 81.5 feet plus 35 feet for the height of the hotel totaling 117.5 feet where the wetland elevation adjacent to the development is Elev. 66 feet.

The following facts substantiate and justify the reasons for denial:

Continues to use the wrong infiltration rate. It appears that there is a fatal flaw in the submission as the Applicant used the incorrect infiltration rate. The current NRCS Soil Interpretation Record identifies Stissing and Pittstown soil series as belonging to Group 1 that has a permeability range in inches per hour of (0.06-0.2) consistent with other hardpan soils in R.I. (Attachment A Current NRCS Soil Interpretation Record). The site is composed of Stissing and Pittstown soils and the applicant used a permeability rate of 0.52 inches per hour. **The Applicant permeability rate is much higher than what the soils can absorb. Thus, their calculations of reducing peak runoff into the swamp and Silver Creek by infiltration needs to be reexamined.** Less infiltration will cause more runoff that will affect the flooding issue. Also, the *Rhode Island Stormwater Design and Installation Manual* requires an infiltration rate of at least 0.5 inches per hour to be acceptable for infiltration Best Management Practices.

The original wetland application submitted by SITEC in February 2015 used an infiltration rate of 0.27 inches per hour. The soils on the site have not changed and DiPrete is currently using SITEC soil information in their latest wetland alternation application.

Conclusion: It is my opinion that RIDEM review the Applicant's infiltration rate and determine if it is consistent with the Current NRCS Soil Interpretation Record. Also examine if the appropriate infiltration rate was used in the stormwater analysis and determine if infiltration is a viable method for mitigating the increased runoff rate from the proposed development.

Flooding - There is a **flooding problem** downstream of the proposed development that affects the neighborhoods, Mount Hope High School, and Chestnut Street. The **problem of flooding was confirmed recently by the September 2, 2021 storm event that closed streets including Chestnut and Hope Streets, and flooded property including Mt. Hope High School, and classrooms and play areas at Guiteras School.** This storm event had 6.5 inches of rain which is by engineering standards a 25-year storm event. (Supporting document *Rhode Island Stormwater Design and Installation Manual,* RIDM and CRMC, 2015).

- *Ignored Neighbor's Concerns* - The Applicant continues to **disregard the concerns of the neighborhoods** by ignoring the flooding issues and by not responding to the serious issues identified in our previous letter to RIDEM (to Martin Wencek, dated February 10, 2018).

- *Flooding is a major concern for the Town: Recent rain and flooding on September 2, 2021* Flooding is not only a major concern within our neighborhood, the High School, and Chestnut Street but also throughout the total land area downstream of the proposed development (the eastern branch of the Silver Creek watershed). During the most recent large rain stormon September 2, 2021, flooding occurred throughout this land area. The rivers flowing through the culverts at the high school and Chestnut Street overflowed, flooded, and closed traffic onto Chestnut Street. Silver Creek at Hope Street overflowed and the areas of Hope, Washington, and Thames Streets were under 3 to 4 feet of water. Classrooms and play areas at Guiteras School were flooded. Flooding is destructive and costly for the residents of Bristol, and impacts everyone. With road closures of Chestnut and Hope Streets, the detour traffic backup onto residential streets that are not capable of handling the heavy traffic volumes. This heavy traffic volumes on the residential streets causes concerns of the residents of the neighborhoods of the inability of rescue vehicles to travel freely responding to emergency situations. (Attached B photos)

Silver Creek Drainage Study -The Town of Bristol retained Beta engineering consultants to perform a drainage study of the Silver Creek watershed. **The Beta study confirmed what everybody in the neighborhood knew: there is a flooding problem in our immediate neighborhood, the high school, Chestnut Street and areas downstream as well.** The study identified the cause and extent of the flooding in the Silver Creek watershed and recommend possible remedial actions including reserving land (upstream) to provide additional storage areas for flood surge. (Supporting document *Silver Creek Drainage Study,* Beta Engineers, November 2007).

- *Updated Drainage Study*-In 2010, Rhode Island Department of Environmental Management (RI DEM) presented a new *Rhode Island Stormwater Design and Installation Standards Manual* (subsequently amended in 2015) that revised the rainfall amounts, particularly for the 100-year storm event. **The 100-year storm event rainfall amount increased from the 2007 value of 7.10 inches, to 8.6 inches, which is the current amount.**

I created a HEC-RAS model (Attachment B *Silver Creek Flood Examination Table of Contents and Executive Summary),* similar to the Beta model in order to better understand the impact of flooding to the neighborhoods and the possible effects of the revised rainfall amounts. The hypothesis of my examination **is that since the rainfall amounts have increased, the runoff into Silver Creek will also increase.** The greater volume of water entering and being conveyed by Silver Creek will result in an increase in the flood elevations and flooded areas than those originally identified by the Beta Study.

The revised HEC-RAS model, created by my examination, showed an increase in flood elevations and flood areas along Silver Creek, without considering the effects of sea rise. The examination considered a free flow condition at the outfall into Bristol Harbor. **The HEC-RAS model demonstrates that there is an increase in flood elevations and flooded areas resulting from the increase in rainfall amount. It reinforces the concern of the downstream residents of the**

flooding problems along Silver Creek and the need for a thoughtful and comprehensive examination. The Applicant must do this same analysis using the HEC-RAS method.

- **RIDEM has requested in numerous reviews that the Applicant perform a Downstream Analysis.**
  A RIDEM review dated December 12, 2017 recognized the downstream flooding and requested that the applicant perform a downstream analysis considering the existing limitation at the twin 48"culverts at the high school. The RIDEM review request is based the *R.I Stormwater Design and Installation Standards Manual* that states when there is a known flooding problem, regardless of whether the peak runoff rates from the proposed development are decreased, a downstream analysis is still required. DiPrete response was that the drainage system, at the proposed hotel site, not only reduced the peak flow rates but also resulted in a decrease in flood volumes from pre to post conditions. This did not represent a valid response to RIDEM request (DiPrete response dated January 23, 2018 p.3).

  Since the previous response to RIDEM request for a downstream analysis was inadequate. A RIDEM review on March 12, 2018, Item 2 requested the downstream analysis and even suggested that "a downstream analysis would be to revise the existing *Silver Creek Drainage Study.* DiPrete response was that there is no increase in peak runoff, however in order to verify that peaks do not create flood rate, "we completed a rough drainage analysis....**not having the raw watershed data from Beta study**..." (DiPrete response dated May 11, 2018 p.2).

  Again, on August 1, 2022, RIDEM requested on Engineering Review Comments No. 11 that you (the Applicant) submitted analysis indicates pre and post project drainage diagrams of flows to Bristol Harbor. No analysis was provided. DiPrete response was that they completed a rough drainage analysis for Silver Creek (using the wrong methodology) **because "not having the raw watershed data from the Beta Study"** (DiPrete response dated January 4, 2023.

  RIDEM complete their review on June 30, 2023 concluding that" the designer has addressed potential downstream flooding concerns by indicating that the submitted analysis shows that the total runoff volume of runoff to the receiving wetlands will be decreased in 1, 10, and 100-year 24 hour Type III storm events". This is not consistent with RIDEM regulations concerning the requirement for a Downstream Analysis if it there is a decrease in the peak runoff rates from the proposed development.

Conclusion A Downstream Analysis should be completed. It is my opinion, that after several RIDEM reviews of the Applicant's submittals and numerous requests to conduct the analysis, using the appropriate HEC-RAS method, RIDEM accepted a useless and erroneous assessment. RIDEM accepted the Applicant excuse of "Not having the raw watershed data from the BETA study, we model the following parameters. A more detail discussion of the Downstream Analysis and the Applicants erroneous response is contained in Attachment C Downstream Analysis. It is curious why RIDEM ignored their own requirements and accepted such a useless assessment of the flooding issues.

It is important that RIDEM fully understand the Town's flooding concerns and assure that the Applicant will perform a comprehensive and detailed analysis of the effects of downstream flooding from the proposed development. Such an analysis should be consistent with applicable engineering standards and the *Silver Creek Drainage Study*.

This is particularly important, at this time, as the bond issue for $200 million was approved, by the residents of Bristol and Warren, to build a new high school. The new high school, will be located in the same general area as the existing high school, that is adjacent to Silver Creek. A major issue will be the need to control flooding not only for the new school building but also for the adjacent neighborhoods.

Accurate Erosion and Sedimentation Control Plan

The submitted (E&S) plan sheet (Sheet No. 4 Erosion and Sedimentation Control Plan) is based on the existing surface elevations, where the purposed surface condition is to raise the site two to ten feet in height (Supporting documents Grading Plan Sheet 6, Mainstay/Sleep Inn 1-4-2023). Applicant referenced a E&S Control Plan in Notes 5 and 6 (Sheet 3 of 10 title: *General Notes and Legend*) identifying that sequence and phasing of construction is required).

For example, the floor elevation of the new building is proposed to be at Elevation 81.5 feet. During construction, an infiltration area is proposed to be located just south of the building site at the existing elevation of 72 to 74 feet. The difference in elevation is almost ten feet with a horizontal separation difference of 10 feet. This could result in a very steep slope if it is really feasible to construct.

How does the Applicant proposed to build and maintain the slope? What erosion measures will be used to stabilize the slope? What E&S measures will be used when the infiltration area is being filled to grade to construct the parking lot? It is my opinion that **this needs to be provided to show how wetlands are being protected during construction as the site is filled to a new and noticeably increase in height.**

In conclusion, it is my opinion and I respectively request that RIDEM **deny the wetland alternation permit** presented by D&M Boca Development for the proposed Mainstay/Sleep Inn Hotel since **essential information has not been provided and what has been provided contains incomplete and inaccurate information leading to unsubstantiated and false conclusions.** Thank you for your consideration of this request.

Sincerely:
Edward Spinard
Edward Spinard
35 Dartmouth Street, Bristol RI

Attachment A Current NRCS Soil Interpretation Record
Attachment B *Silver Creek Flood Examnation*
Attachment C Downstream Analysis

Attachment A

Current NRCS Soil Interpretation Record

2015 Changes: Removed from RIGIS Attribute Table – still included in the master sheet (2015RIGIS_Soil_Attribute_All).

Field ID	Percent Surface Covered by Outcrops
1	0-1
2	1-10
3	5-10
4	10-30
5	30-80
6	80-100

Field: ***B_perm (REMOVED)***
Source: 1996 RIGIS
Description: B horizon permeability group. See next table for descriptions.
2014 Update: This field is omitted (dropped) from the attribute table but is still available in the spread sheet if needed.
2015 Changes: Removed from RIGIS Attribute Table – still included in the master sheet (2015RIGIS_Soil_Attribute_All).

Field: ***C_perm (REMOVED)***
Source: 1996 RIGIS
Description: C horizon permeability group. See table below for descriptions.
Online Linkage: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/geo/?cid=nrcs142p2_054242
2014 Update: This field is omitted (dropped) from the attribute table but is still available in the spread sheet if needed.
2015 Changes: Removed from RIGIS Attribute Table – still included in the master sheet (2015RIGIS_Soil_Attribute_All).

NOTE: The term "permeability" is an outdated term in soil survey; it has been replaced by saturated hydraulic conductivity (Ksat), visit the Soil Data Mart for Ksat values:

Soil permeability groupings have been prepared for both the B and C horizons:

Field ID	Permeability Range (inches/hour)
1	<0.2
2	0.2-0.6
3	0.6-2.0
4	0.6-6.0
5	0.6-20.0
6	2.0-6.0
7	2.0-20.0
8	>2.0
9	6.0-20.0
9.9	Too variable to rate
10	>6.0
11	>20
12	<0.2 or 0.6-20.0
13	<0.2 or Too variable to rate
14	0.6-2.0 or 0.6-6.0
15	0.6-2.0 or Too variable to rate
16	0.6-6.0 or Too variable to rate
17	0.6-6.0 or 2.0-6.0

18	2.0-6.0 or Too variable to rate
19	0.6-6.0 or >2.0
20	0.6-2.0 or 6.0-20.0
21	0.6-6.0 or 6.0-20.0
22	6.0-20.0 or >6.0
23	6.0-20.0 or >20.0
24	6.0-20.0 or Too variable to rate
25	>6.0 or >20.0

The water table depths used in the grouping system are taken from the current NRCS Soil Interpretation Record (form SOI 5) rather than the Soil Survey of Rhode Island

- Group 1 includes the Stissing series (0.06 - 0.2 inches/hour in the C horizon) and the Pittstown series (0.06 - 0.6 inches/hour in the C horizon). They were included to make the Stissing and Pittstown series consistent with the other hardpan soils in RI.
- Groups 12 through 24 represent multi-taxa mapping units. These map units contain two or more named soils that have different permeability's. Soil map units in Group 12, for example, consist of two soils, one of which has a permeability of <0.2 inches/hour and the other, a permeability of 0.6 - 20 in./hr. Depending on which soil exists on a specific site, the permeability rating is 0.2 or 0.6 - 20.

Field: ***Cap_cls***
Source: New Field
Description Capability classes and subclasses - the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive land forming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations-of groups of soils for rangeland, for forest trees, or for engineering purposes. The table below describes each field code.
Online Linkage: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ri/soils/?cid=nrcs144p2_016628
2014 Update: This field is omitted (dropped) from the attribute table but is still available in the spread sheet if needed.
2015 Update: This field was re-added to the 2015 table as per user request.

Field ID	Description
1	Class I soils have few limitations that restrict their use.
2	Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
3	Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.
4	Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.
5	Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.
6	Class VI soils have severe limitations that make them generally unsuitable for cultivation.
7	Class VII soils have very severe limitations that make them unsuitable for cultivation.
8	Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, IIe. The letter e shows that the main limitation is risk of erosion unless close-growing plant

Attachment B

Silver Creek Flood Examination

Silver Creek Flood Examination

Eastern Branch and Elbow Tributary

Edward J. Spinard, Jr.

11/30/18

Bristol, RI

Contents

Executive Summary 0
Purpose of the Examination: 0
Results 0
Conclusion 0
Declaration: 1
Purpose of Examination 1
Background: 2
Recent Floods 2
Recreate Beta HEC RAS Model 7
Modified Beta Model 9
Hydrologic Study 9
Hydraulic Study 12
Cross-Section 12
Roughness Factor 12
Flood Profile 13
Beta Study Hydraulic Analysis 13
Recreated Hydraulic Analysis 13
Cross-Sections 14
Culverts 15
Silver Creek Flood Profile (recreated/modified) 18
Change in Condition 20
Revised Flood Profile 20
Hydrology 20
Hydraulic Analysis 21
Conclusion 23
Declaration 24

Appendix A Beta's 100 Year Summary Profile from the *Silver Creek Drainage Study*
Appendix B Eastern Branch and the Elbow Street tributary 16 Subwatersheds
Appendix C Flood profile and Summary for the recreated HEC RAS model 100 year storm event
Appendix D Revised Peak Runoff Rates for each of the Subwatersheds using 8.5 inches of rainfall
Fold Out Flood Plain Map

Executive Summary

Purpose of the Examination:

The purpose of this examination is to evaluate the impact of the increased rainfall amounts on the flooding issues associated with Silver Creek (East Branch) in Bristol, RI. The Town of Bristol retained Beta engineering consultants to perform a drainage study of the Silver Creek watershed (*Silver Creek Drainage Study*, Beta Engineers/Scientists, Lincoln, RI, November 2007) (Beta Study). The primary purpose of Beta Study was to determine the cause of the flooding in the Silver Creek watershed and to identify possible remedial actions.

In 2010, Rhode Island Department of Environmental Management (RI DEM) presented a new *Rhode Island Design and Installation Standards Manual* (subsequently amended in 2015) that revised the rainfall amounts, particularly for the 100-year storm event. The 100-year storm event rainfall amount increased from the 2007 value of 7.10 inches, to 8.6 inches, which is the current amount.

The hypothesis of this examination is that since the rainfall amount has changes, the runoff amounts will increase. The greater volume of water entering and being conveyed by Silver Creek will result in an increase in the flood elevations and extent of the flood inundation then those identified by the Beta Study.

In order to examine this hypothesis, this examination recreated the model used in the Beta Study to generate runoff amounts and simulate river flow along the East Branch of Silver Creek and Elbow Tributary.

The model was considered to be comparable when the recreated hydrology and hydraulic models produced similar results to the Beta Study's model. With the recreated models providing similar results to the Beta Study model, the new rainfall amounts can be incorporated into the models to examination the impact on the flood elevations and flooding areas.

Results

The revised HEC RAS model, created by this examination, showed an increase in flood elevations along Silver Creek ranging from about 2 inches to 1 foot. This demonstrates that these is an increase in flood elevations resulting from the increase rainfall with an average increase of 0.44 feet or about five inches. The increase in flood elevation also produces a larger area being flooded. The fold out plan at the end of this report shows the area. It reinforces the flooding problems along Silver Creek and the need for a thoughtful and comprehensive examination.

Conclusion

This examination confirms and reinforces the analysis of the Beta Study. It shows the potential for increased flooding between Gooding Avenue and Chestnut Street and within St Mary

Cemetery. It supports and reinforces the conclusion of the *Silver Creek Drainage Study.* It also demonstrates the importance of the existing wetland areas are critical to controlling and mitigating the flood elevations and the resulting flood areas. The Beta Study's conclusion that **"It is recommended that additional storage be constructed, particularly upstream of the local areas currently experiencing flooding, and on vacant land, to retain stormwater runoff until the peak flows have safety passed....Possible locations include along Gooding Avenue, Naomi Street, within the Mount Hope High School campus ...."** (p.21 The Silver *Creek Drainage Study*).

Declaration:

My examination was conducted solely by myself. It represents my work product and my opinions. It was not commission or support financially by the Town, any regulatory agency or any advocatory group. It resulted from concerns expressed by my neighbors that development within wetland areas could cause increased flooding to their property.

The study is not meant to be predicative of the exact flood elevations or the size of the area that could be flooded during a 100-year storm event. It is based on the comparative recreation of the Beta model and has relatively the same confidence level as the Beta study. My study was conducted to gain a better understanding of the potential increase of flood elevations and the increase in the potential size of the inundation area along Silver Creek. It was meant to provide a recognition of the existing flooding issues and the need to recognize the important role that wetland areas have in mitigating flood areas. It provides support for a comprehensive examination of the flooding issues along Silver Creek.

Attachment C

Downstream Analysis

Downstream Analysis

The Applicant has contended during the RIDEM wetland review process that a Downstream Analysis was not required since they reduced the peak runoff rate. I have attached the pertinent sections of the RI Stormwater Design and Installation Standards Manual, which specifically explains and uses a graph to illustrate why a downstream analysis is required, even though there is a reduction in the pre and post runoff rates.

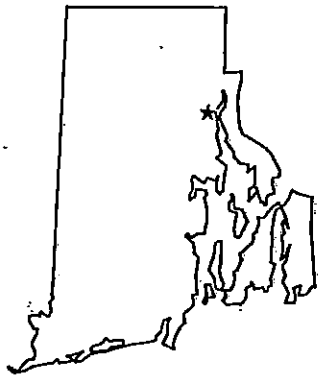
The Applicant attempted to satisfy the Downstream Analysis by modeling the section of Silver Creek as a 'Reach' using *HydroCAD* Stormwater modeling software. **This assessment is categorically wrong.**

I have attached sections from the HydroCAD Owner's Manual that describes a Reach as a "A uniform stream..." Silver Creek is not a uniform stream. That is why the HEC RAS model requires a series of cross-sections to reflect the non-uniform nature of natural streams. The Beta Silver Creek drainage model uses seven different cross sections in the Applicant's reference section.

There is a section in the HydroCAD Owner's Manual dealing with Reach Routing Limitations. It states that "If a detailed water surface profile is required for a channel, you should use a program specifically designed for that purpose." Footnote 25 states "Water surface profiles are usually calculated under constant flow conditions, rather than with a hydrograph (time-varying flow)"

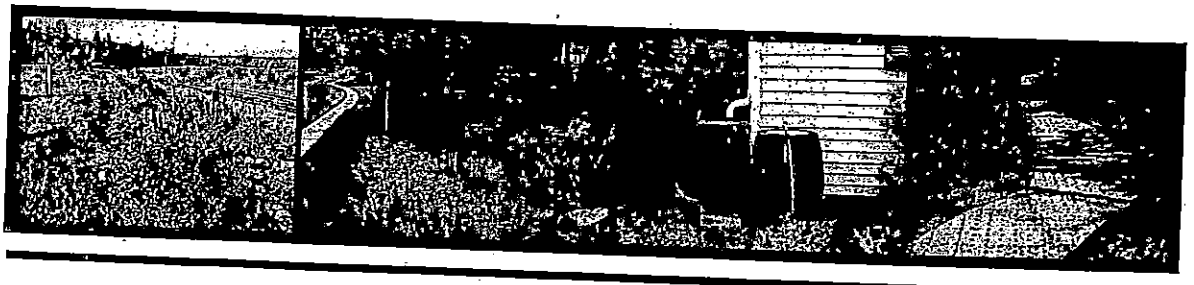
RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL

AMENDED MARCH 2015



RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND

COASTAL RESOURCES MANAGEMENT COUNCIL



For facility sizing criteria, the basis for hydrologic and hydraulic evaluation of development sites are as follows:

- The models TR-55 and TR-20 (or approved equivalent) will be used for determining the required storage and outlet structures for attenuating the peak flows from the 10-year and 100-year, 24-hour Type III design storms.
- The standard for characterizing pre-development land use for on-site areas shall be woods, meadow, or rangeland. For agricultural land, use a CN representing rangeland.
- For purposes of computing runoff, all pervious lands prior to development shall be assumed to be in good condition regardless of conditions existing at the time of computation.
- Off-site areas that drain to a proposed facility should be modeled as "present condition" for peak-flow attenuation requirements.
- If an off-site area drains to a facility, an applicant must also demonstrate safe passage of the 100-year event, based on actual conditions upstream.
- The length of sheet flow used in t_c calculations is limited to no more than 150 feet for pre-development conditions and 100 feet for post-development conditions.
- An applicant must demonstrate that flows from the 100-year event will be safely conveyed to a practice designed to manage the 100-year event.

The Q_p criterion can be waived for sites that:

- Direct discharge to a large river (i.e., 4th-order stream or larger. See Appendix I for State-wide list and map of stream order), bodies of water > 50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters.
- A Downstream Analysis indicates that peak discharge control would not be beneficial or would exacerbate peak flows in a downstream tributary of a particular site (i.e., through coincident peaks).

3.3.6 Downstream Analysis

A downstream analysis is required for projects meeting the project size and impervious cover characteristics in the table below, or when deemed appropriate by the approving agency when existing conditions are already causing a problem (e.g., known drainage or flooding conditions or existing channel erosion is evident), to determine whether peak flow impacts are fully attenuated by controlling the 10- and 100-year events. The criterion used for the limit of the downstream analysis is referred to as the "10% rule." Under the 10% rule, a hydrologic and hydraulic analysis is extended downstream to the point where the site represents 10% of the total drainage area. For example, a 10-acre disturbed area within the same subwatershed would be analyzed to the point downstream with a drainage area of 100 acres.

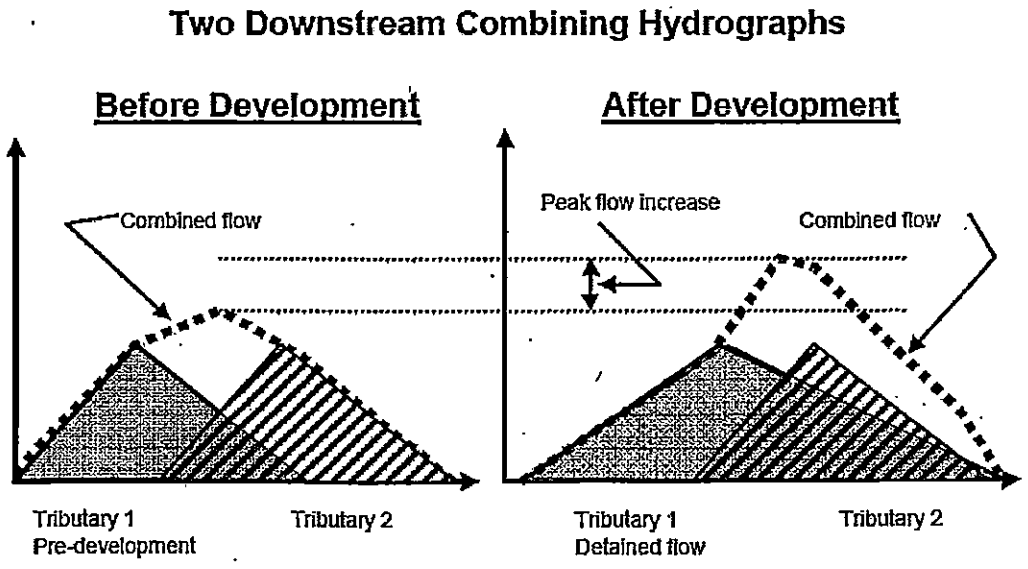
5 + 10 = 50 ACRES

Table 3-7 Projects for which a Downstream Analysis is required

Area of Disturbance Within the Subwatershed (acres)	Impervious Cover (%)[1]
>5 to10	>75
>10 to 25	>50
>25 to 50	>25
>50	all projects

A number of hydrologists have noted that overbank and extreme flood control approaches do not always provide full downstream control from the out-of-bank events, due to differences in timing of individual peak discharges in the downstream portion of the watershed. Depending on the shape and land use of a watershed, it is possible that upstream peak discharge may arrive at the same time a downstream structure is releasing its peak discharge, thus increasing the total discharge (see Figure 3-1). As a result of this "coincident peaks" problem, it is often necessary to evaluate conditions downstream from a site to ensure that effective out-of-bank control is being provided.

Figure 3-1 Graphical Representation of Coincident Peaks (Ogden, 2000)



[1] Percent Impervious Cover = I / disturbed area contributing to discharge locations

As a minimum, the analysis should include the hydrologic and hydraulic effects of all culverts and/or obstructions within the downstream channel and assess whether an increase in water surface elevations will impact existing buildings or other structures. The analysis should compute flow rates and velocities (for the overbank flood control storms) downstream to the location of the 10% rule for pre-developed conditions and proposed conditions both with and without detention facility(ies). If flow rates and velocities (for Q_p) with the proposed detention facility increase by less than 5% from the pre-developed condition, and no existing structures are impacted, then no additional analysis is necessary. If the flow rates and velocities increase by more than 5%, then the designer must redesign the detention structure, evaluate the effects of no detention structure, or propose corrective actions to the impacted downstream areas. Additional investigations may be required by the approving agency on a case-by-case basis depending on the magnitude of the project, the sensitivity of the receiving water resource, or other issues such as past drainage or flooding complaints.

Special caution should be employed where the analysis shows that no detention structure is required. Stormwater designers must be able to demonstrate that runoff will not cause downstream flooding within the stream reach to the location of the 10% rule. The absence of on-site detention shall not be perceived to waive or eliminate groundwater recharge (Re_v), water quality control (WQ_v), or stream channel protection requirements (CP_v).

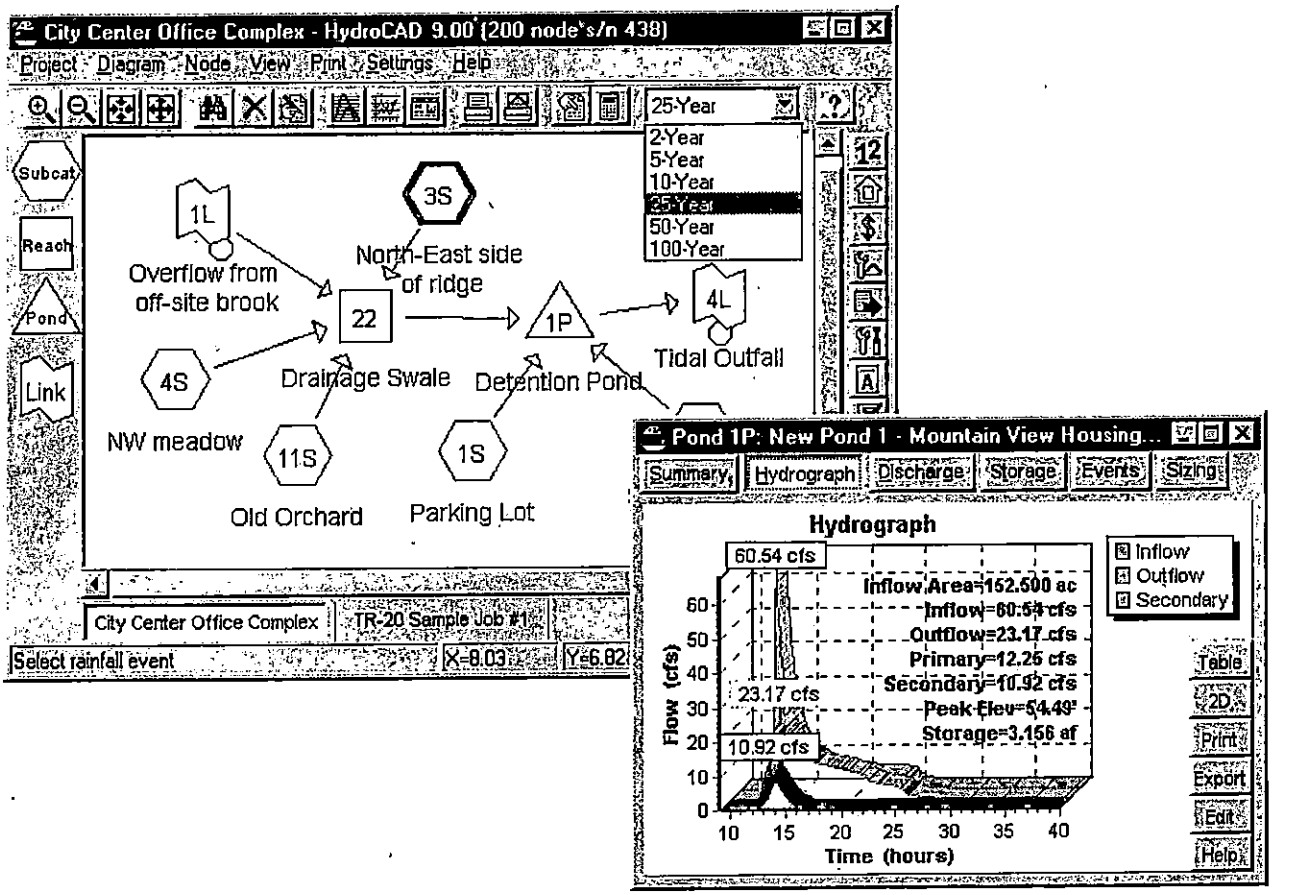
A typical downstream analysis will require a hydrologic investigation of the disturbed area draining to a proposed detention facility and of the contributory watershed to the location of the 10% rule for the 10- and 100-year, 24-hour Type III storms. The approving agency may also request analysis of the 1-year, 24-hour Type III storm on a case-by-case basis. A hydraulic analysis of the stream channel below the facility to the location of the 10% rule will also be necessary (e.g., a HECRAS water surface profile analysis). Depending on the magnitude of the impact and the specific conditions of the analysis, additional information and data may be necessary such as collecting field run topography, establishing building elevations and culvert sizes or investigating specific drainage concerns or complaints.

Table 3-8 Summary of Stormwater Treatment Practice Criteria

Criteria	Description	Post-Development Storm Magnitude

HydroCAD®

Stormwater Modeling System



Owner's Manual

Version 9

HydroCAD Software Solutions LLC

The Routing Diagram

The routing diagram shows the individual *nodes* that make up each project. The nodes are usually connected by arrows that indicate how their outflows are routed. Multiple inflows are summed automatically as required.[1]

Based on the routing diagram, HydroCAD is able to determine the correct sequence of calculations, and then calculate the flows throughout the project. Routing calculations are automatically updated as required. You can manipulate the diagram display with the main scroll bars, the tool bar, the main menu, the palette, and the mouse.

Watershed components

Each drainage system is represented by a network of the following types of *nodes*:

- **Subcatchment**: A relatively homogenous area of land that typically drains into a reach or pond. Each subcatchment generates a *runoff hydrograph*. A subcatchment may also be used to account for the rain falling directly on the surface of a pond. A subcatchment *cannot* be used to route an inflow hydrograph. Instead, use a subcatchment to calculate the runoff and a separate reach to perform the routing.

- **Pond**: A pond, swamp, dam, catch basin, manhole, drywell, or other impoundment that fills with water from one or more sources and empties in a manner determined by a weir, culvert, or other outlet device(s). The outflow of each pond is determined by a *hydrograph routing* calculation which attenuates and delays the peak flow. A pond may empty into a reach or into another pond. An optional *secondary* outflow may be used to *divert* the discharge from specific outlet devices and route them separately. A *discarded* outflow is also available for outflows that are not subject to further routing, such as exfiltration.

- **Catch Basin**: A special type of pond that provides an insignificant amount of storage, but otherwise has all the properties and capabilities of a pond. Since a catch basin has no storage capability, it cannot detain or attenuate its inflow. However, the routing calculations will determine the water surface level (headwater) at each point in time.

- **Reach**: A uniform stream, channel, or pipe that conveys water from one point to another and operates under *open channel flow*.[2] A reach may also be used to route an upstream hydrograph through a subcatchment.[3] The outflow of each reach is determined by a *hydrograph routing* calculation. This generally delays and attenuates the peak flow. A reach may be routed into a pond or into another reach.

- **Link**: A link may be used to 1) enter a hydrograph generated outside HydroCAD, 2) interconnect several routing diagrams, 3) scale a hydrograph, 4) split a hydrograph into two components for independent routing, or 5) define a fixed or tidal tailwater elevation.

---

[1] To sum multiple flows without performing a hydrograph routing, use an undescribed reach, pond, or link.

[2] To model a pipe under other flow conditions, including headwater and tailwater effects, use a *catch basin or pond with a culvert outlet*. This applies to most culverted road crossings, manholes, and other impoundments that feed a pipe.

[3] When a reach drains a subcatchment *along its length*, it may be best modeled as a component of the subcatchment's Tc calculation, rather than as an independent reach.

This technique is based on the assumption that the total flow is equal to the sum of the flows for the individual segments. If applied to a section with a constant Manning's value, the result is ***not*** the same as the original Manning's value.

Subdivision by Segment

$$Q = \sum Q_i \qquad \text{Eq. 27}$$

Q=Total flow for cross-section [ft³/sec] or [m³/sec]
Q_i=Flow for segment i (see Eq.23) [ft³/sec] or [m³/sec]

This technique produces exactly the same flow as the Lotter method, described above. It differs only in the calculation procedure, in which the total flow is the sum of the flows calculated separately for each segment, without the use of a composite Manning's value.

Subdivision by Manning's Value

$$Q = \sum Q_n \qquad \text{Eq. 28}$$

Q=Total flow for cross-section [ft³/sec] or [m³/sec]
Q_n=Flow for consecutive segments with same Manning's value

This technique subdivides the channel only when there is a change (break) in the Manning's value. This produces more consistent results than subdivision by segment, in that the resulting flow is independent of the number of points along the cross section. When all segments have the same Manning's value, the flow is identical to the traditional solution for a constant Manning's value. This technique is similar (although not identical) to the current procedure used in HEC-RAS.

Other Procedures

If another technique is used to calculate flow through a complex cross-section, the rating curve can be calculated separately and entered into HydroCAD using option 1, above. However, using a defined geometry or cross-section allows direct evaluation of the channel at any depth, without having to interpolate between a (smaller) number of user-defined stages.

Reach Routing Limitations

The preceding stage-discharge calculations are based solely on Manning's equation, and do *not* consider possible inlet, outlet, or tailwater effects. If a complete analysis is desired for a pipe, including entrance losses and possible tailwater effects, it should be modeled as a pond with a culvert outlet. If a detailed water surface profile is required for a channel, you should use a program specifically designed for that purpose.[25]

[25] Water surface profiles are usually calculated under constant-flow conditions, rather than with a hydrograph (time-varying flow). Peak flows (from HydroCAD or another hydrograph model) are often used as input for these calculations.

TOWN OF BRISTOL, RHODE ISLAND

TOWN COUNCIL
Nathan T. Calouro, *Chairman*
Mary A. Parella, *Vice Chairwoman*
Antonio A. Teixeira
Timothy E. Sweeney
Aaron J. Ley

DEC 12 2023
Office of Water Resources

Council Clerk
Melissa Cordeiro

December 8, 2023

Department of Environmental Management
Office of Water Resources -Freshwater Wetlands Program
Attn: Martin D. Wencek
235 Promenade Street
Providence, RI 02908

Subject: Comments re Application #22-0264 - Council Concerns and Additional Information

Dear Mr. Wencek;

I am writing on behalf of the Bristol Town Council to bring to your attention certain matters discussed during our recent council meeting on December 6, 2023, regarding DEM Application #22-0264. It was noted that the applicant asserted the town's support for the application; however, the Council wishes to clarify that the Town has neither taken a position in favor of nor against the said application.

The Council places great importance on the due diligence process in the review of both local and state board approvals. It is imperative to ensure compliance with regulations and to safeguard the interests of the community. Therefore, we find it necessary to communicate with the Department of Environmental Management (DEM) to underscore our concerns and share pertinent information.

During the council meeting, it was emphasized that flooding concerns on wetlands must be carefully considered in the application process. To assist in your evaluation, we have enclosed a copy of the Silver Creek Drainage Study for the Silver Creek watershed, which provides a comprehensive analysis of the area and highlights relevant factors.

Additionally, the Council believes it is crucial to bring to your attention the recent approval of a school bond by the town. This bond will facilitate the construction of a new high school in close proximity to the location covered by Permit #22-0264. When conducting your assessment, please consider the potential effects of the proposed development on the future high school in this location, as identified in the Bristol Tax Assessor Map Plat 117 lots 3 & 5.

In light of these factors, the Council kindly requests that the DEM thoroughly evaluates all aspects of Application No.#22-0264, including the concerns raised about flooding, the information provided in the Silver Creek Drainage Study, and the potential impact on the construction of a new school in the area.

We appreciate your attention to these matters and trust that the DEM will conduct a comprehensive review to ensure the protection of our community and the environment.

Please do not hesitate to contact us if you require any further clarification or additional information.

Thank you for your time and cooperation.

Sincerely,

Melissa Cordeiro
Town Clerk/Council Clerk

cc: Town Administrator
Director of Community Development

x/c Docket 1/17/2024

Silver Creek

Drainage Study

Bristol, RI

Prepared for:

Town of Bristol.
10 Court Street
Bristol, RI 02809

Prepared by:

BETA
ENGINEERS • SCIENTISTS

6 Blackstone Valley Place, Lincoln, RI 02865
315 Norwood Park South, Norwood, MA 02062

November 2007

Silver Creek Drainage Study

Table of Contents

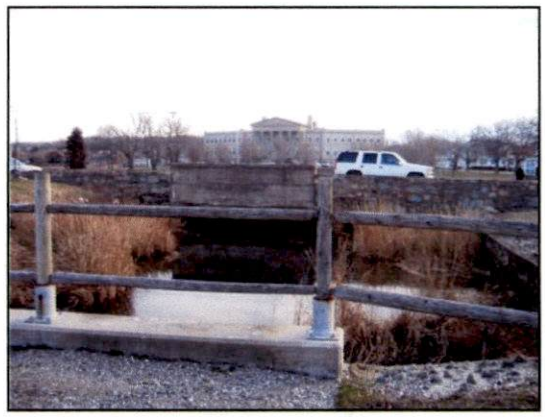
Description	Page
Introduction and Project Scope.....	1
Data Collection and Field Observations.....	3
Watershed Analysis.....	5
Problem Areas.....	14
Proposed Improvements.....	21
Recommendations.....	23
Cost Estimates.....	24

Appendix

Appendix A	Watershed Analysis
Appendix B	Silver Creek Analysis
Appendix C	Problem Area Analysis
Appendix D	Estimates
Appendix E	Map of Study Area

Introduction and Project Scope

The Town of Bristol retained the services of BETA Group, Inc. to complete a drainage study of the Silver Creek watershed. The 2-square mile watershed extends from Tupelo Street near the Town's northerly border discharging into Bristol Harbor under Route 114 and the East Bay Bicycle Path. The study is one of several projects currently underway to identify existing drainage facilities within the Town and to improve the storm water infrastructure. The primary objective of the study was to determine the causes of flooding within the watershed, and to identify remedial projects which the Town may advance as money becomes available either through grants or bonds.



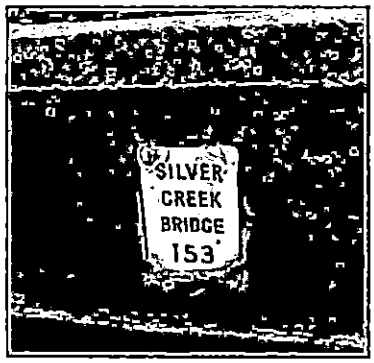
The Silver Creek watershed contains at least 66 subwatershed areas in 1,250 acres, and contains approximately 170 acres of regulated freshwater and saltwater wetlands. Runoff from approximately 60% of the watershed enters the creek and associated wetlands via closed drainage systems (i.e. pipes and drainage structures), while the runoff from the remaining 40% flows overland to the wetlands and stream channels. Silver Creek begins as two (2) separate channels, identified as the East Branch and the West Branch, which merge into one creek south of Chestnut Street in the large marshy area north of the Guitaris School. The boundaries of the watershed were determined through the use of GIS, dry-weather opening of the drainage structures, and field observations of the wet-condition overland flows. The watershed is identified in Figure No. 1. The Silver Creek watershed falls under the jurisdiction of both the Coastal Resources Management Council (CRMC) and the Rhode Island Department of Environmental Management Freshwater Wetlands Section (RIDEM). The RIDEM regulates the wetlands within the watershed north of Chestnut Street and east of Sherry Avenue. Figure No. 2 illustrates the boundaries of the two (2) regulatory agencies.

There are numerous man-made ponds or detention basins which were built to contain or mitigate storm water flows to the receiving wetlands. Some of these have been modified by property owners over the years to improve local conditions, or not properly maintained, resulting in flooding downstream.

In addition to the flow of freshwater runoff via overland and piped flows, the Silver Creek is tidally influenced at the outfall at Bristol Harbor. High tides during storm events reduces the discharge capacity of Silver Creek at Route 114 preventing the upper watershed from draining, resulting in flooding at the fringes of the wetland areas and at the restrictions of piped sections under roadways and through private property. Displaced riprap under the Silver Creek bridge further restricts the flow of saltwater into and out of the salt marsh area adjacent to the Guitarius School and the recreation fields, resulting in insufficient salt water to maintain the marsh characteristics. Sediments have allowed phragmites to invade the area, reducing available flood storage. This is described in much greater detail in the discussion on sediments.

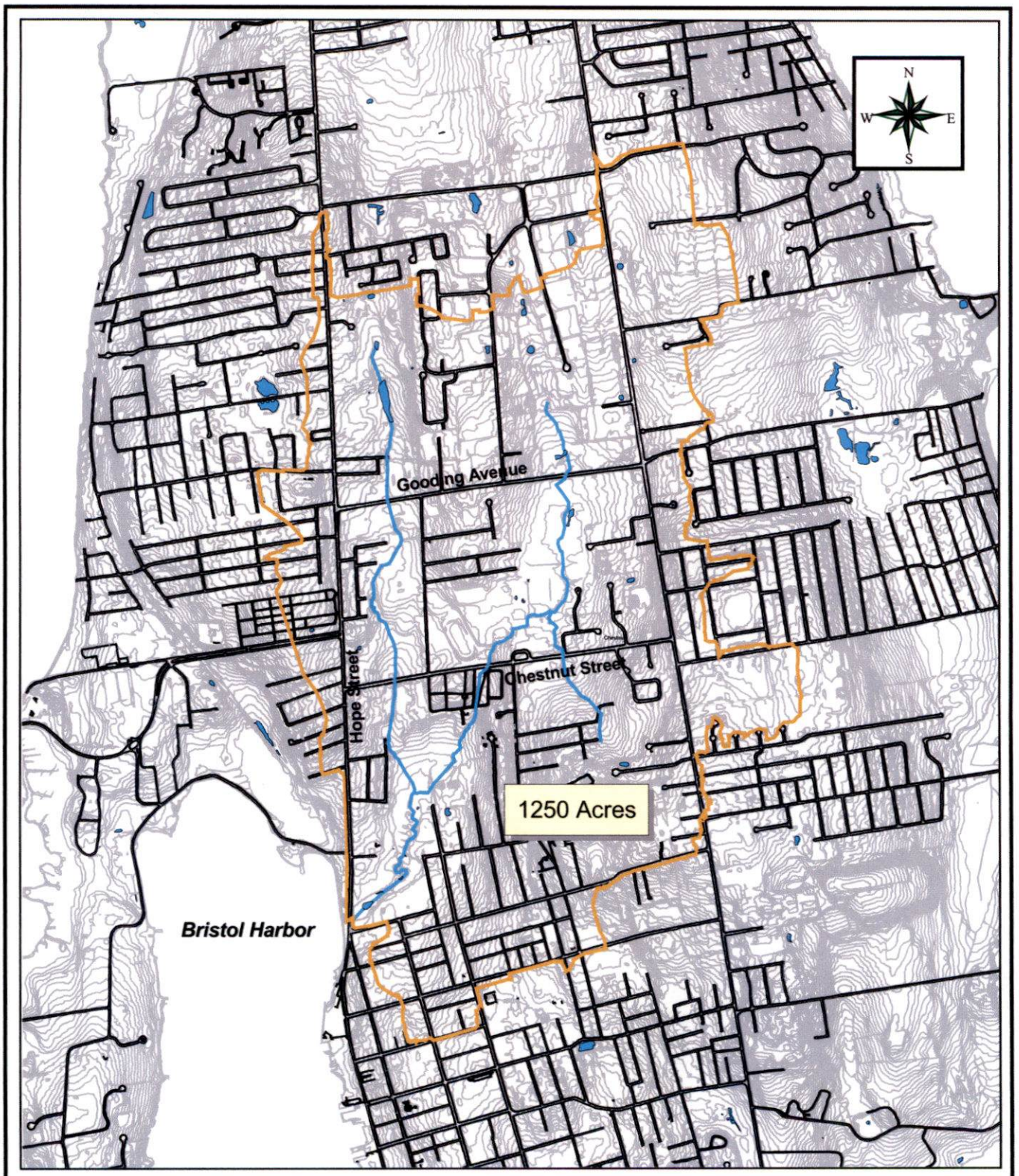
Coordination with Other Projects

The Natural Resources Conservation Services (NRCS) has conducted a study of the lower portion of the watershed including the restrictions under the Silver Creek Bridge No. 153 and the East Bay Bikepath Bridge, developing a HEC-RAS model of the marsh. This model was used in the development of the overall model for the Silver Creek watershed, described in the Methodology section of this report. The NRCS project looked at the effects of removing the rocks to allow for salt water intrusion into the lower creek area to kill off the freshwater invasive plants, and to re-establish the marsh characteristics south of the footbridge. This project is currently in the permitting stage, with construction expected in 2008.



The Town has several smaller projects either in the conceptual design stage, or under construction in 2007 which have either a direct or indirect impact on the study, as well as our recommendations. Chestnut Street, which runs in an east-west direction from Metacom Avenue (Route 136) to Hope Street (Route 114) is a major route within the watershed providing access to the Mount Hope High School, the Benjamin Church Manor, Naomi Street and the St. Mary Cemetery. The east and west branches of the Silver Creek pass under Chestnut Street, and there is an older closed drainage system within the roadway. The Town is currently constructing "1R Improvements" to Chestnut Street including new sidewalks, pavement overly, etc. No work to the drainage system is being done under this contract.

Elbow Street is an extension of Waterman Street, and is the location of chronic flooding problems. Caputo and Wick has designed and permitted a project which will replace the existing 12" CMP with



Legend

Silver Creek Model Reaches

Silver Creek Watershed

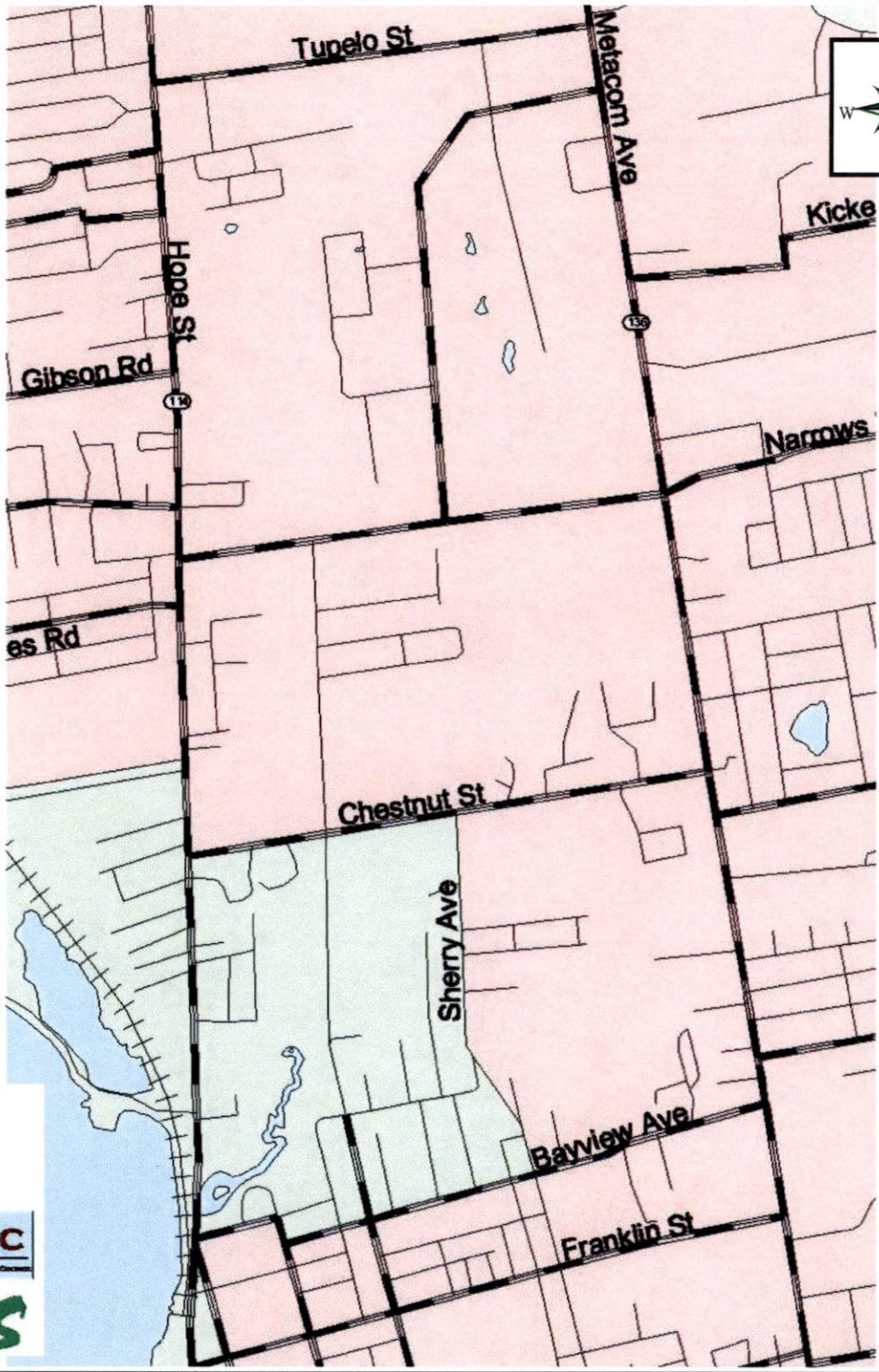
Town of Bristol Rhode Island

Silver Creek

NOT TO SCALE

Figure 1

Silver Creek Watershed



Legend

CRMC

RIDEM

Town of Bristol
Rhode Island

Silver Creek

NOT TO SCALE

Figure 2

Jurisdictional Boundary

new pipes including an increase in the pipe conveying the flow under the road with an 18" HDPE. Construction on this project is schedules for Fall 2007. This project is discussed in greater detail later in the report, as this area of Elbow Street has been identified as one of the problematic areas.

Also discussed in the report is Sherry Avenue. New sidewalks will be constructed in 2007. Caputo and Wick developed a Conceptual Plan for new drainage within the existing Right-of-Way, utilizing 48" pipes to provide storage. This plan would change the drainage patterns by conveying all the stormwater toward Chestnut Street, as opposed to the current route through private property toward Varnum Avenue. This project is also discussed in further detail.

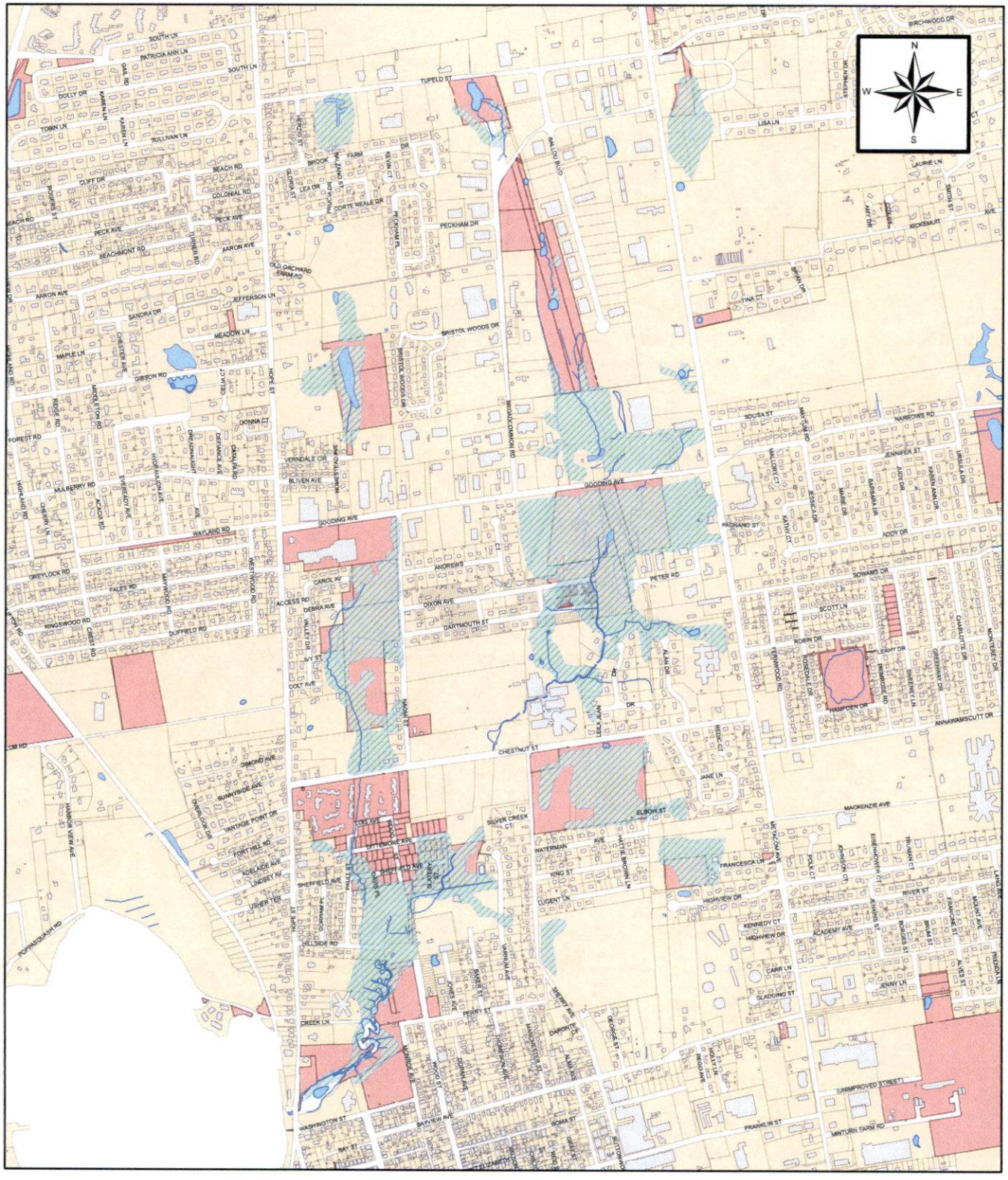
Data Collection and Field Observations

Data Collection

As part of the study and to determine accurate limits of the watershed, BETA completed an inventory of the existing drainage catch basins and manholes, as well as all outfalls and detention facilities within the 1,250 acre watershed. Catch basins were located using GPS equipment and opened to identify structure and pipe materials, pipe inverts and sizes, condition and the presence of silt or standing water. Approximately 1,000 catch basins were opened along with 250 drain manholes. Information collected regarding pipe size and invert elevations allows us to identify closed drainage systems which in turn can be used calculate the system capacity.

As previously stated, it was determined that there are 66 separate drainage systems which collect runoff on local streets and developments, and then discharge to the Silver Creek. BETA used contour information provided by aerial mapping to determine the limits or reach of each individual subwatershed area. These subwatersheds have been compiled on a large scale map which is included in the report Appendix. Once the contributing areas are determined from this map, a hydrologic analysis was completed using Hydrocad software. The program calculates the watershed yield, or the rate of runoff directed to each individual closed drainage system. By comparing the capacity of each system with the calculated yield, we can determine those subsystems that are over-capacity and thus theoretically in a flooded state for storms of varying frequency (i.e. 2-year, 10-year, 100 year frequencies).

Figure 3 illustrates the town-owned parcels within the study area. This map is important in that it provides potential areas where improvements can be made without the acquisition of private property.



Legend

- Town-Owned Parcel
- Wetland
- River or Stream
- Lake or Pond

Town of Bristol Rhode Island

Silver Creek

NOT TO SCALE

Figure 3

Town-Owned Property

Field Observations

In addition to the catch basin data and the plan development, BETA on several occasions inventoried much of the upland areas and the wetland conditions. It was observed that filling in of fringe areas or buffers was prevalent in several locations, including grass clippings, leaves, and small tree branches. Although "No Dumping" signs were observed at the end of several streets, this fill material, even though organic in nature, occupies space that would otherwise be used for flood storage.

Over the study period, the area experienced several measurable storm events, which provided the opportunity to witness the effects of the runoff throughout the watershed. During high-intensity, short duration storms, where the rain falls over a relatively short timeframe (i.e. heavy downpours), localized street flooding occurred on several of the major roadways including Gooding Avenue, Hope Street at the Silver Creek Bridge, Sherry Avenue and Washington Street. This indicated that there was a catchment problem on several of the streets. During long duration storms, where the rain continued to fall over a 24-hour period at a significantly lower rate, the flooding was confined to the lower watershed area, and the upper watershed and wetland areas were capable of containing the volume of water. This photo shows the water level approximately 2-3 feet above ground, with the bikepath and Route 114 completely covered.

During the period of high tide on March 3, 2007, the water level in Bristol Harbor was estimated to be approximately 4 feet above mean high tide level, and the entire area from Washington Street to the Topside Restaurant was flooded. RIDOT's efforts to pump the area were futile until the tide subsided. Also, during these storm events, sediments were observed in the open channels leading to the creek and associated wetlands. These included runoff from soil stockpiles with incorrect erosion controls, parking lots, and other paved areas.

Public Meetings

In addition to the field data collections and observations, BETA attended a Public Meeting with residents to hear first-hand of their perceived drainage problems, and the historical nature of the flooding. During

this meeting, the residents identified several areas where chronic flooding occurs and affects their private property and commercial businesses. In addition to the Public Meeting, BETA attended a meeting of the storm water committee to determine which projects currently under consideration fall within the Silver Creek watershed, and to gain insight into the problems which have been identified by the Town's engineer and planning department.

The Draft Report was presented to the Bristol Town Council on October 17, 2007. BETA summarized the findings and recommendations for members of the Town Council and local residents at this workshop, and answered questions from the audience. Input from this meeting has been used to modify the recommendations, emphasizing the improvements which can be done without extensive environmental permitting, and for relatively low costs.

Watershed Analysis

Hydrocad Analysis

The 1,250 acre watershed was separated into 66 subwatershed areas to review the capacity of each individual drainage system, and the actual rate of stormwater runoff flowing to each area. These subwatershed areas were analyzed using the Hydrocad software, which utilizes TR-20 technology to determine yield for storms of varying intensities, which can then be compared with the capacity of the existing pipe. As previously indicated, the pipe capacities were calculated based on the existing system characteristics (i.e. size, slope, inverts, etc.). The systems were analyzed for the 2-year and 10-year storms. In the 2-year storm, with 3.4 inches of rainfall in a 24-hour period, it was found that 32 of the 66 areas did not have sufficient capacity to handle the runoff. This included 5 areas where the capacity deficit exceeded 20 cubic feet per second (cfs), and 13 areas where the deficit was greater than 10 cfs.

The 10-year analysis (4.9 inches of rainfall in a 24-hour period) showed that an additional 12 watershed areas do not have existing capacity to handle the rate of runoff. The storms and watershed areas are summarized in Table 1. The figure demonstrating the watershed areas for the closed drainage systems can be found in the appendix.

HEC-RAS

The Hydraulic Engineering Centers River Analysis System (HEC-RAS) program was used to analyze the river and floodplain portions of the watershed. This program allows for both open-channel analysis of

Silver Creek Drainage Study
Pipe Capacity vs. Watershed Yield
Table 1

Watershed	Pipe Size (in.)	Pipe Capacity	Watershed Yield (cfs)			
			2 Year	10 Year	25 Year	100 Year
1	24	31	38	58	38	85
2	15	9	9	13	15	19
3	24	20	27	48	59	79
4	36	68	40	64	77	99
5	12	7	5	8	10	13
6	36*	67	23	36	44	57
6d	12*	5	2	3	4	4
6e	12	7	2	2	3	4
8	12	2	3	6	7	10
9	12	7	7	11	13	17
10	24	24	12	22	27	35
11	15	17	39	62	74	96
12	12	8	6	10	12	15
13	12	6	13	24	30	40
15	12	32	28	50	61	81
16	24	6	4	8	9	13
14 & 17	18	6	18	34	42	58
18	18	83	21	38	48	65
19	36*	4	17	33	42	58
20	12*	2	15	27	34	46
21	36*	67	8	12	14	18
22	18	8	18	28	33	41
23	12*	5	3	4	5	6
24	12*	4	12	19	23	29
25	18*	11	11	21	26	35
26	4	1	0.5	0.5	0.5	0.5
27	6*	1	0.5	0.5	0.5	0.5
28	12	12	5	9	12	16
29	18	14	17	29	36	48
30	10*	1	3	5	6	8
31	12*	4	25	48	61	84
32	18*	17	35	71	92	130
33	18*	6	44	79	99	133
34	12	2	8	14	17	23
35	15*	6	4	7	8	11
36	30*	41	136	235	290	386
37	18*	11	9	14	17	23
38	18*	8	4	7	8	11
39	15*	4	16	29	36	48
40	6*	1	0.5	0.5	1	1
41	8*	2	0.5	1	1	2
42	6*	1	0.5	0.5	0.5	0.5
43	24	20	5	8	11	14
44	6*	1	2	3	4	6
45	12*	2	3	6	8	12

* Due to limited information about these systems, the slope was assumed to be 1%.

Silver Creek Drainage Study
Pipe Capacity vs. Watershed Yield
Table 1

Watershed	Pipe Size (in.)	Pipe Capacity	Watershed Yield (cfs)			
			2 Year	10 Year	25 Year	100 Year
46	12*	2	1	2	3	4
47	18*	6	13	23	30	40
48	12*	2	3	4	5	7
50	4*	0.50	3	5	6	9
51	18*	11	11	17	21	26
52	12*	2	9	14	17	22
53	12	4	12	19	22	28
54	12	4	1	2	3	4
55	8	2	4	6	7	9
56	24	36	11	20	25	33
57	12*	2	4	7	8	11
58	12*	2	5	8	10	14
59 & 60	54/36	240	72	124	152	203
61	24	20	27	48	60	80
62	12*	2	11	20	25	34
63	15*	4	15	27	34	46
64	12*	4	2	3	3	4
65	18*	11	6	10	13	18
66	18	7	6	10	13	17
67	18	5	4	7	8	11
68	12	2	26	48	60	81

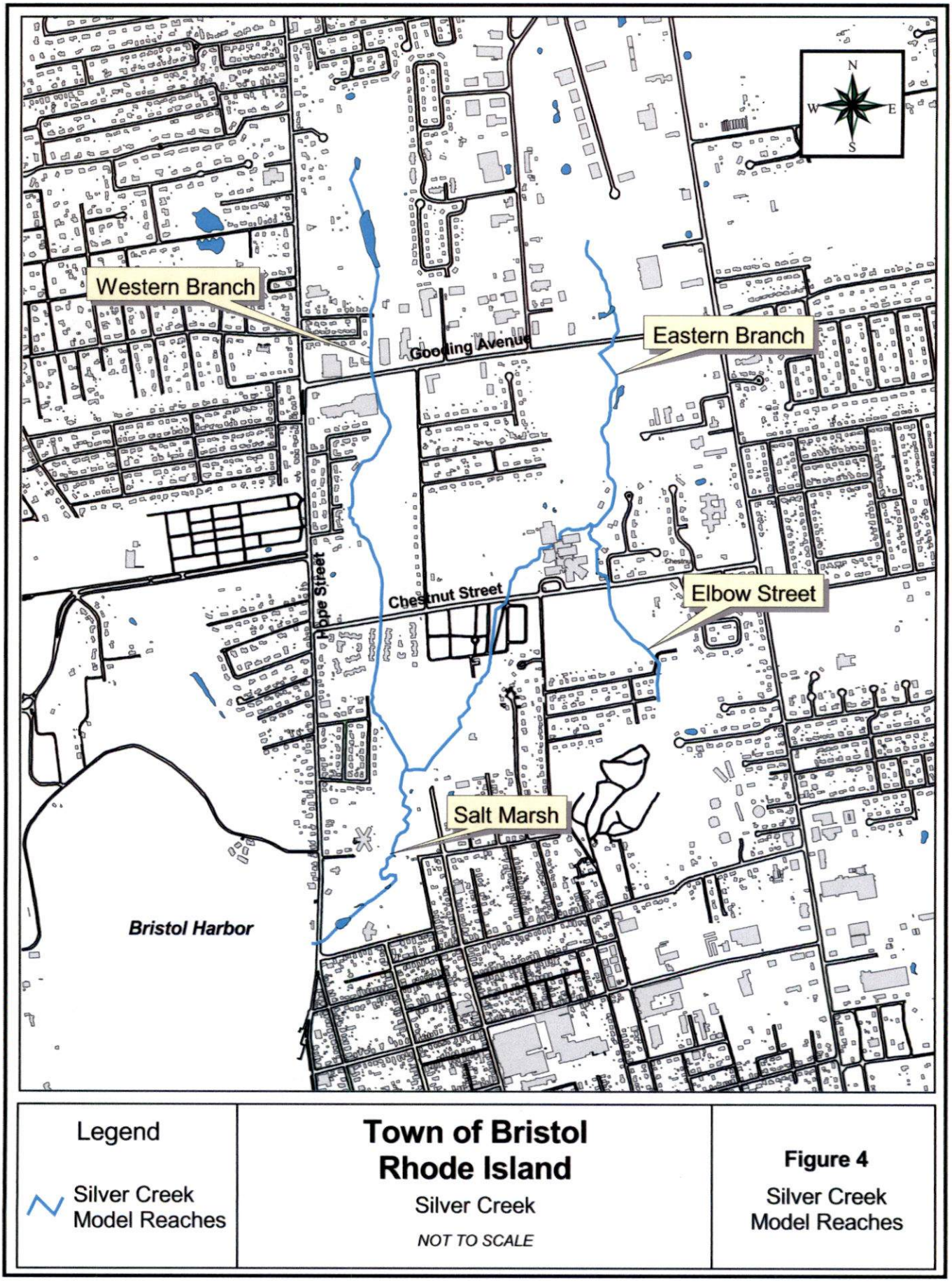
* Due to limited information about these systems, the slope was assumed to be 1%.

the river portions of the east and west branches (northern reaches), and the pond areas of the lower watershed as well as those areas where flows back up as a result of restrictions from piped sections. In order to calculate the input runoff at key locations, the total watershed area was broken down into 45 subwatershed areas, each with a discharge point and volume of stormwater runoff. It should be noted that these 45 subwatershed areas are different from the 66 subwatershed areas identified in the pipe-flow analysis as they have different discharge points and characteristics. The figure illustrating the subwatershed areas for the Silver Creek analysis can be found in the appendix.

To determine the open channel characteristics of the channel, the creek was analyzed from upstream of Gooding Avenue to the discharge point west of Hope Street. The creek was divided into four reaches: the Eastern Branch, Western Branch, Salt Marsh and Elbow Street. These reaches can be seen in Figure 4. The Eastern and Western Branches extend from north of Gooding Avenue to south of Chestnut Street where they converge in the salt marsh and continue to the outfall. The Elbow Street reach was modeled because many of the previously discussed problem areas discharge to the wetland north of Elbow Street. This wetland area flows to a culvert which crosses Chestnut Street and discharges on the northern side. The Elbow Street reach then converges with the Eastern Branch before flowing to the culverts under the high school. The model would help to determine if the problems in these areas were due to the hydraulic characteristics of the creek or the inadequate capacity of the individual drainage systems.

Methodology

The hydrologic and hydraulic analysis for this project was completed using HydroCad and HEC-RAS computer software. The overall watershed was divided into approximately 45 subwatersheds. HydroCAD was utilized to determine the watershed yield for each of the subwatersheds. The watershed yield assumes that the peak flow reaches the creek regardless of the restrictions the closed drainage systems may create. HydroCAD utilizes the Soil Conservation Services Technical Release 55 (TR-55). Additionally, the Rhode Island Intensity-Duration-Frequency (IDF) curve was used to determine intensity values based on the time of concentration. A lag time, ranging anywhere from 20 to 60 minutes, was calculated for each subwatershed based on the amount of time it would take to travel in the creek from the discharge point of one subwatershed to the next. The peak discharge for each subwatershed was determined for the 2, 10 and 100 year design storm events. The results of the HydroCad analysis for each storm event are included in the Appendix.


N
W
E
S
Western Branch
Eastern Branch
Gooding Avenue
Hope Street
Chestnut Street
Elbow Street
Salt Marsh
Bristol Harbor
Legend
Silver Creek Model Reaches
Town of Bristol
Rhode Island
Silver Creek
NOT TO SCALE
Figure 4
Silver Creek Model Reaches

The hydraulic conditions in the creek were computed by a steady flow simulation in HEC-RAS using the derived peak flows for the 2, 10, and 100 year design storms obtained from HydroCad. The hydraulic analysis was completed for the existing condition and several alternatives to mitigate flooding during various design storm events.

Existing Condition

DESCRIPTION

The existing condition is defined as the existing creek channel, assuming that the rock sill upstream of the bike path has been lowered by the ongoing project. The alignment of the river channel and the cross sections were defined using the 2-foot contour intervals obtained from the Town's GIS. The geometry of the bridge crossings or hydraulic opening and cross culverts were defined and quantified using information obtained from the Town's GIS, the Natural Resources Conservation Service (NRCS) Silver Creek Study and Model, and field data obtained during this study. It is assumed that these culverts are not damaged or collapsed and able to convey flow at full capacity. For analysis purposes, if required information was not available, the characteristics of the system were assumed using the best available information and the topography of the area.

The river bed and wetland elevations were derived from the 2-foot contours except in the Salt Marsh reach. NRCS had performed a more detailed survey of the salt marsh area for their study of Silver Creek. The cross-sections from their HEC-RAS model through the salt marsh area were incorporated into our model. The hydraulic openings for the pedestrian, Hope Street and the bike path bridges were also taken from the NRCS model.

The outfall downstream of the bike path is tidally influenced. The tailwater only affects the creek from the outfall to just upstream of where the eastern and the western branches converge (approximately 3,000 feet), mostly through the marsh area. Upstream of this point, the elevation of the creek is higher than the tailwater elevation. The HEC-RAS simulation was performed for four different tailwater scenarios. The first scenario assumed the bike path culvert had no tailwater (empty), the second scenario assumed the culvert was half full, the third scenario assumed the culvert was fully submerged but not overtopping the bike path, and the last scenario assumed the culvert was fully submerged and overtopping the bike path by six inches. Each of these conditions was used as the boundary condition downstream for the

simulation. The only tailwater condition that affected the water surface elevation (more than 0.05 feet) or the discharging flow at Hope Street or the bike path was the last scenario representing the fully submerged culvert and overtopping of the bike path by six inches. The discharging flow from Hope Street causes the bike path to act as a weir which overtops and discharges to the harbor. Until the tailwater elevation is above the bike path, the weir flow from the bike path is able to discharge sufficient flow without increasing the water surface elevation upstream of Hope Street. Therefore, only the two extreme tailwater scenarios were used in the simulation: no tailwater and a tailwater elevation which overtops the bike path by six inches (referred to as the tailwater condition throughout the rest of this study).

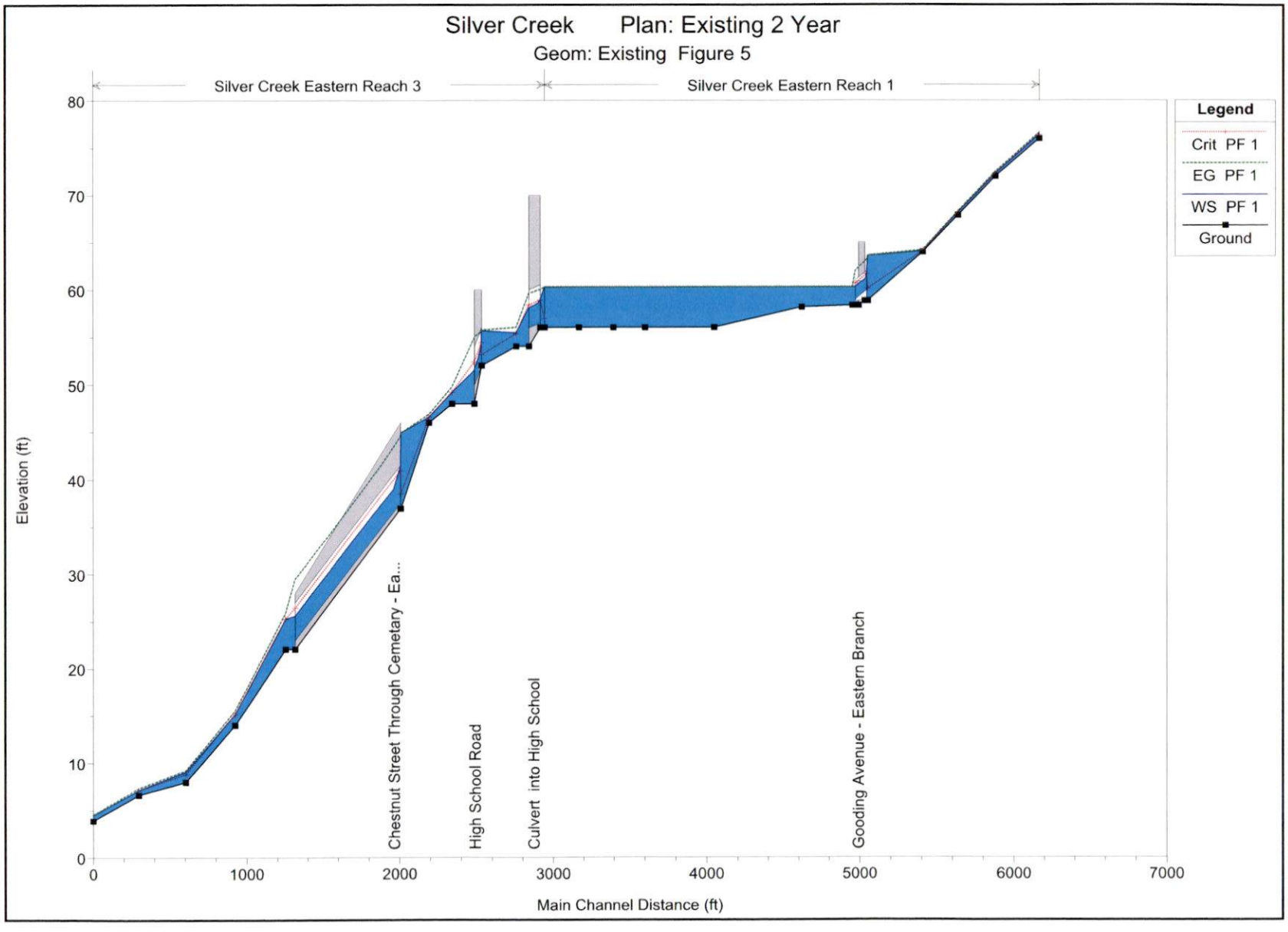
The pedestrian bridge located upstream of Hope Street in the marsh is flooded for the 2, 10 and 100-year storm events. In agreement with the previous NRCS Study, it was determined that this bridge does not change the characteristics of the flow through this area and therefore will not be discussed further as part of the following results.

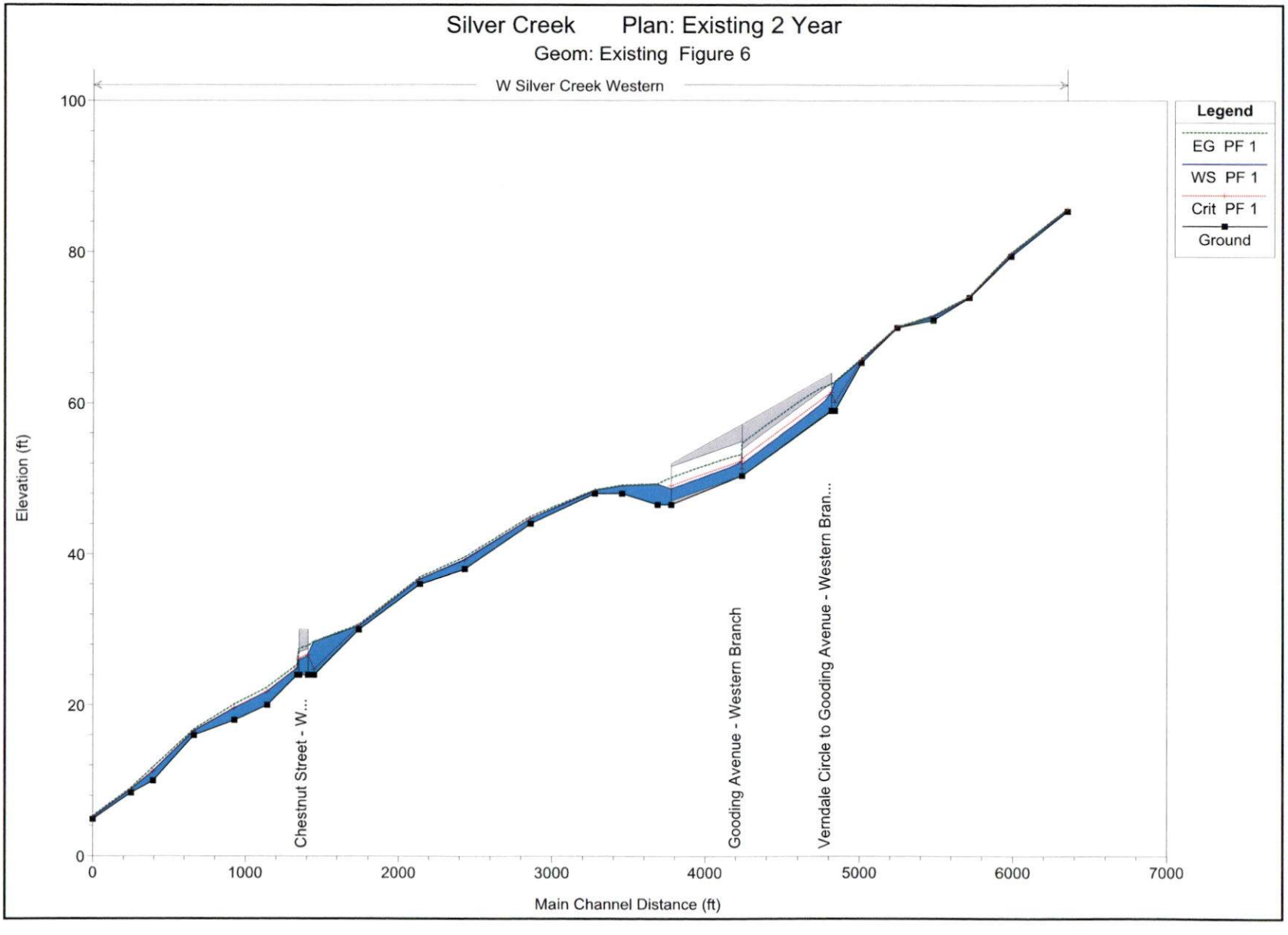
RESULTS

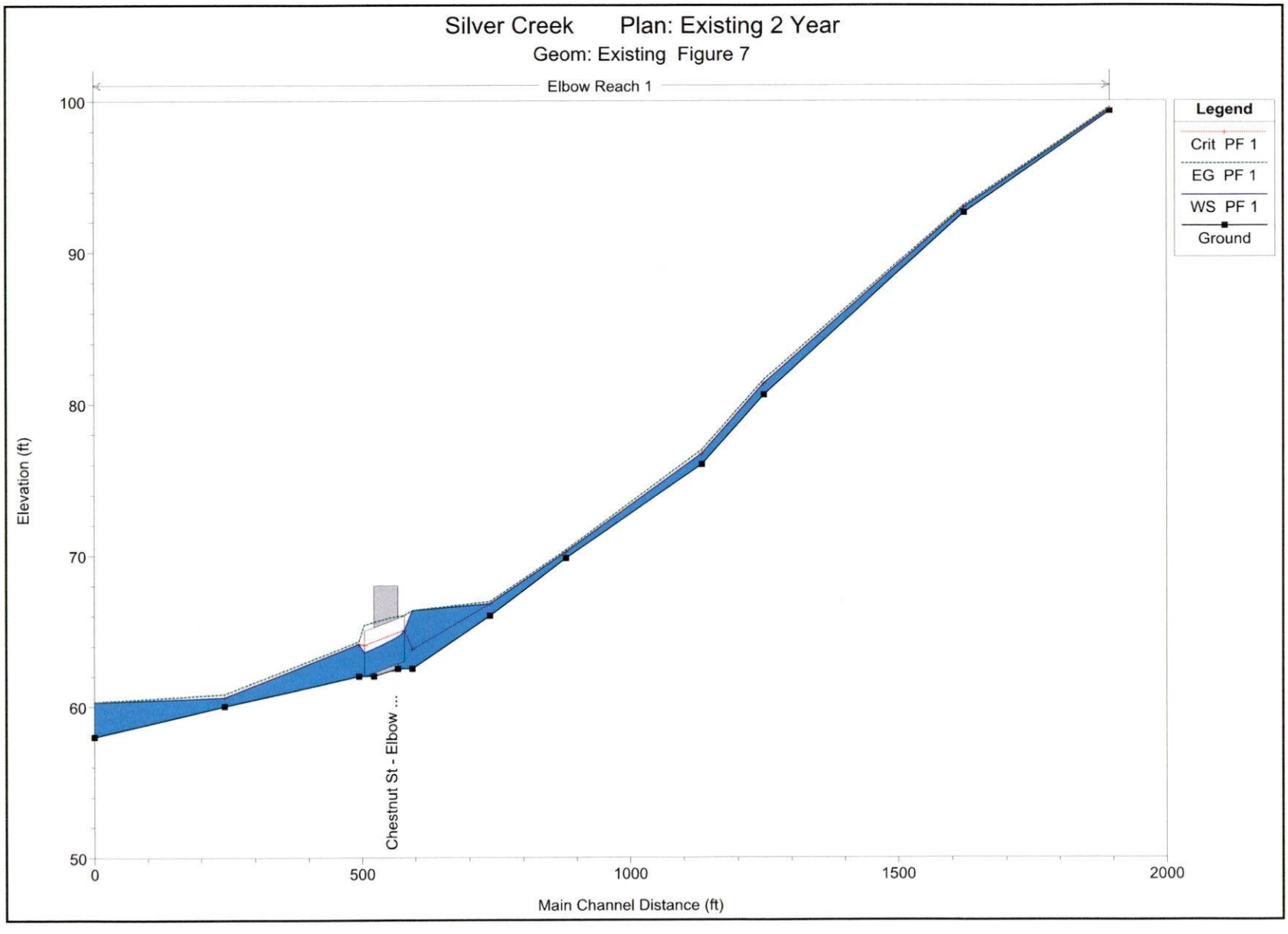
Based on the model, there are two areas throughout the watershed that seem to flood periodically. These areas are the marsh upstream of Hope Street and the area from the eastern branch between Gooding Ave and the high school. The topography is very flat in these areas and the creek is restricted downstream by culverts at Hope Street and the high school. The bike path bridge and the tidal influence at the outfall also impede the flow. Table 2 summarizes the elevations at the bike path, Hope Street, the marsh and the area between Gooding Avenue and Chestnut Street for the eastern branch for all three of the design storms with the tailwater condition and without. Each storm will have profiles to represent the eastern branch, western branch and Elbow Street and the marsh will have a profile with the tailwater condition and without if necessary. The results will also be presented in a summary table which can be found in the appendix with the output of the model.

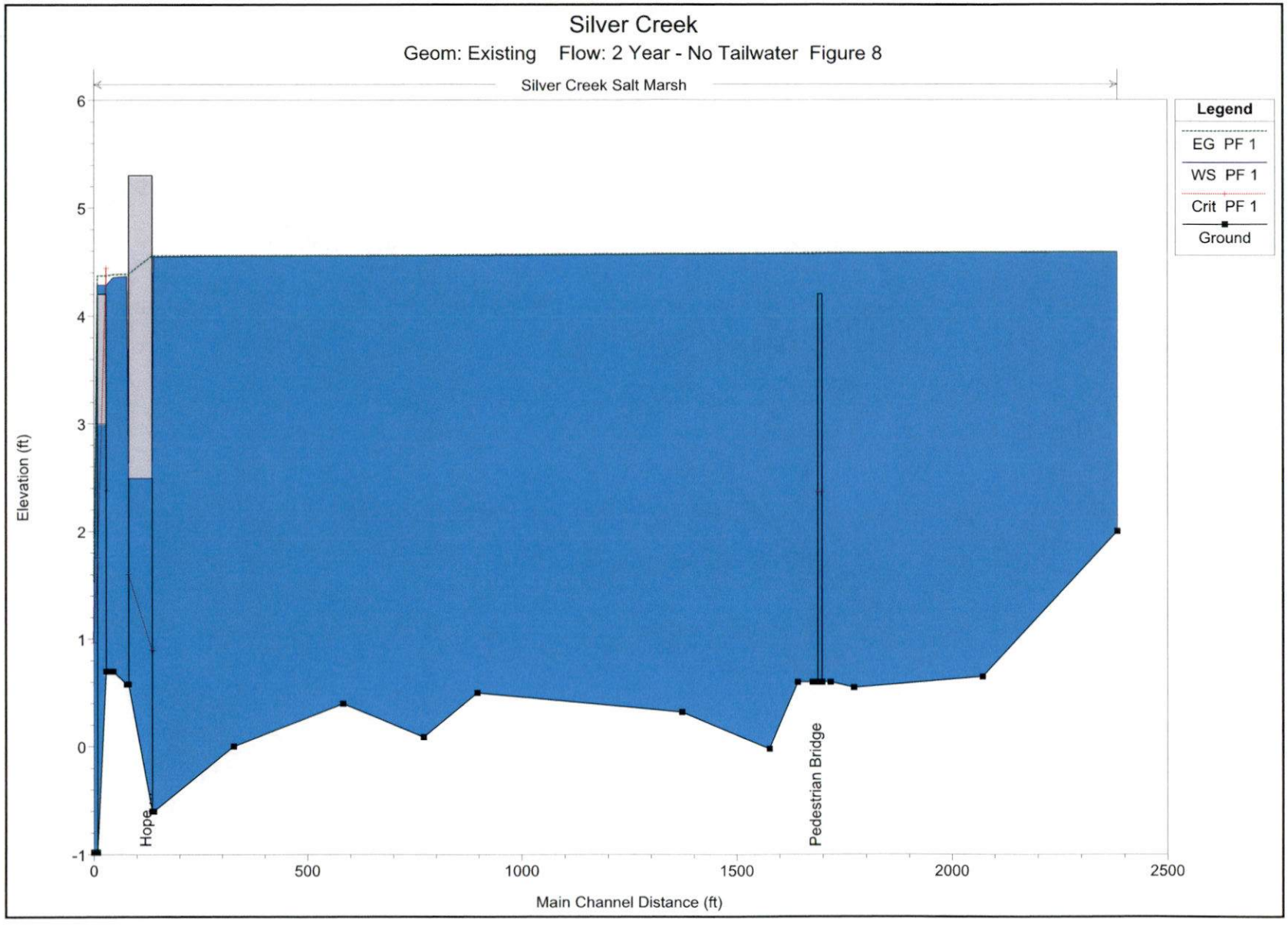
Two-Year Design Storm

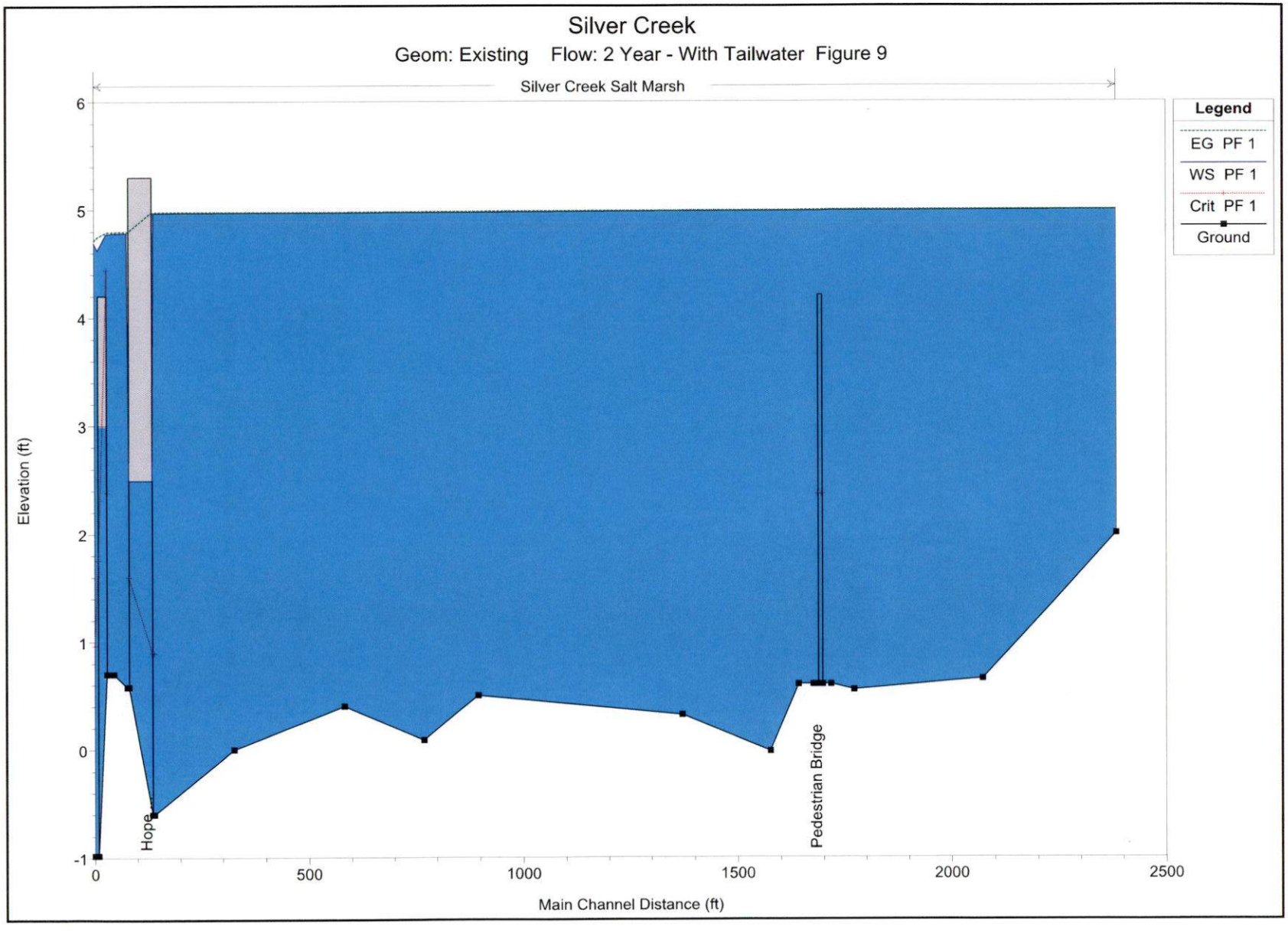
As previously mentioned, the creek was divided into four reaches: Eastern Branch, Western Branch, Salt Marsh and Elbow Street. The creek has the available capacity to convey the peak discharge of 210 cfs associated with a 2-year storm event. The culverts and hydraulic openings of the bridges are sufficient (see Figures 5-9). The only bridge that overtops is the bike path. The approximate elevations of the bike


Silver Creek Plan: Existing 2 Year
Geom: Existing Figure 5
Silver Creek Eastern Reach 3
Silver Creek Eastern Reach 1
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street Through Cemetary - Ea...
High School Road
Culvert into High School
Gooding Avenue - Eastern Branch
0
10
20
30
40
50
60
70
80
0
1000
2000
3000
4000
5000
6000
7000


Silver Creek Plan: Existing 2 Year
Geom: Existing Figure 6
W Silver Creek Western
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street - W...
Gooding Avenue - Western Branch
Verndale Circle to Gooding Avenue - Western Bran...
0
20
40
60
80
100
0
1000
2000
3000
4000
5000
6000
7000


Silver Creek Plan: Existing 2 Year
Geom: Existing Figure 7
Elbow Reach 1
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
100
90
80
70
60
50
0
500
1000
1500
2000
Main Channel Distance (ft)
Chestnut St - Elbow ...


Silver Creek
Geom: Existing Flow: 2 Year - No Tailwater Figure 8
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Hope
Pedestrian Bridge
6
5
4
3
2
1
0
-1
0
500
1000
1500
2000
2500


Silver Creek
Geom: Existing Flow: 2 Year - With Tailwater Figure 9
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
Hope
Pedestrian Bridge
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

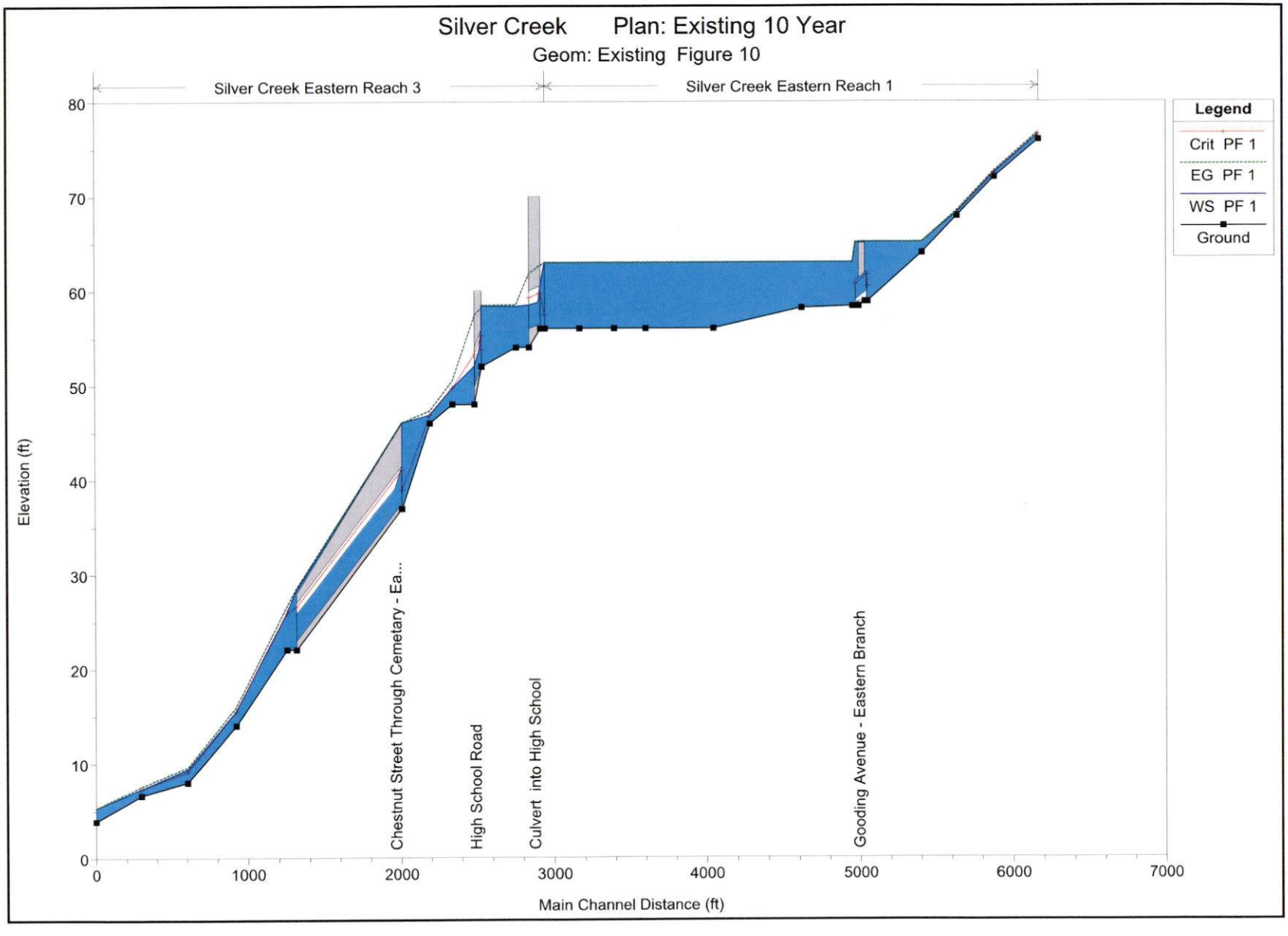
path and Hope Street are 4.2 feet and 5.3 feet, respectively. The water surface elevation is 0.10 feet above the bike path elevation with no tailwater and 0.5 feet above with the tailwater condition. Hope Street is not flooded by this design storm whether a tailwater condition is applied or not. The water surface elevation increases throughout the marsh to just upstream of Hope Street by 0.5 feet, bringing it to approximately 5.0 feet, when the tailwater condition is applied. As shown in Figure 5, the water surface elevation in the area between Gooding Avenue and the high school is approximately 60.4 feet. As previously mentioned, the tailwater does not affect the creek this far upstream.

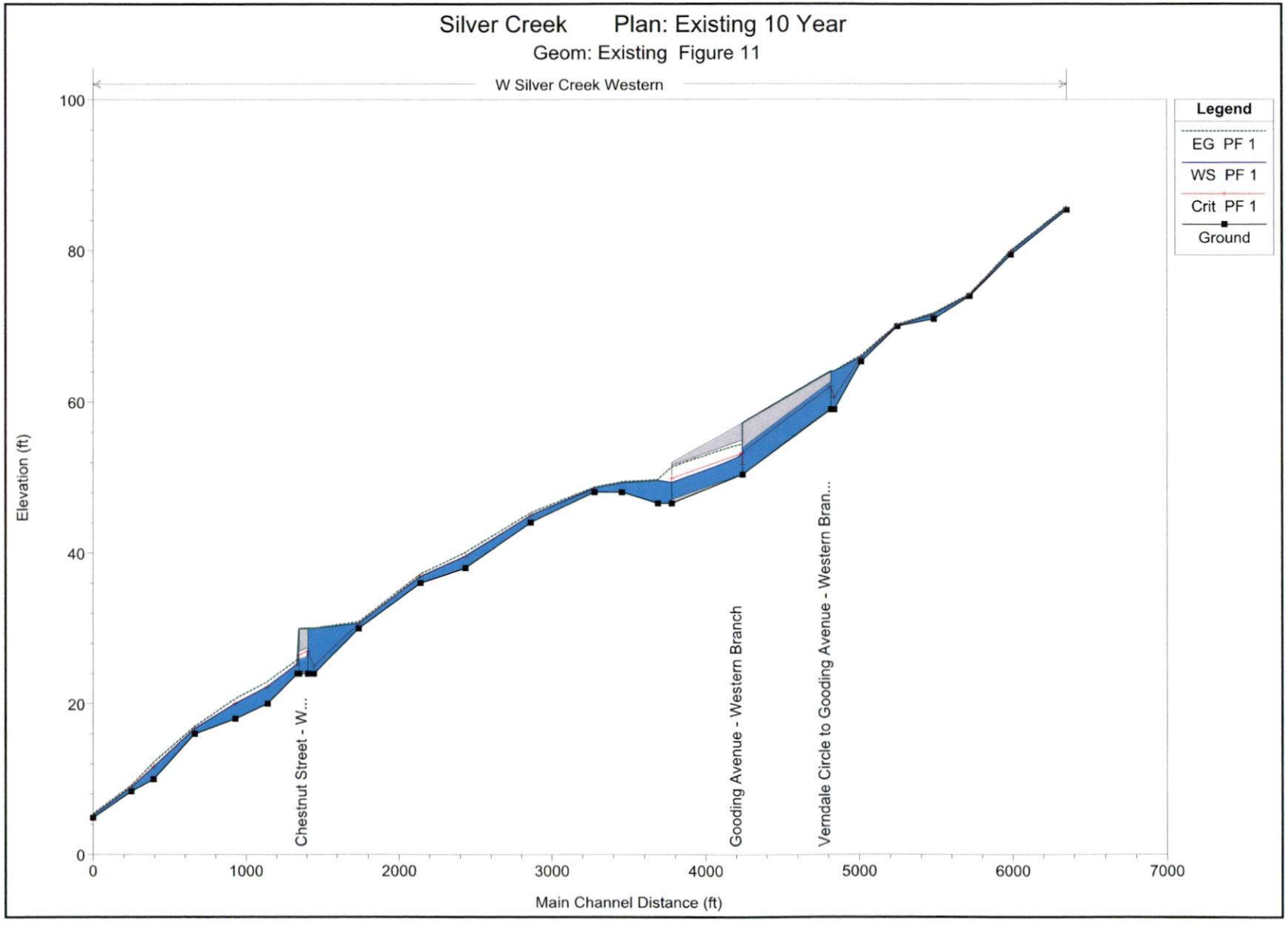
Ten-Year Design Storm

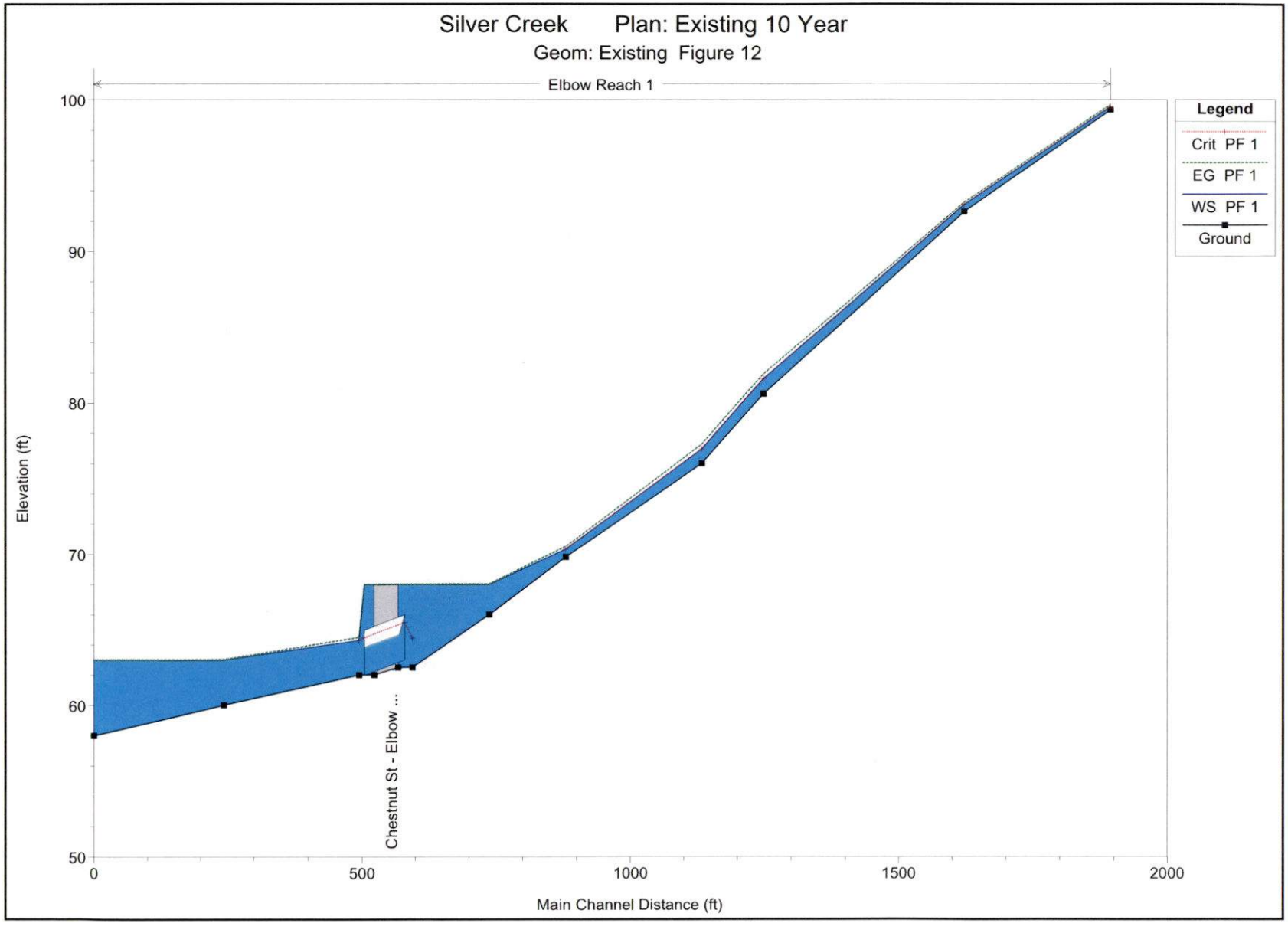
The ten-year storm, which produces a peak discharge of 377 cfs, overtops Gooding Avenue and Chestnut Street in the eastern branch (See Figure 10) and Verndale Circle (upstream of Gooding Avenue) and Chestnut Street in the western branch (See Figure 11) by approximately 0.10 feet. As shown in Figure 12, the flow from the Elbow Street area overtops Chestnut by less than 0.10 feet. These structures may not actually flood or overtop during this design storm. More detailed survey information would be needed to determine the exact elevations of the culverts and hydraulic openings in these areas. As shown in Table 2, the water surface elevation at the bike path with no tailwater condition is 4.4 feet and 4.7 feet with a tailwater condition (see Figures 13-14). Hope Street does not overtop until a tailwater (high tide) condition is applied with the ten-year design storm. Hope Street barely floods with the tailwater condition and the corresponding elevation in the marsh rises to 5.32 feet, which is 0.02 feet above the street's normal grade. The flood elevation between Gooding Avenue and the high school is approximately 63 feet.

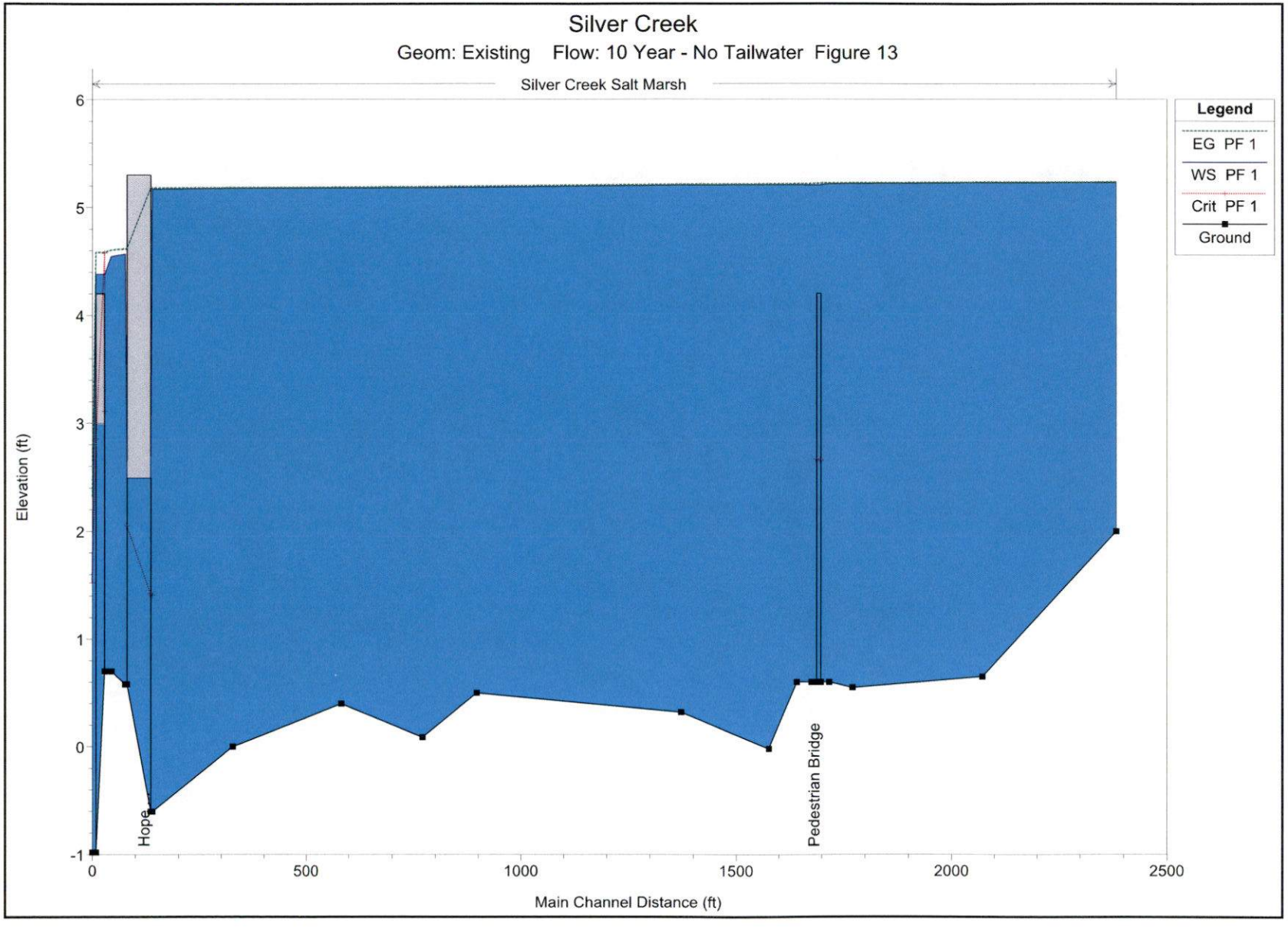
One Hundred-Year Design Storm

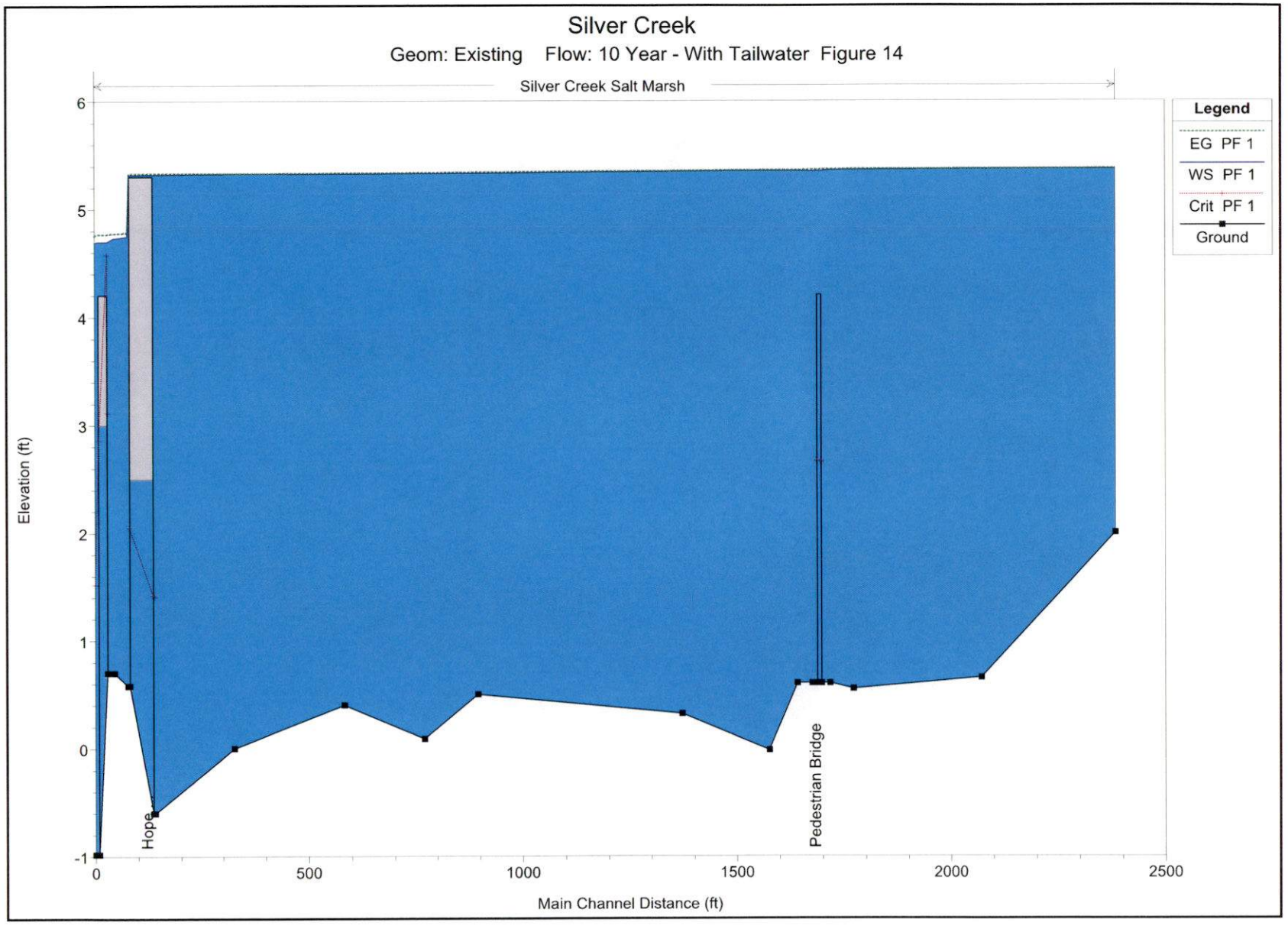
As shown in Figures 15-18, the peak flow of 639 cfs from the one hundred-year design storm overtops all of the bridges and culverts except the high school. The water surface elevations are the same regardless of whether a tailwater condition was simulated. The water surface elevation at the bike path is 5.1 feet and 5.6 feet at Hope Street. The elevation throughout the marsh is 5.7 feet and 67.0 feet between Gooding Avenue and the high school for the eastern branch.

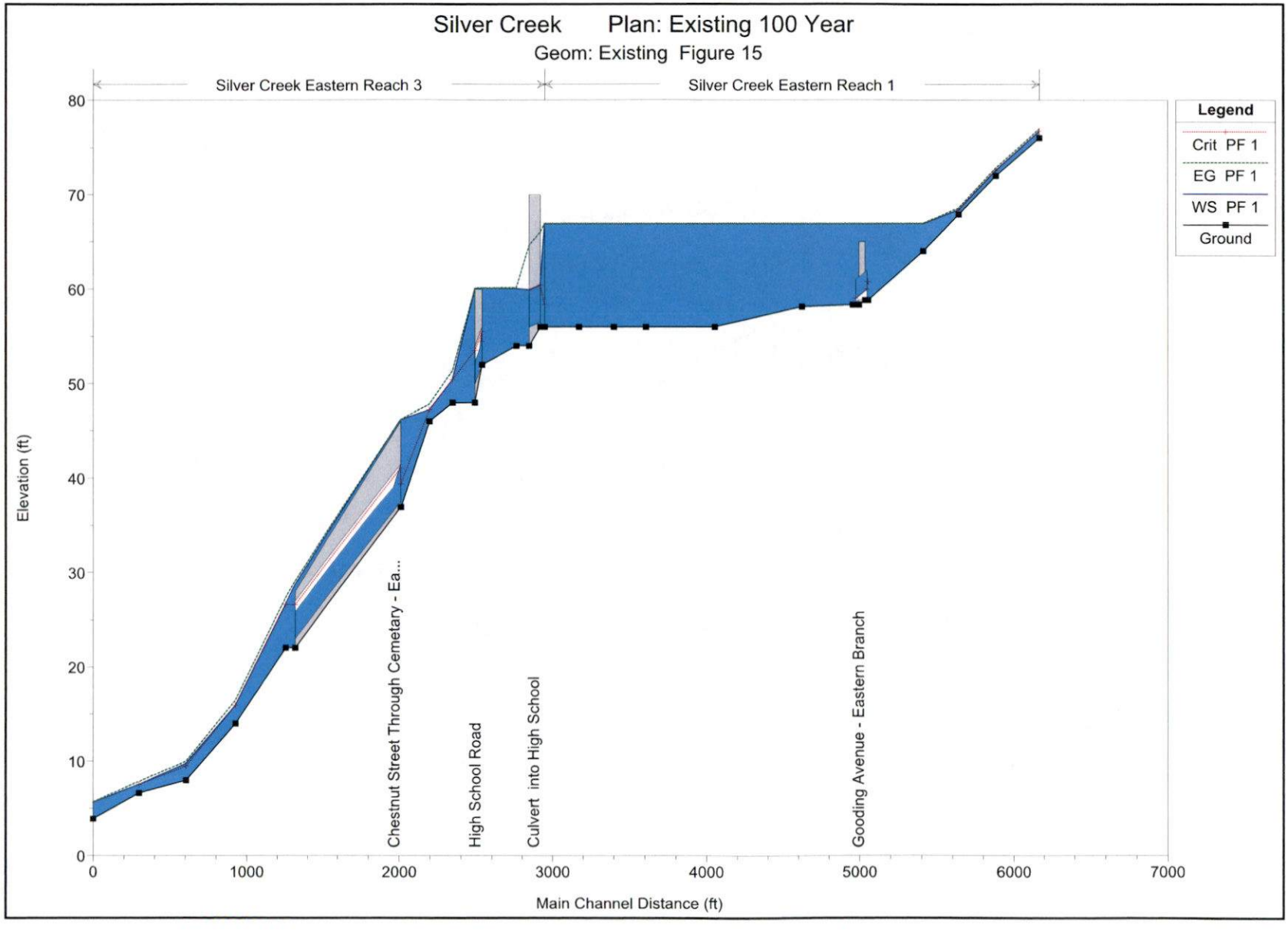

Silver Creek Plan: Existing 10 Year
Geom: Existing Figure 10
Silver Creek Eastern Reach 3
Silver Creek Eastern Reach 1
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street Through Cemetary - Ea...
High School Road
Culvert into High School
Gooding Avenue - Eastern Branch
0
10
20
30
40
50
60
70
80
0
1000
2000
3000
4000
5000
6000
7000

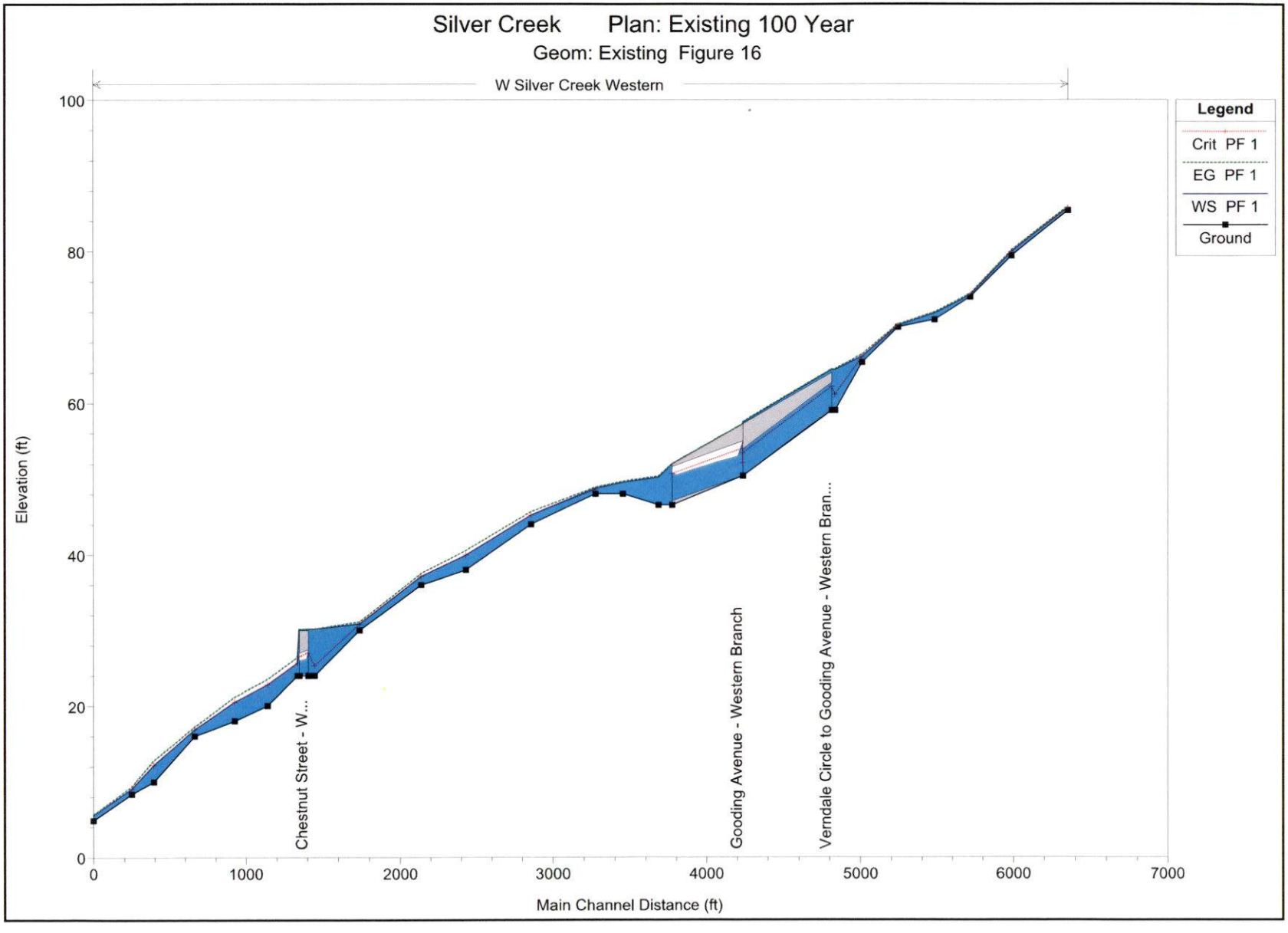

Silver Creek Plan: Existing 10 Year
Geom: Existing Figure 11
W Silver Creek Western
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street - W...
Gooding Avenue - Western Branch
Verndale Circle to Gooding Avenue - Western Bran...
0
20
40
60
80
100
0
1000
2000
3000
4000
5000
6000
7000

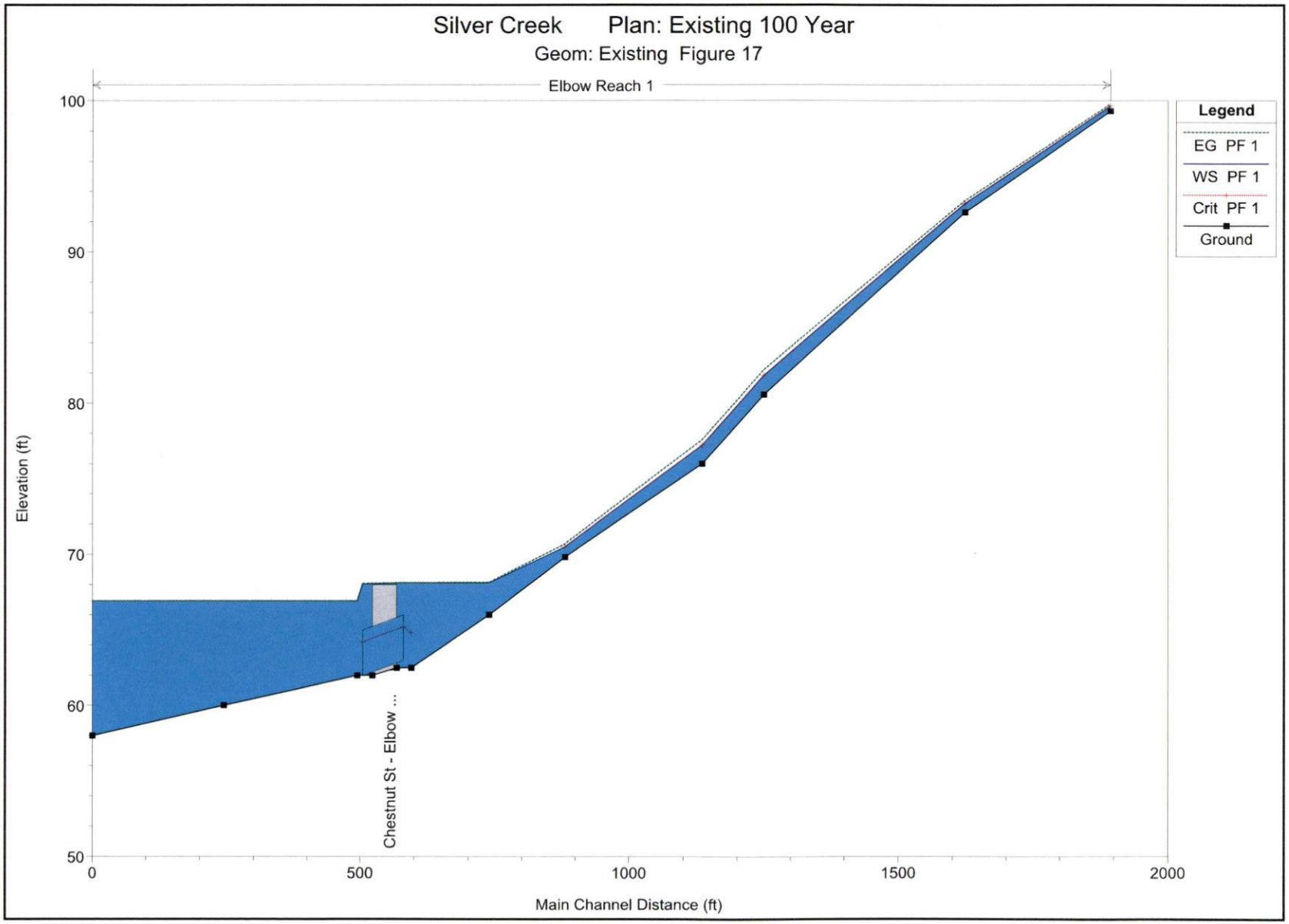

Silver Creek Plan: Existing 10 Year
Geom: Existing Figure 12
Elbow Reach 1
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
100
90
80
70
60
50
0
500
1000
1500
2000
Main Channel Distance (ft)
Chestnut St - Elbow ...


Silver Creek
Geom: Existing Flow: 10 Year - No Tailwater Figure 13
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Hope
Pedestrian Bridge
6
5
4
3
2
1
0
-1
0
500
1000
1500
2000
2500


Silver Creek
Geom: Existing Flow: 10 Year - With Tailwater Figure 14
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
0
500
1000
1500
2000
2500
Main Channel Distance (ft)
Hope
Pedestrian Bridge


Silver Creek Plan: Existing 100 Year
Geom: Existing Figure 15
Silver Creek Eastern Reach 3
Silver Creek Eastern Reach 1
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street Through Cemetary - Ea...
High School Road
Culvert into High School
Gooding Avenue - Eastern Branch
0
10
20
30
40
50
60
70
80
0
1000
2000
3000
4000
5000
6000
7000


Silver Creek Plan: Existing 100 Year
Geom: Existing Figure 16
W Silver Creek Western
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street - W...
Gooding Avenue - Western Branch
Verndale Circle to Gooding Avenue - Western Bran...
0
20
40
60
80
100
0
1000
2000
3000
4000
5000
6000
7000


Silver Creek Plan: Existing 100 Year
Geom: Existing Figure 17
Elbow Reach 1
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
100
90
80
70
60
50
0
500
1000
1500
2000
Main Channel Distance (ft)
Chestnut St - Elbow ...

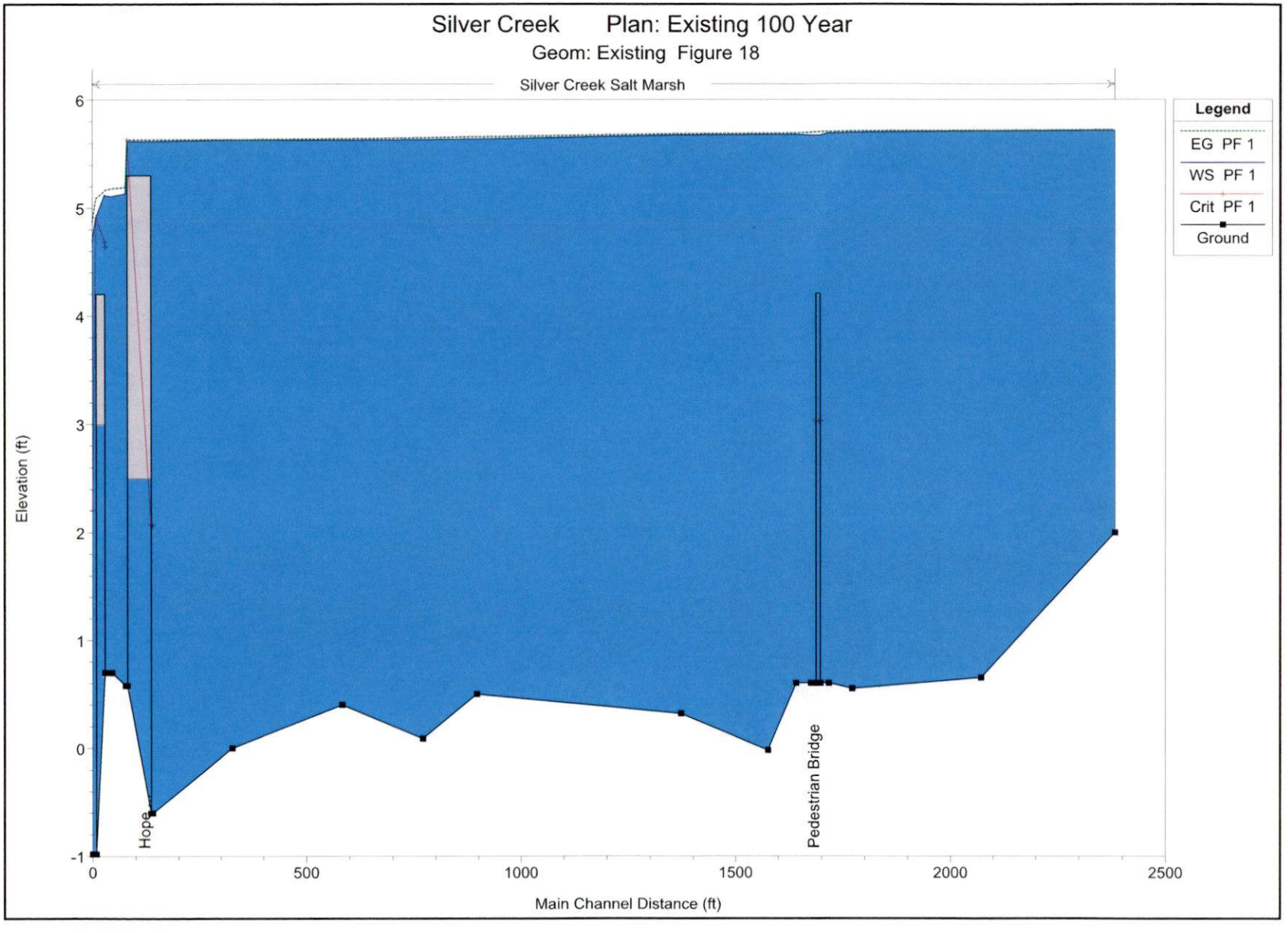

Silver Creek Plan: Existing 100 Year
Geom: Existing Figure 18
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
0
500
1000
1500
2000
2500
Main Channel Distance (ft)
Hope
Pedestrian Bridge

Table 2 Water Surface Elevations

Design Storm Event	Water Surface Elevations (Feet)			
	Bike Path (EL. 4.2)	Hope Street (EL. 5.3)	Marsh (Tidal)	Eastern Branch Between Gooding Ave and High School
2 Year No Tailwater	4.3	Does Not Overtop	4.6	60.4
2 Year Tailwater Condition	4.7	Does Not Overtop	5.0	60.4
10 Year No Tailwater	4.4	Does Not Overtop	5.2	63.0
10 Year Tailwater Condition	4.7	5.3	5.3	63.0
100 Year No Tailwater	5.1	5.6	5.7	67.0
100 Year Tailwater Condition	5.1	5.6	5.7	67.0

Sediment Removal from Marsh

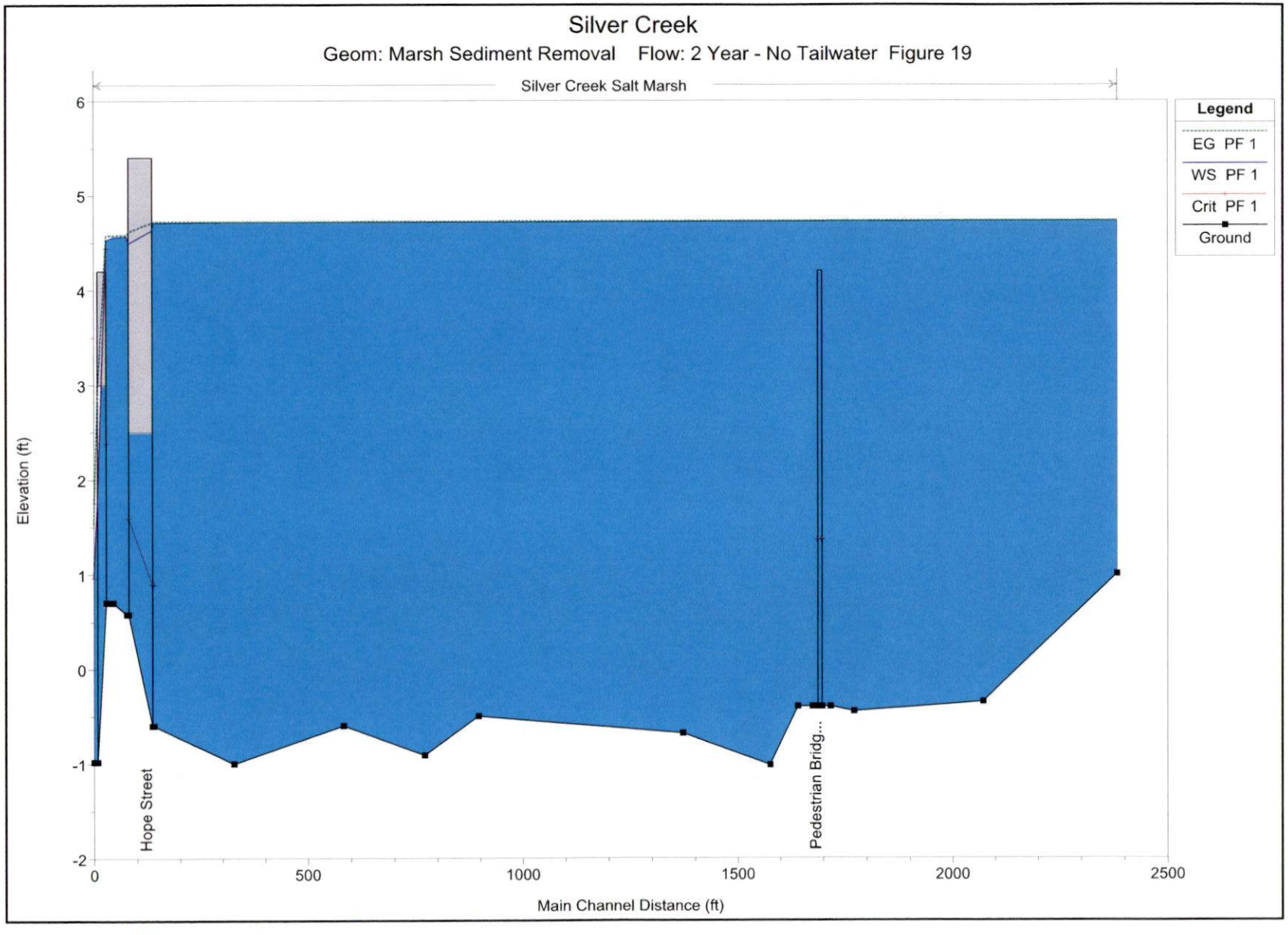
DESCRIPTION

The model was used to determine what effect removing sediment from the marsh would have on the hydraulic capacity of the creek. The cross-sections though the marsh for the existing conditions were altered to represent removing 1 foot of sediment. The three design storms were simulated with a tailwater condition and without.

RESULTS

Two-Year Design Storm

As shown in Figure 19, the two year design storm without a tailwater condition does not overtop the bike path or Hope Street with the sediment removed. The level in the marsh does rise to 4.7 feet which is 0.10 feet above the existing condition elevation. The bike path is not acting as a weir and therefore less flow is being discharged and the elevation in the marsh rises. When the tailwater condition is simulated, the


Silver Creek
Geom: Marsh Sediment Removal Flow: 2 Year - No Tailwater Figure 19
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
-2
Hope Street
Pedestrian Bridg...
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

water surface level in the marsh is 0.10 feet lower than the existing condition, setting the elevation at 4.9 as opposed to 5.0 feet. As shown in Figure 20, the bike path bridge does flood.

Ten-Year Design Storm

As shown in Figure 21, the ten-year design storm without a tailwater condition does not overtop the bike path or Hope Street with the sediment removed. The level in the marsh does rise to 5.25 feet which is 0.05 feet above the existing condition elevation. When the tailwater condition is simulated, neither the bike path nor Hope Street are overtopped and therefore neither structure acts as a weir and the culverts are restrictions. This causes the water surface elevation in the marsh to rise to 5.74 feet which is 0.44 feet higher than the existing conditions. So Hope Street will not flood, but the level in the marsh will rise for a short period of time. This is also illustrated in Figure 22.

One Hundred-Year Design Storm

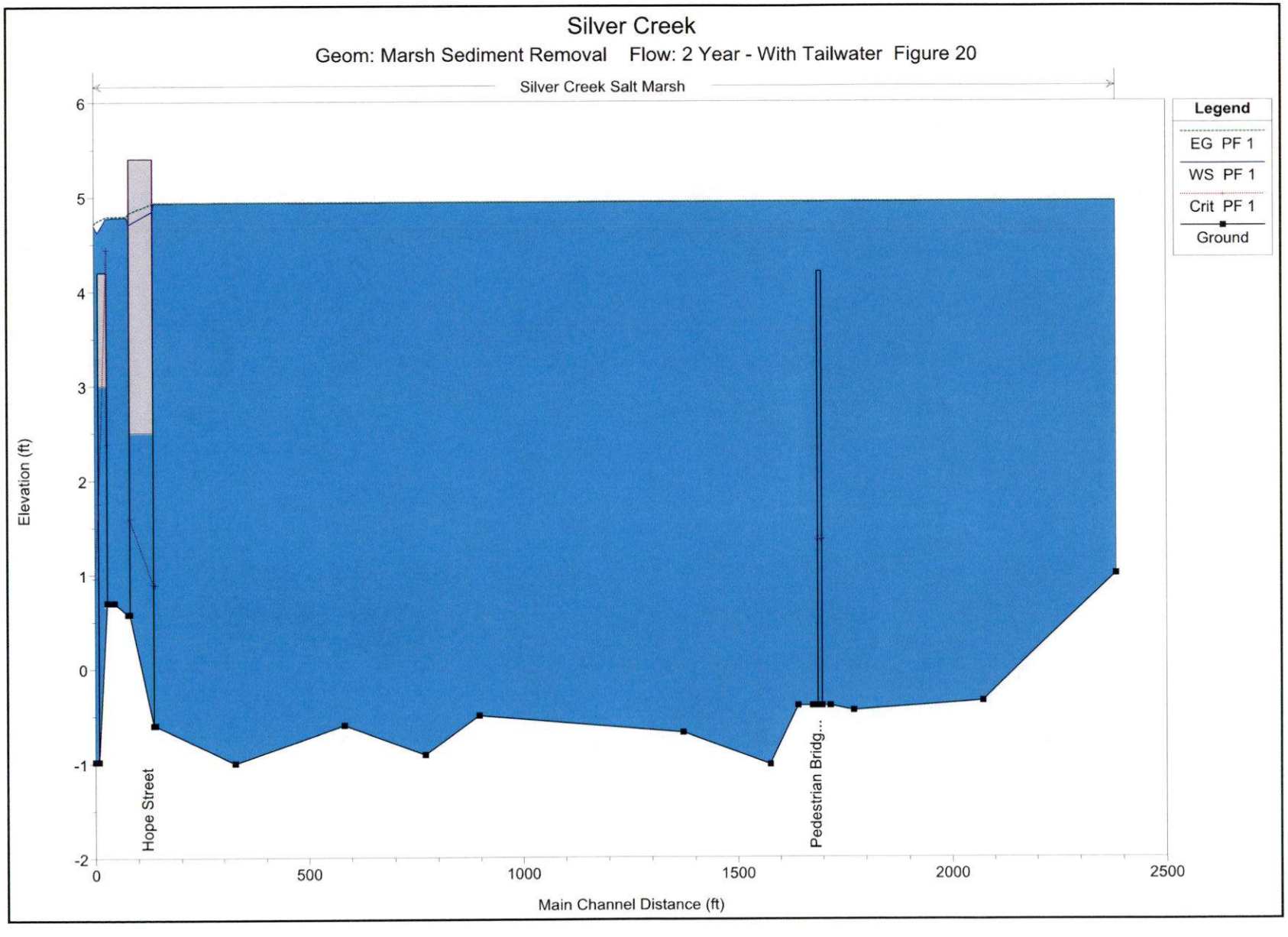
As shown in Figure 23, the flow from the one hundred-year design storm overtops the bike path and Hope Street. The water surface elevations are the same regardless of whether a tailwater condition was simulated. The elevation throughout the marsh is 6.07 feet which is 0.37 feet above the existing condition

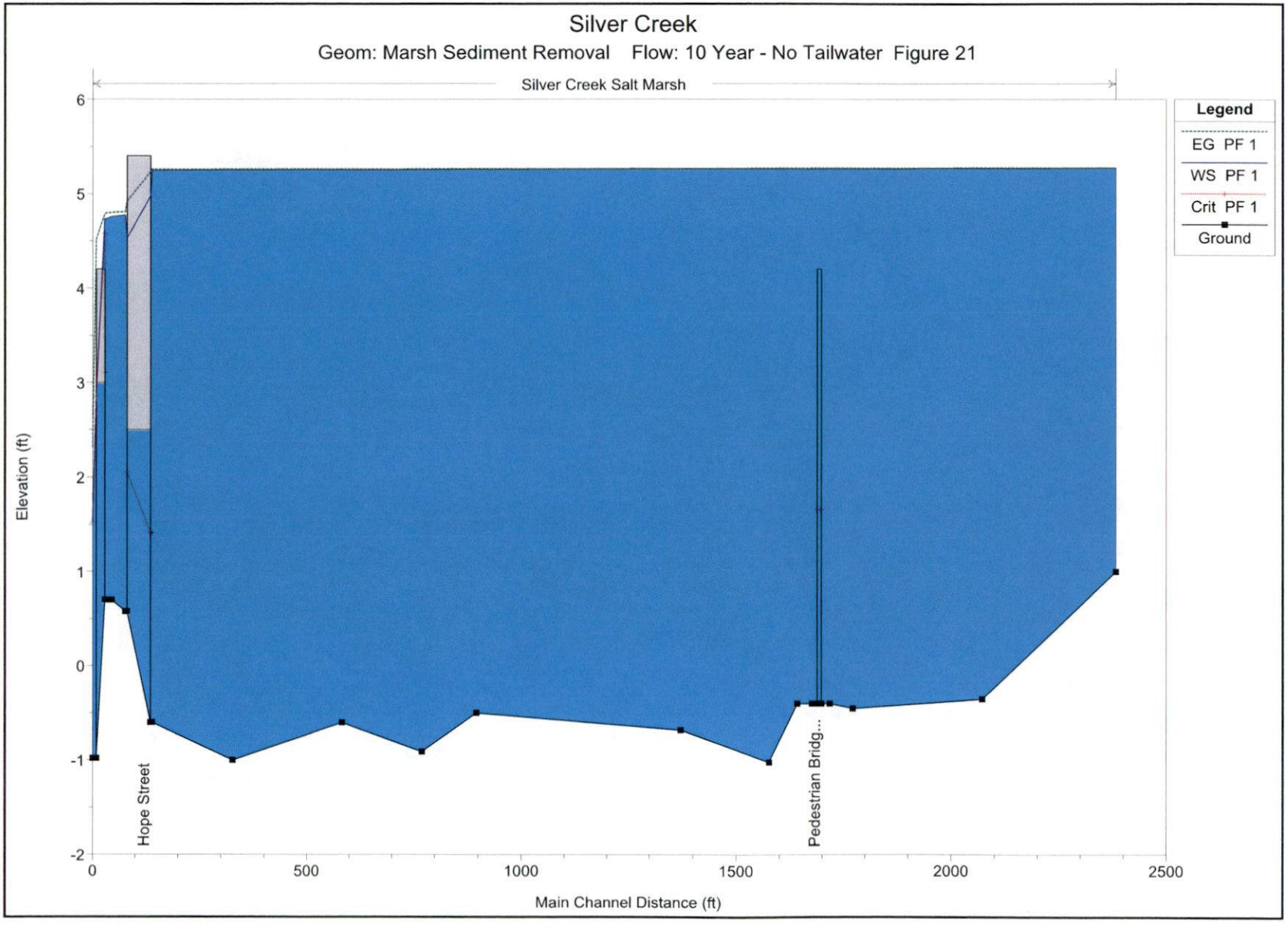
Removing 1 foot of sediment from the marsh relieves the flooding at the bike path and Hope Street for the ten-year storm event. Hope Street floods under the existing condition for a ten-year design storm with the tailwater condition. Dredging the marsh allows for more storage and Hope Street does not appear to flood for these same conditions.

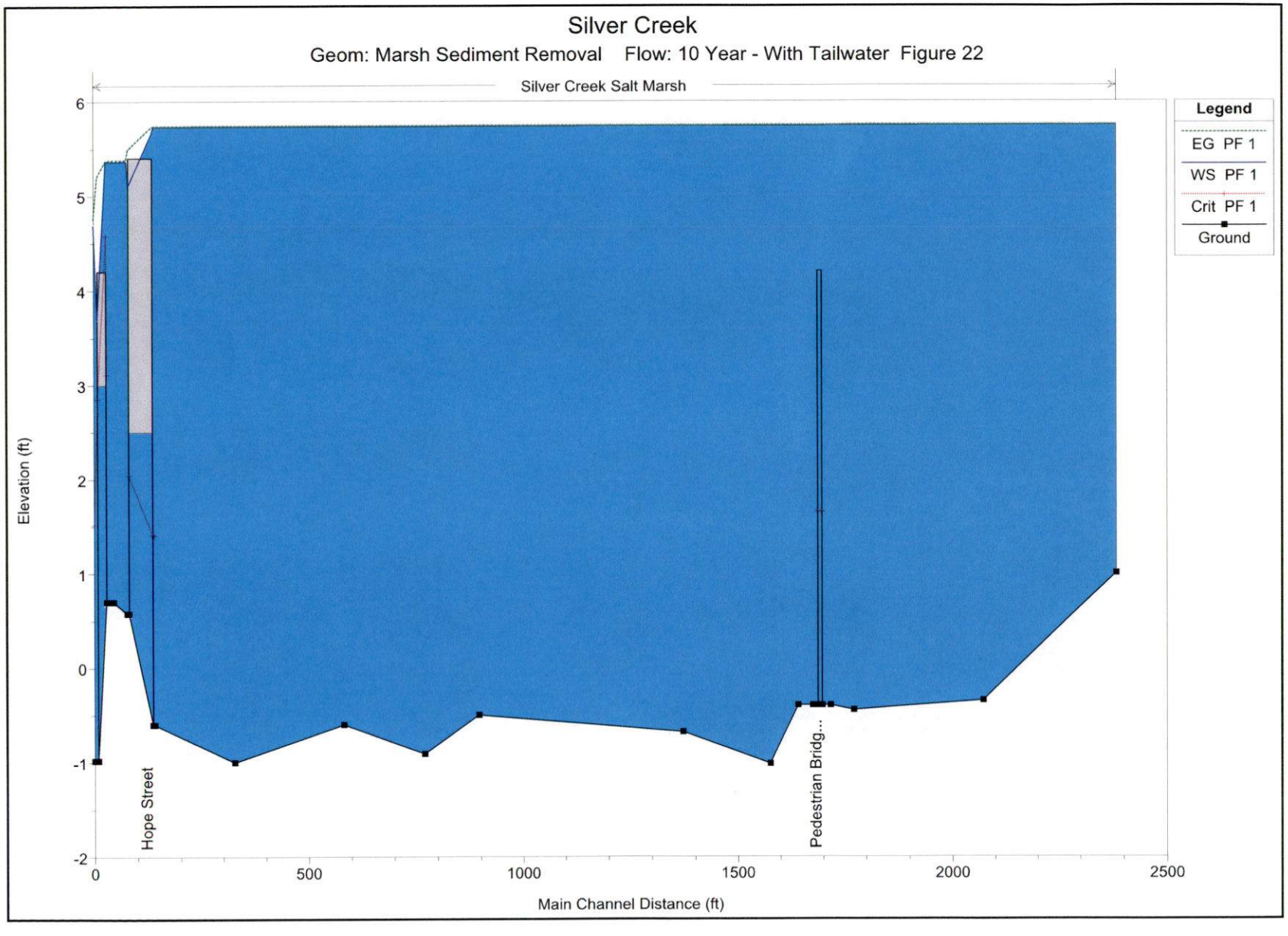
Increase Capacity of High School Culverts

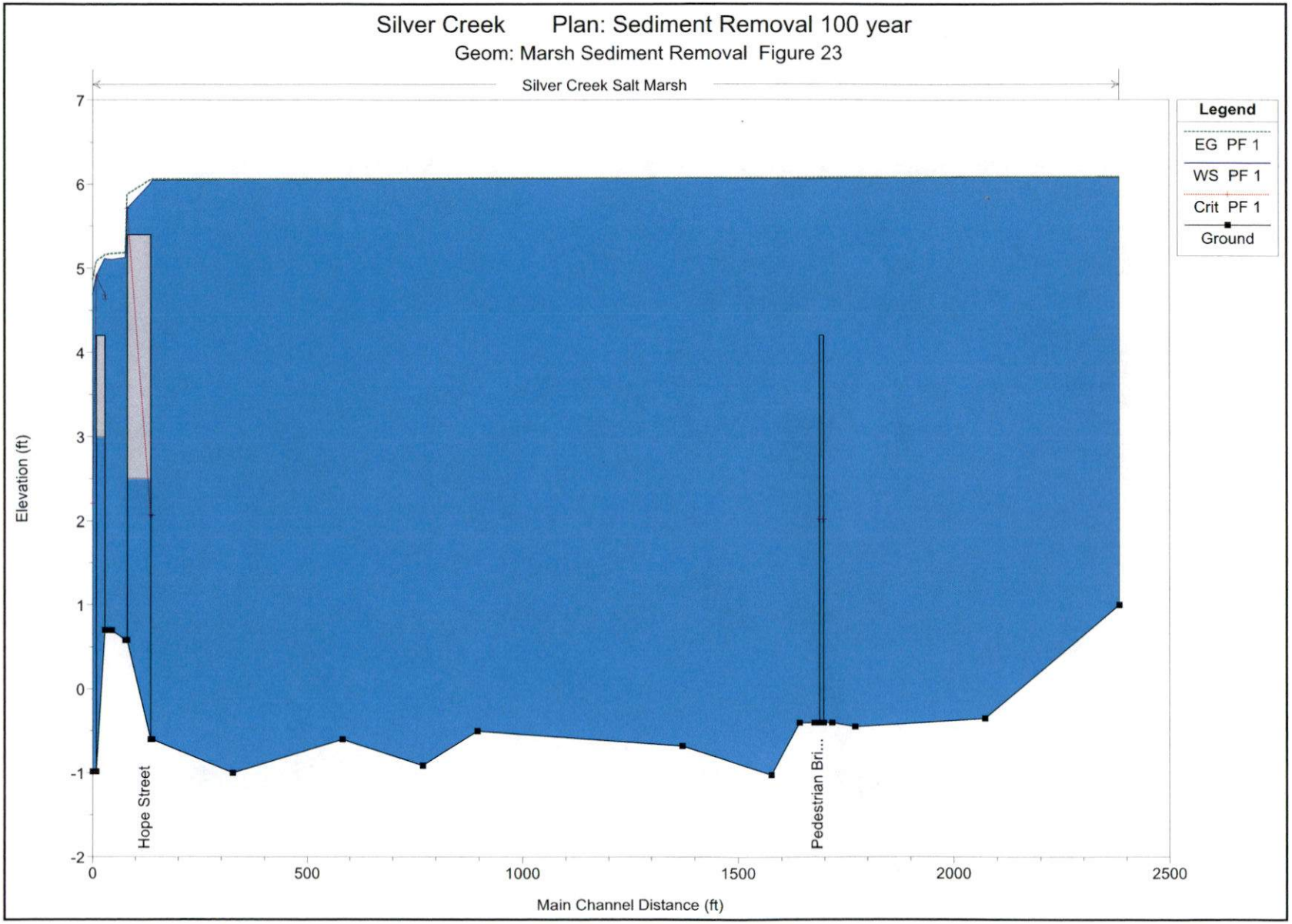
DESCRIPTION

The model was used to determine what effect increasing the capacity of the culverts through the high school would have on the hydraulic characteristics of the creek in this area. Only the size of the twin 48" culverts was altered from the existing condition model. The model shows that the existing culverts are the restriction in the upstream portion of the eastern branch of the creek. Some of the flooding between Gooding Avenue and the high school could be relieved by increasing the size of the existing culverts. Once the size was increased, the impacts downstream were examined. Residents from the Town have stated that there is a flooding problem through the cemetery south of the high school and Chestnut Street.


Silver Creek
Geom: Marsh Sediment Removal Flow: 2 Year - With Tailwater Figure 20
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
-2
Hope Street
Pedestrian Bridg...
0
500
1000
1500
2000
2500
Main Channel Distance (ft)


Silver Creek
Geom: Marsh Sediment Removal Flow: 10 Year - No Tailwater Figure 21
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
-2
Hope Street
Pedestrian Bridg...
0
500
1000
1500
2000
2500
Main Channel Distance (ft)


Silver Creek
Geom: Marsh Sediment Removal Flow: 10 Year - With Tailwater Figure 22
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
6
5
4
3
2
1
0
-1
-2
Hope Street
Pedestrian Bridg...
0
500
1000
1500
2000
2500
Main Channel Distance (ft)


Silver Creek Plan: Sediment Removal 100 year
Geom: Marsh Sediment Removal Figure 23
Silver Creek Salt Marsh
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
7
6
5
4
3
2
1
0
-1
-2
Hope Street
Pedestrian Bri...
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

Since the existing creek has the capacity to convey the two-year design storm, and this culvert would not be designed to convey the one hundred-year design storm, only the ten-year design storm was considered for this alternative. As previously stated, the tailwater condition at the outfall at Hope Street does not affect the creek this far upstream, and therefore was not taken into consideration.

RESULTS

Ten-Year Design Storm

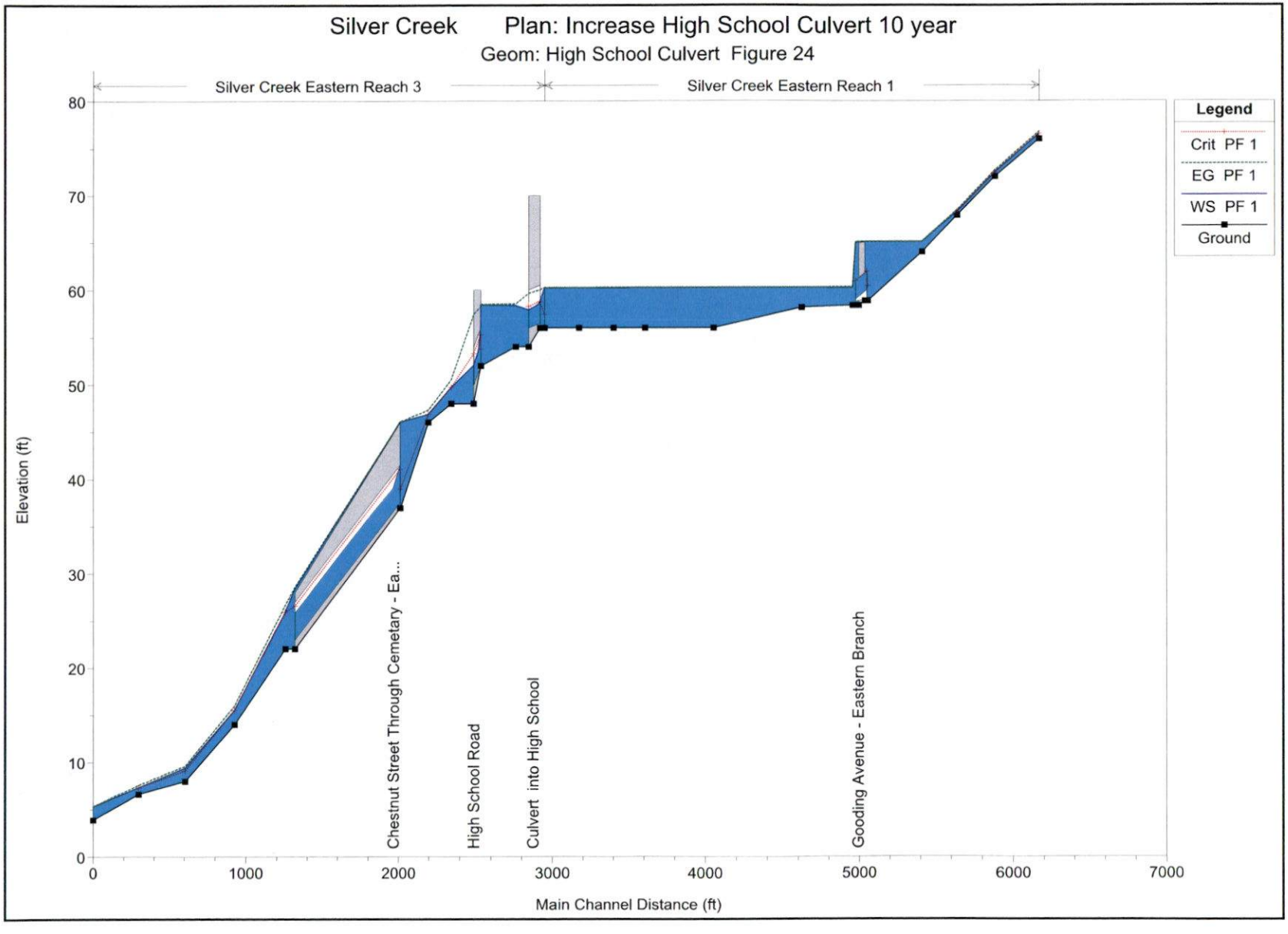
The model was run while replacing the existing culverts with twin 6-feet wide by 4-feet deep box culverts. The feasibility of this option would have to be investigated in greater detail. As shown in Figure 24, increasing the culverts would decrease the water surface elevation between Gooding Avenue and the high school from 63.0 feet (existing) to 60.3 feet. This does not impact the creek downstream. The culvert through the cemetery south of Chestnut Street, assuming it is not damaged or collapsed, has an adequate capacity to the increased peak flow. The water surface continues to overtop Chestnut Street by 0.10 feet as it does in the existing model.

Diminished Capacity at Chestnut Street/Cemetery due to deteriorated pipe

DESCRIPTION

There is a flooding problem along the Eastern branch of the creek downstream of Chestnut Street through the cemetery. There are many possible factors in this area to account for the flooding problems. Two 48-inch culverts flow from the northern side of Chestnut Street and discharge to one 48-inch pipe which then conveys flow through the cemetery. This area is a low point for about a 17 acre watershed that flows overland to the creek and is conveyed by a closed drainage system from Chestnut Street and Sherry Avenue. When the creek is surcharged the systems from Chestnut Street and Sherry Avenue can not discharge, so this area will flood and flow overland through the cemetery to the open channel portion of the creek south of the cemetery. Even if the creek is not surcharged, based on the topography of the area, if the basins on Sherry Avenue do not intercept all of the runoff generated in that area this runoff will continue to flow overland through the cemetery.

As stated previously, the HEC-RAS model is based on the assumption that the pipes and culverts are not damaged or collapsed and can physically convey their full capacity. Concerns about the condition of the 48-inch pipe which flows through the cemetery prompted the use of a camera to determine the condition


Silver Creek
Plan: Increase High School Culvert 10 year
Geom: High School Culvert Figure 24
Silver Creek Eastern Reach 3
Silver Creek Eastern Reach 1
Legend
Crit PF 1
EG PF 1
WS PF 1
Ground
Elevation (ft)
Main Channel Distance (ft)
Chestnut Street Through Cemetary - Ea...
High School Road
Culvert into High School
Gooding Avenue - Eastern Branch
0
10
20
30
40
50
60
70
80
0
1000
2000
3000
4000
5000
6000
7000

of the pipe. The results of the television inspection revealed that the two-48" RCP culverts under Chestnut Street are at least one third full of debris and sediment, including large stones, and the bottom of the 48" corrugated metal pipe which runs through the cemetery pipe is extremely deteriorated, with the entire bottom of the pipe rotted away. The model was run with the 48-inch pipe being replaced with a 32-inch pipe to simulate the existing pipe being one third full of debris. Examination of the structure where the pipes are reduced from 2 -48" RCP to 1-48" CMP revealed that the brick cap originally constructed is intact despite the velocities through the drainage structure. Also noted by the Truax video inspection, there is a very large pile of sediment at the outfall south of the cemetery, as well as several trees which have fallen into the channel, indicating a lack of maintenance of the pipe and open channel.

RESULTS

Ten-Year Design Storm

The diminished capacity of the pipe due to the debris results in an increase in water surface elevation north of Chestnut Street of 0.10 feet. As shown in Table 3 and 4, the 48-inch culvert could convey approximately 154 cfs. When the pipe size is decreased to 32 inches, the conveyed flow is decreased to approximately 68 cfs. The condition of this pipe is a contributing factor to the flooding in this area.

HEC-RAS Plan: Existing 10 Yr River: Silver Creek Reach: Eastern Reach 3 Profile: PF 1 Table 3 48" Culvert Capacity 4947 Culvert 1

Reach	River Sta	Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(ft)	(ft/s)	(ft/s)
Eastern Reach 3	5881 Culvert #1	PF 1	63.04	63.04	63.04	62.12	70.01	123.93		4.60	9.86	14.45
Eastern Reach 3	5881 Culvert #2	PF 1	63.04	63.04	63.04	62.12	70.01	123.93		4.60	9.86	14.45
Eastern Reach 3	5497 Culvert #1	PF 1	58.50	58.49	58.50	57.64	60.01	124.50		8.69	9.91	18.51
Eastern Reach 3	5497 Culvert #2	PF 1	58.50	58.49	58.50	57.64	60.01	124.50		8.69	9.91	18.51
Eastern Reach 3	4947 Culvert #1	PF 1	46.13	46.13	46.13	44.21	46.01	154.16	97.35	20.13	12.27	16.11

HEC-RAS Plan: Existing 10 Yr River: Silver Creek Reach: Eastern Reach 3 Profile: PF 1 Table 4 32" Culvert Capacity 4947 Culvert 1

Reach	River Sta	Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(ft)	(ft/s)	(ft/s)
Eastern Reach 3	5881 Culvert #1	PF 1	63.04	63.04	63.04	62.12	70.01	123.93		4.60	9.86	14.45
Eastern Reach 3	5881 Culvert #2	PF 1	63.04	63.04	63.04	62.12	70.01	123.93		4.60	9.86	14.45
Eastern Reach 3	5497 Culvert #1	PF 1	58.50	58.49	58.50	57.64	60.01	124.50		8.69	9.91	18.51
Eastern Reach 3	5497 Culvert #2	PF 1	58.50	58.49	58.50	57.64	60.01	124.50		8.69	9.91	18.51
Eastern Reach 3	4947 Culvert #1	PF 1	46.19	46.19	46.19	46.19	46.01	67.45	182.04	20.19	12.05	12.05

Problem Areas

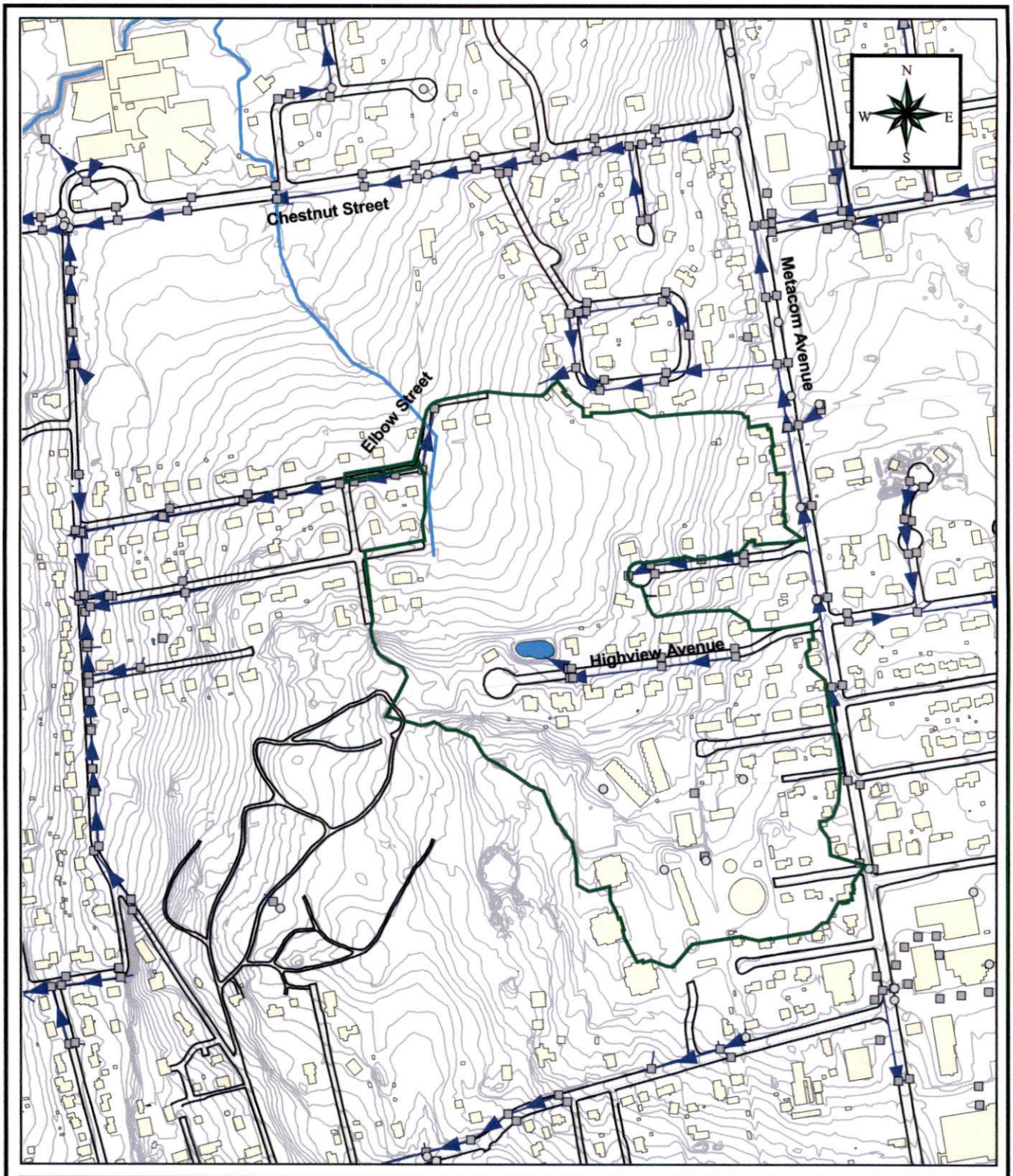
Both the Hydrocad analysis and the HEC-RAS model identified several areas of particular concern, where the yields exceeded the existing pipe capacities and the areas require extensive attention. While these six (6) areas are by no means the only areas with flooding problems within the watershed, they have been identified as those most problematic, both from an analytical point as well as what was discussed at the Public Meeting.

Area 1 – Elbow Street/Waterman Avenue

Existing Conditions

Elbow Street is an extension of Waterman Avenue, located east of Sherry Avenue. As shown in Figure 25, this 44-acre subwatershed area receives runoff from the south and east of Elbow Street, from Jane Lane, Highview Drive, Francesca Lane, Kennedy Court, Carr Lane and a portion of Hattie Brown Lane and King Street. A small detention pond was constructed at the end of Highview Drive. The pond was originally designed to retain the increase in runoff from the new subdivision only, and was not designed to detain the flows it is receiving from other areas upstream. This detention pond is discussed further in Area 4 – Highview Drive.

That issue aside, the runoff from the pond and other overland flow is directed to Elbow Street in a drainage channel, or as an intermittent stream, where it was designed to flow under Elbow Street to a wetland area north and west of the roadway. However, the existing 12" CMP under Elbow Street is crushed or collapsed, according to a report by Caputo and Wick, further reducing the capacity. The roadway is flat in this area, with a low point near the culvert. The stormwater runoff tops the roadway and flows across the pavement, as shown in the photographs.



Legend

Existing Drain Pipes

Problem Area Watershed

Town of Bristol
Rhode Island

Silver Creek

NOT TO SCALE

Figure 25

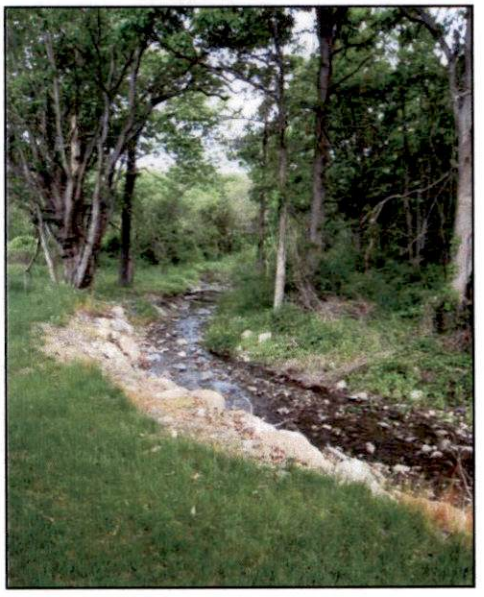
Elbow Street/
Waterman Avenue

Inspection of the basins on Elbow Street revealed that there was silt and water in most of the structures. Our calculations show that the flow to this area in the 2-year storm is approximately 30 cfs, and 60 cfs for the 10-year storm. The collapsed pipe results in the stormwater overtopping the pavement and entering the wetland via a swale along the northwesterly side of the road. It should be noted here that information from the Caputo and Wick report was used in our calculations as the pipe and invert information was not available due to sediments in the structures.

The Town has recently advertised and awarded a contract to replace the existing 12" CMP pipe with a new 18" HDPE pipe and a new flared end section to capture the intermittent stream flowing from south to north. It is anticipated that this work will be completed in the Fall 2007. This pipe will increase the capacity and provide improvement during minor storm events. However, our calculations show that this area will remain subject to flooding during major storms without additional improvements.

Recommended Improvements

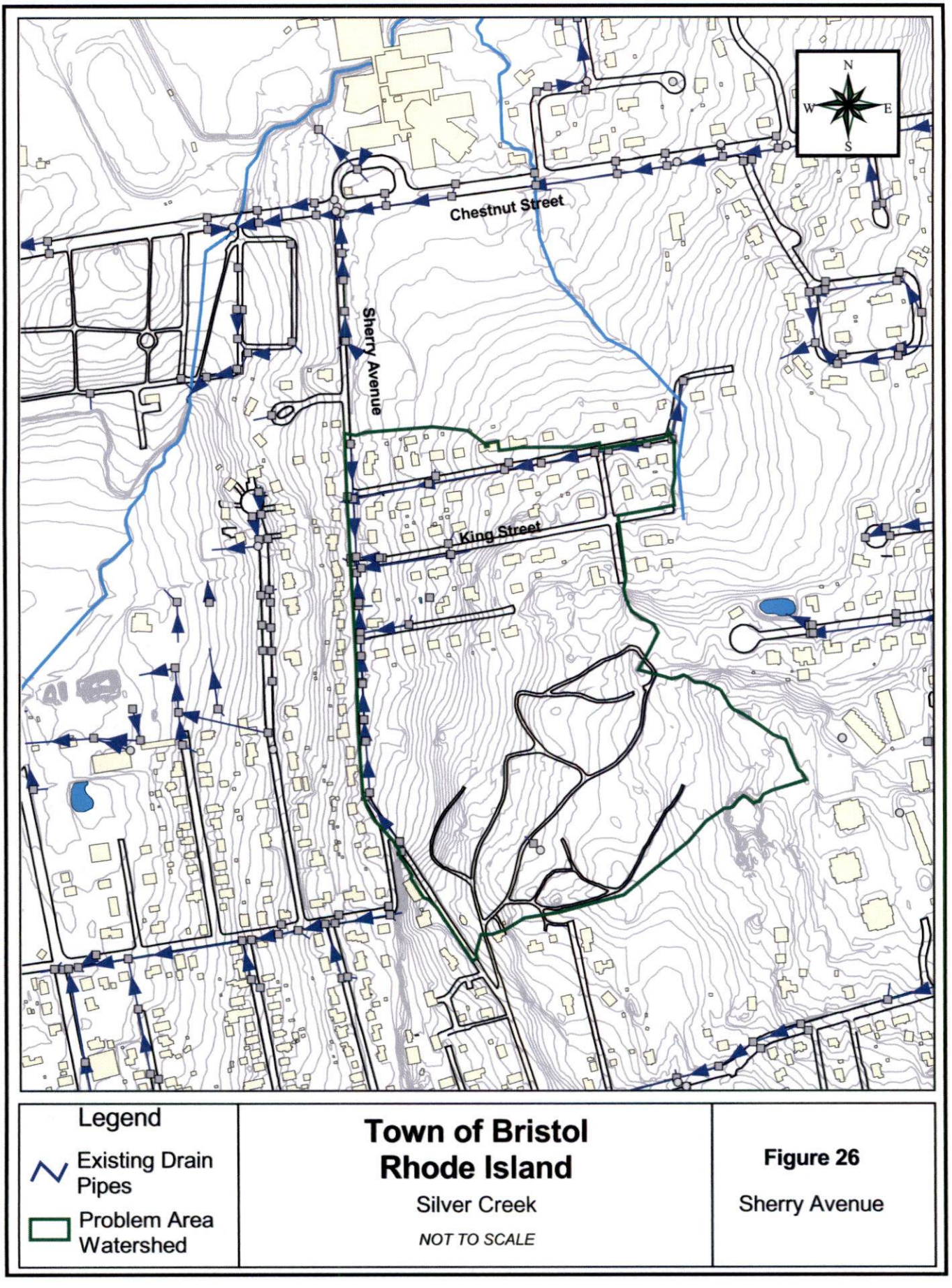
Because of the large rate of runoff generated from the areas east of Elbow Street, it is suggested that the Town attempt to identify possible property available for stormwater retention. Enlarging the existing detention pond on Highview Drive may alleviate some of the flooding downstream. Although the plans call for the existing 12" pipe to be replaced with an 18" HDPE pipe, our calculations indicate that 25 cfs is currently flowing across the pavement, and would require the capacity of a 30" pipe. This project should be considered a long-term goal as part of a complex upgrade of the drainage pipes from Elbow Street to Chestnut Street and through the cemetery.



Area 2 – Sherry Avenue

Existing Conditions

Sherry Avenue is a north-south roadway which provides an alternate route to Wood Street and the down town area from Chestnut Street (See Figure 26). Located opposite Mount Hope High School, it borders the Saint Mary Cemetery to the west, and town-owned land to the north. The remaining length of the roadway, from Silver Creek Court south is residential. There is a closed drainage system in Sherry


N
W
E
S
Chestnut Street
Sherry Avenue
King Street
Legend
Existing Drain Pipes
Problem Area Watershed
Town of Bristol
Rhode Island
Silver Creek
NOT TO SCALE
Figure 26
Sherry Avenue

Avenue, with approximately 500 feet of the roadway draining toward Chestnut Street. The remaining roadway collects flows from the closed drainage systems in King Street and Lugent Lane, and conveys the flow to Varnum Street via a 16" corrugated metal pipe in a prescriptive easement area. However, our calculations indicate that these pipes are undersized and the drainage structures are ineffective in collecting the runoff, resulting in overtopping of Sherry Avenue flooding local properties and Varnum Avenue to the west. The existing outfall, west of Varnum Avenue, flows to a stone swale, which in turn flows through a manmade pond on the DaPonte property. Although it appears that the Elbow Street and Waterman Street drainage system would be connected to the closed drainage system in Sherry Avenue, because of the crushed pipe under Elbow Street, and pipes with negative slopes, our analysis shows that minimal (if any) runoff from Elbow Street reaches Sherry Avenue, and therefore, the 44-acre subwatershed area was analyzed separately using Hydraflow.

Our field inspections revealed that 21 of the drainage structures were filled with sediment, and one structure was filled with water. Many of the pipes do not have sufficient capacity to convey the 2-year storm. The result is that the stormwater runoff floods Sherry Avenue, and then runs down the hill to Varnum Avenue, and through private property before entering the east branch of the Silver Creek.

The photos illustrate the private pond on Mr. Seraphin DaPonte's property, under dry conditions and flooded conditions.

Proposed Improvements

It is recommended that the existing closed drainage system on Sherry Avenue be replaced with a new closed drainage system consisting of RCP and new precast concrete structures with oversized sumps. The existing 16" outfall pipe should be replaced with a 30" RCP to provide sufficient capacity in a 10-year storm to safely convey the runoff from Sherry Avenue through the existing easement area to the discharge point. A new BMP (i.e. Vortechs or similar structure) is recommended prior to the cross-country run to remove sediments. Although it would appear that we are increasing the flow to this outfall, the increase in runoff should be negligible as the flows currently reach this point via overland (flooded) flow, due to the steepness of the properties and the well-manicured lawns. The proposed state would result in reduced flooding of private property as well as reduced erosion and removal of sediment. In addition to the 450 linear feet of 30" RCP, approximately 570 LF of 24" RCP and 1,050 LF of 18"RCP would replace the existing undersized pipes in Sherry Avenue and intersecting sidestreets. The remaining 300 LF of 12" corrugated pipe would be replaced with 12" RCP at slopes sufficient to increase the capacity to accommodate the 10 year storm. New structures and grates would provide sufficient storage for sediments while reducing the depth of stormwater on the roadway surfaces. The outfall would be located so as to pose no flooding to private property, with discharge to the open waters of the Silver Creek.

It is also recommended that additional storage be provided within this subwatershed area to reduce the rate and volume of water flowing downstream toward the Silver Creek. Possible areas include the town-owned land east of Sherry Avenue, and land west of Varnum Street. This land, since it currently is not town-owned, would need to be purchased for this purpose.

We have reviewed the conceptual design to place two 48" pipes within the existing Right-of-Way from Lugent Lane to Chestnut Street, with a control structure to be constructed in Chestnut Street to restrict the flow and use the 48" pipes as storage. BETA believes this design would be more costly and would require additional maintenance. In addition to the costs and maintenance issues, sending more water to the Chestnut Street system even at a reduced rate, would increase the volume of water in this already over-capacity system, resulting in greater flows as the longer peaks from the Sherry Avenue system would coincide with the peak flows coming from the High School.

Area 3 – Perry Street

Existing Conditions

As shown in Figure 27, Perry Street receives runoff from approximately 28 acres, extending from Sherry Avenue to Monroe Avenue. The grades are extremely steep (in excess of 7%), with no curbing or berm to contain the runoff within the roadway, resulting in flooding and erosion of abutting properties. The closed drainage system is ineffective with grates incapable of intercepting but a fraction of the existing gutter flow. The pipes seem to be an older system that has been modified over the years, with larger pipes being added to smaller pipes downstream, creating restrictions and surcharging basins. Pipe materials include 6" asbestos cement (AC) pipe, 24" RCP, 15" CMP, 4" cast iron pipe, and 10" vitrified clay (VC) pipe. In one instance, the capacity of a pipe is approximately 2 cfs, although the runoff is in excess of 28 cfs.

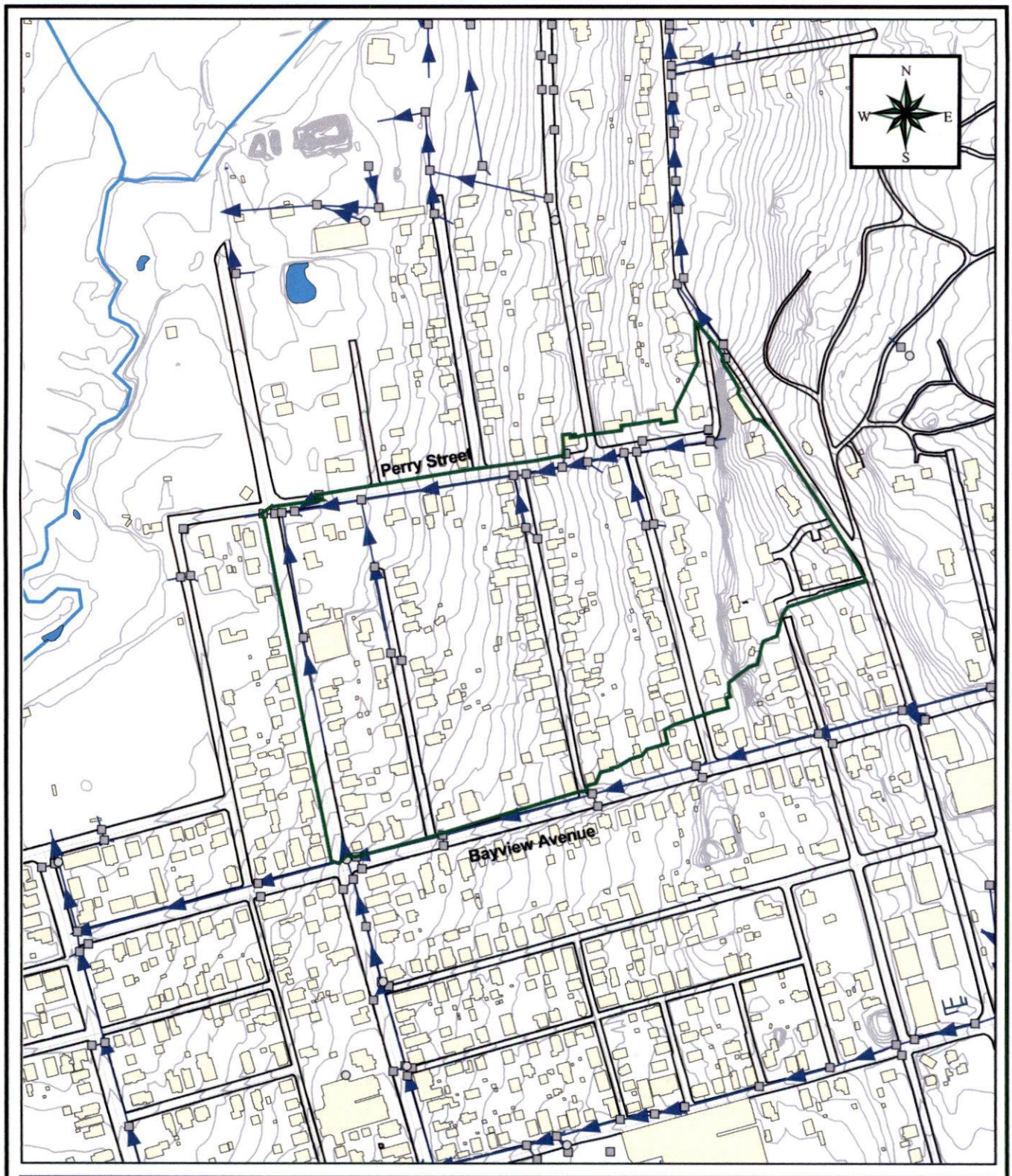
Proposed Improvements

It is recommended that a new trunkline be installed on Perry Street, gradually increasing in size from an 18" pipe to the east, to a 30" RCP near the outfall at Monroe Avenue. The lateral pipes would be replaced, requiring 180 LF of 24" RCP, 770 LF of 18" RCP, and 300 LF of 12" RCP. New structures would be proposed incorporating high-capacity double grates where warranted on the steep grades and at low points. Bituminous berm or curbing is recommended along both sides of the roadway to channelize the flows and prevent flooding of adjacent properties. Catch basins would be located upstream of all intersections and crosswalks to minimize localized flooding. High capacity grates are needed to catch the flow, reducing the splash-over velocity due to the steepness of the roadway. As this is a residential area in close proximity to schools, an alternate grate to the RI standard high capacity grate could be selected which would not create a trip hazard.

Area 4 – Highview Drive

Existing Conditions

Highview Drive is located off Metacom Avenue south of Chestnut Street (See Figure 28). This area has been mentioned as requiring improvements. The existing drainage system in Highview Drive includes a closed drainage system which is connected to the swale from Kennedy Lane and Carr Lane. Our data collection program revealed that 7 of the 8 structures on Highview Drive contained silt, and one structure surcharges during storm events. The existing system was analyzed using Hydraflow and this activity was reproduced in the model. The open channel flow from Carr Lane enters the closed drainage system via an 18" HDPE flared end section, with the connecting pipe at a 5% slope. This water rushes into the



Legend

Existing Drain Pipes

Problem Area Watershed

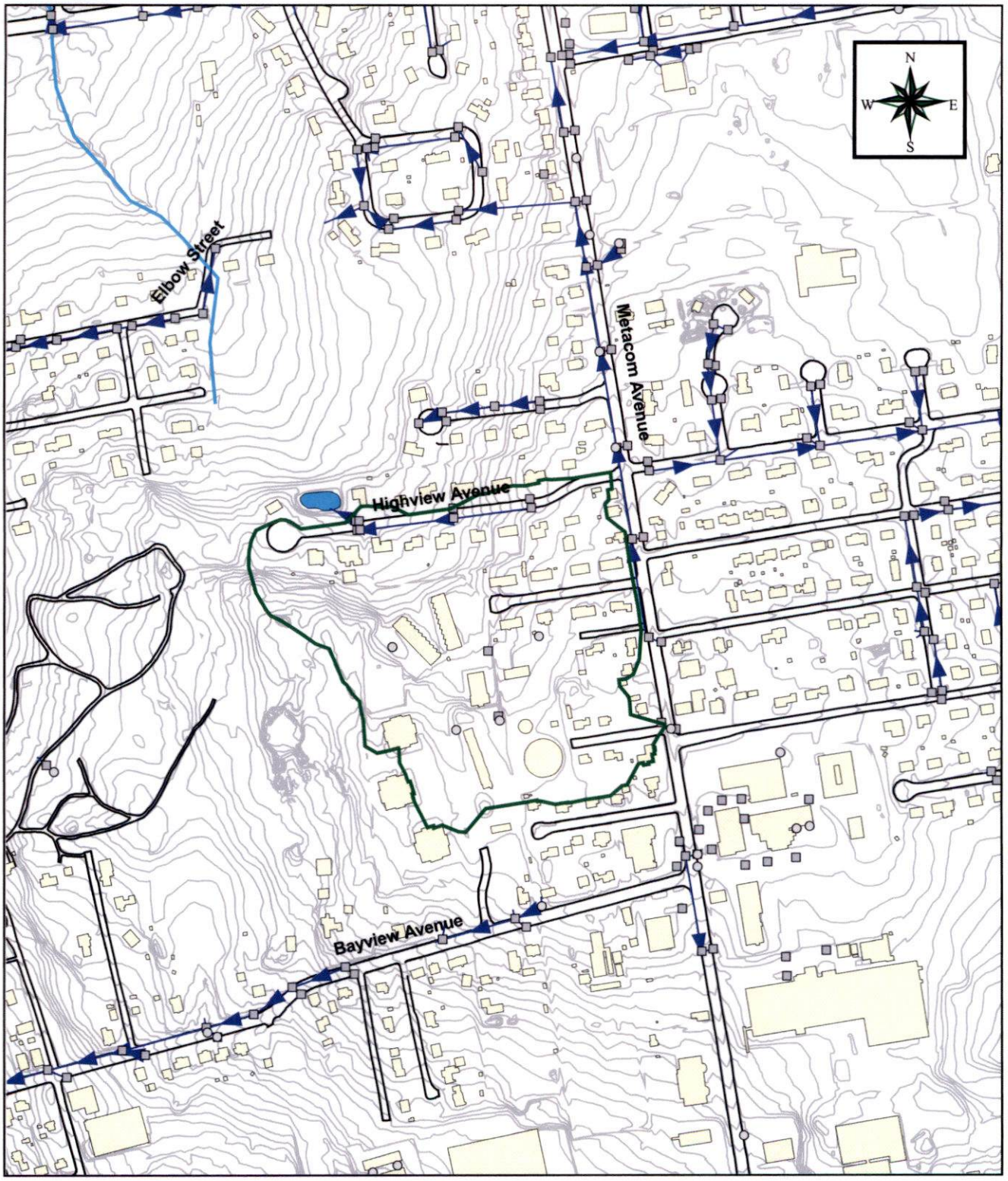
Town of Bristol
Rhode Island

Silver Creek

NOT TO SCALE

Figure 27

Perry Street



Legend

Existing Drain Pipes

Problem Area Watershed

Town of Bristol
Rhode Island

Silver Creek

NOT TO SCALE

Figure 28

Highview Avenue

closed drainage system increasing the hydraulic grade line and surcharging the system. One pipe is under capacity for the 2 and 10 year storms, while two pipes are under capacity for the 10 year storms.

A detention pond exists at the end of Highview Drive and there have been some misconceptions about the pond including that the pond is not operating properly, and modifications have been performed on the northern wall of the pond. The pond has not been properly maintained, and the overgrown vegetation obstructed the inspection of the northern wall of the basin. The basin was cleaned by the Town during the week of July 16, 2007, removing accumulated silts and vegetation from the interior of the basin. Although it was first thought to have been modified, and not effective in the retention of runoff from this closed drainage system, a visual inspection of the basin revealed that it has not been modified by man; however, approximately 24" caliper trees are growing inside the detention pond. These trees are removing a portion of the storage volume.

An assessment of the design calculations, including a review of the inlet and outlet structures, indicates that in the original design, the pond was sized to mitigate the increase in runoff, but was not sized to hold the total volume of runoff which flows into the structure during the 2, 10 and 50 year storms. The runoff from the areas south of the detention pond was designed to pass through the detention pond. BETA analyzed the basin and the calculations and determined that the decrease in storage volume results in the pond overtopping, flooding out downstream properties (Elbow Street). A more detailed review of the basin, including a survey of the existing contours and inlet and outlet structures, would reveal the extent of the decease in storage volume from the trees.

Proposed Improvements

It is recommended that the velocity of the flow from Carr Lane be reduced by increasing the pipe diameter and reducing the slope of the pipe from 5% to 1.25%. Other minor modifications include increasing one pipe from a 12" CMP to an 18" RCP, and changing the slope of a 24" pipe to increase the capacity.

As noted in the discussion of Elbow Street, it is recommended that the detention pond be reviewed to see if the size can be increased to retain or detain the volume of water which is directed to it from areas to the south. This will have a positive impact on properties downstream.

Area 5 – Jane Lane

Existing Conditions

As shown in Figure 29, Jane Lane is a looped roadway servicing approximately 20 homes off of Chestnut Street. The closed drainage system in Jane Lane is connected to the drainage system in Metacom Avenue (a State highway) via an 18" corrugated metal pipe. The flows from Metacom Avneue exceeds the pipe capacity for the 10 year storm by approximately 10%, yet the pipes in Jane Lane and connecting to Chestnut Street are insufficient to handle the 2 year storm, causing flooding within the subdivision. Also, our field inspections noted sump pumps connected to the catch basins with algae growth, indicating a chronic problem.

Proposed Improvements

It is recommended that the pipes from Metacom Avenue be video-inspected to identify possible collapse of the CMP. It is recommended that the 18" CMP be replaced with an 18" RCP, which would provide increased capacity and structural soundness. Other pipes within the roadway should be upgraded to 18" RCP, and the outlet pipe discharging to the wetland east of Elbow Street should be a 24" RCP. These improvements should alleviate the flooding in this immediate area.

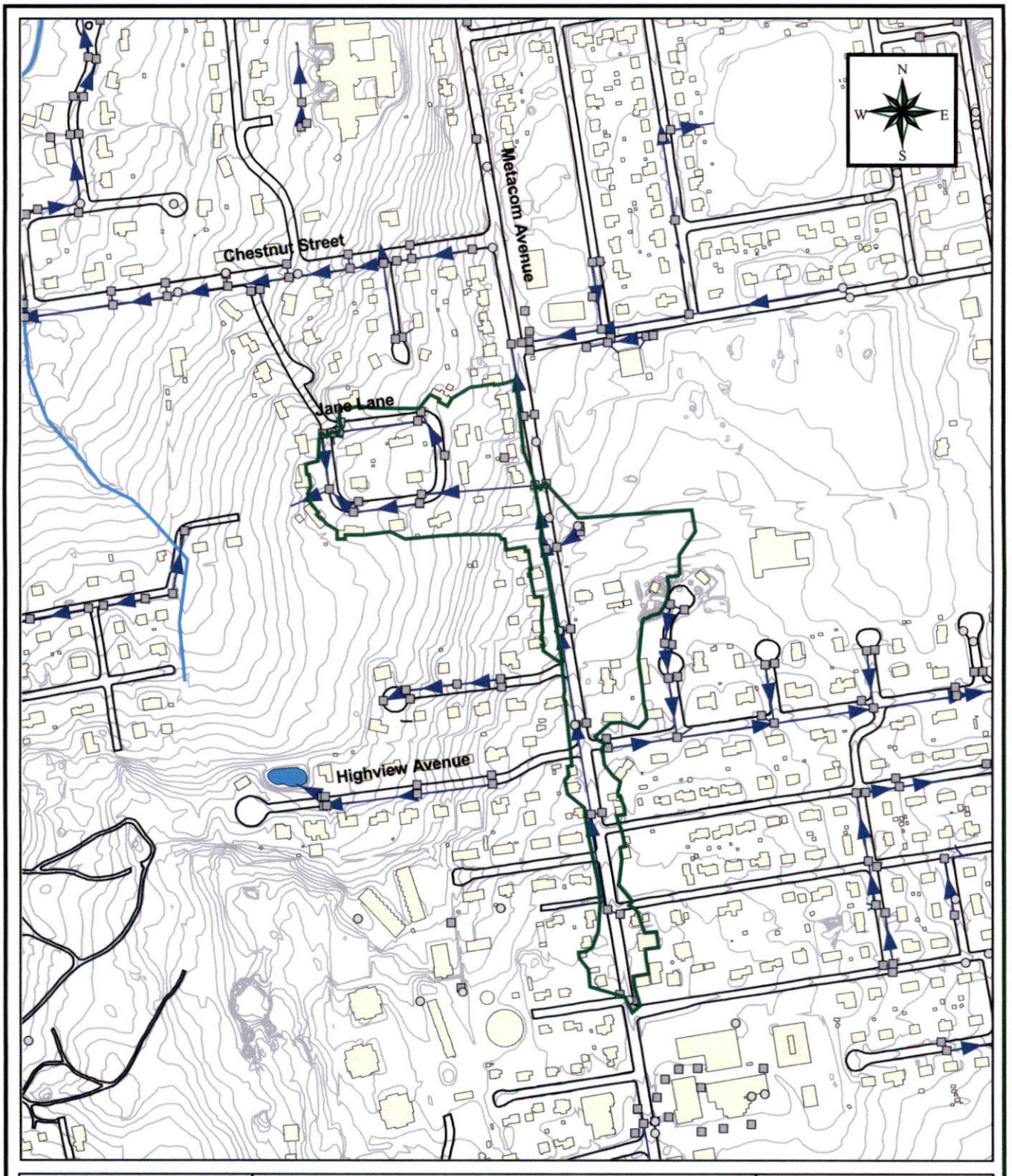
Area 6 – Paull Street/Hillside Road

Existing Conditions

This area is different from the other areas in that it is located adjacent to the Silver Creek wetlands area, and is located within an "AE Zone" as shown on the Flood Insurance Rate Map (RIRM) No. 44001C0014G. The roadways are located within a Special Flood Hazard Area, commonly referred to as the 100-year floodplain. As shown in Figure 30, there is an existing closed drainage system within the roadways consisting of approximately eight (8) catch basins, with several pipes undersized for the 2-year storm. Several of the basins are filled with silt, resulting in roadway flooding. Also, during storms, the Silver Creek and associated wetlands encroaches on the yards of the properties along Paull Street, particularly during periods of high tide when the water cannot flow out to the harbor.

Proposed Improvements

Cleaning and/or upgrading the pipes and catch basins within the roadways will reduce the roadway flooding somewhat, however, in order to alleviate the flooding from the east, additional flood storage area must be created either through dredging of the creek and marsh areas, or by constructing large retention areas in the upper reaches of the watershed.



Legend

Existing Drain Pipes

Problem Area Watershed

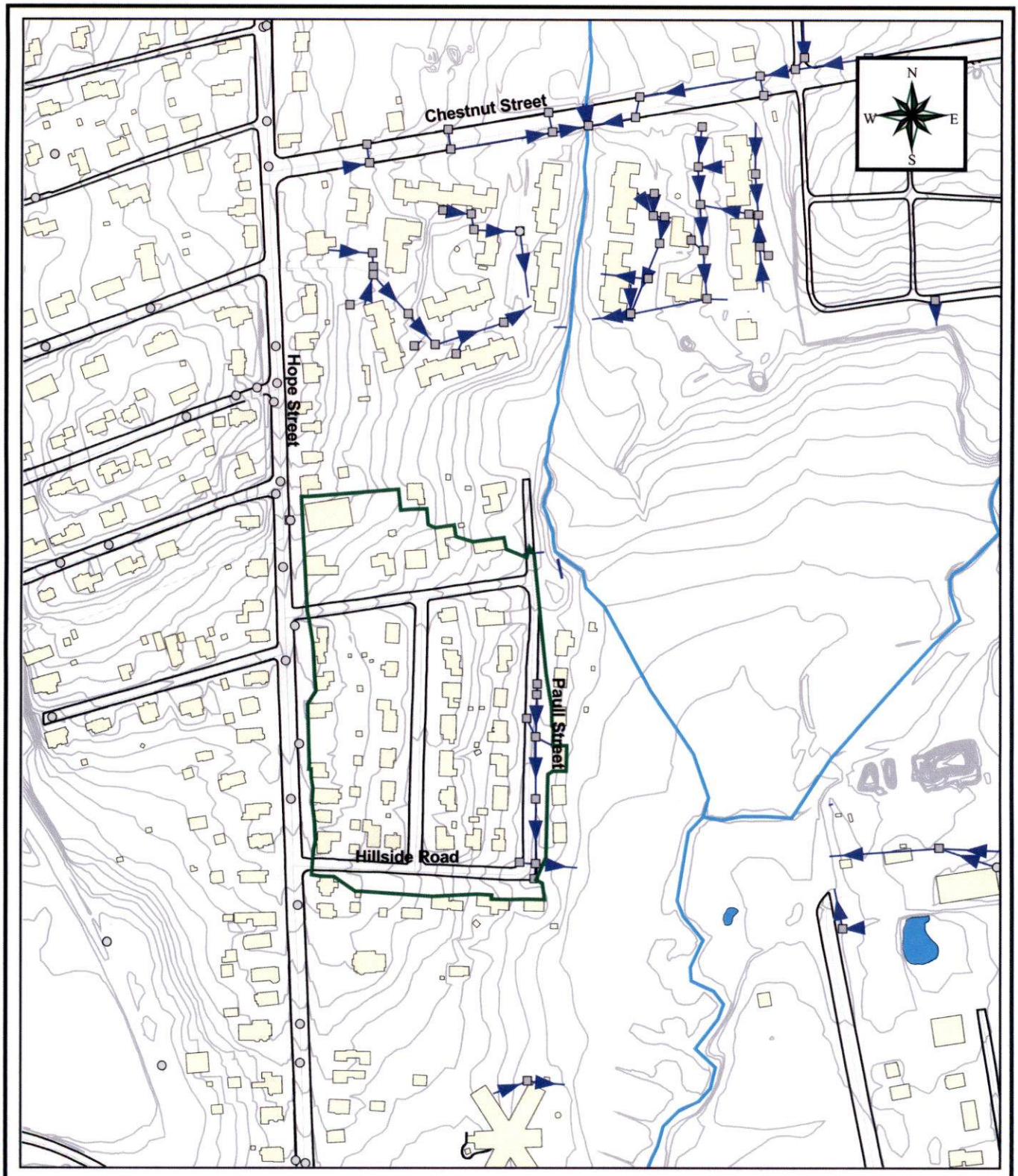
Town of Bristol
Rhode Island

Silver Creek

NOT TO SCALE

Figure 29

Jane Lane



Legend

Existing Drain Pipes

Problem Area Watershed

Town of Bristol
Rhode Island

Silver Creek

NOT TO SCALE

Figure 30

Paull Street/
Hillside Road

Additional Problem Areas

At the October 17 workshop, a resident from the area north of Perry Street, and west of Varnum Street noted a problem that had not previously been identified: This area is at the base of a very steep grade. Several of the roadways do not have catch basins in them, and the runoff flows down the hill via private property, at a high velocity. When the runoff reaches the bottom of the hill, where the ground is relatively flat prior to entering the creek, water accumulates and ponds in the roadway and on lawns. A review of the plans and a site visit resulted in the recommendation of placing new pipes and catch basins within the roadways, including Varnum Street, Baker Street and Jones Street. These pipes could be tied into the upgraded system proposed for Perry Street, as described in the report.

Silver Creek

Proposed Improvements

As the study progressed, it became increasingly clear that the solutions to reducing flooding associated with the Silver Creek would be complex. The 1,250 acre watershed was separated into 45 subwatershed areas for purposes of analysis, and the aerial mapping provided contour data to enable us to develop approximate cross sections of the creek from the outlet at Hope Street, up to the farthest reaches of the stream channels south of Tupelo Street. The storm water model identified areas where the open channel overtops roadways such as Gooding Avenue, Chestnut Street, and Hope Street near Washington Street. These restrictions upstream create localized flooding, however, if the restrictions were removed, downstream neighborhoods would receive stormwater runoff at a much quicker rate, increasing flooding associated with the tides and expanding the flood zones farther into the neighborhoods.

It is recommended that additional storage be constructed, particularly upstream of the local areas currently experiencing flooding, and on other vacant land, to retain stormwater runoff until the peak flows have safely passed and/or until the hide tide period has passed. Possible locations include along Gooding Avenue, Naomi Street, within the Mount Hope High School campus, or within the Benjamin Church property. Enlarging existing detention ponds should also be considered at locations where it has been determined that doing so would reduce downstream flows.

Another means of increasing flood storage throughout the watershed is to remove and properly dispose of materials that have been dumped in wooded areas near outfalls. While signs are posted at several

locations where roadways dead-end near the stream and associated wetlands, this illegal activity continues, with the dumping of grass clippings, leaves, small trees and other organic materials. Removing this fill and re-establishing the outfalls with proper erosion controls (i.e. riprap) would enable local drainage systems to function better while reducing the sediments entering the drainage system.

Dredging the open waters section of the creek, from Hope Street to the point where the two branches converge behind Paull Street would provide additional storage, and allow for further salt water intrusion into the area, re-establishing the marsh and killing off the invasive fresh-water plants. This project would require an Assent from the CRMC, and would be a costly undertaking, but would have the greatest impact on the flooding problems experienced throughout the watershed.

The primary restriction identified through the model and the connection of individual closed drainage systems is related to the 48" corrugated metal pipe through the middle of the cemetery. The existing pipe has corroded, and the pipes under Chestnut Street are one-third filled with large rocks, most likely from displaced riprap upstream, reducing the capacity, and creating a restriction of the flows coming toward Chestnut Street from the high school and Gooding Avenue to the north, and Elbow Street to the east.

This would require a major undertaking, to replace the existing 48" corrugated metal pipe through the cemetery with 2-48" RCP pipes, or a concrete box culvert of sufficient capacity to convey the 100-year storm. Since upgrading the pipes under the high school is not a feasible option, a new pipe should be constructed in Chestnut Street to intercept the flow from the Elbow Street area, eliminating the crossing under Chestnut Street east of the high school. This will reduce the flow to the wetland behind the high school and reduce the flows through the high school property. Picking up the flow at Chestnut Street and carrying it down to the cemetery pipe would allow for additional pipes to be constructed under Elbow Street, to alleviate flooding during the major storm events without adverse effects downstream. This project would be a major undertaking, requiring permitting with CRMC and RIDEM, but would have the greatest impact on the watershed.

The other project which would also result in tangible improvements to the area would be to upgrade the pipes on Sherry Avenue and the intersecting sidestreets to convey the 10 year storm to a suitable discharge point where the outfall does not flood private properties. Intercepting the flow on Sherry would relieve the flow of surface water onto the St. Mary Cemetery property as well.

RECOMMENDATIONS

1. The Town should develop a Capital Improvements Plan to upgrade drainage systems within the Silver Creek Watershed that are currently under capacity. These pipes should be capable of carrying the runoff from at least a 10-year storm with no surcharge or overtopping of local roadways. Also as part of this Capital Improvement Plan, new detention/retention ponds should be constructed where practical to reduce flows downstream and increase flood storage throughout the watershed. Care must be taken when determining the order in which the improvements occur to make sure areas downstream have sufficient capacity to convey the increased runoff without damage to properties downstream.

2. Many of the problems identified in the easterly portion of the watershed are associated with runoff received from Metacom Avenue. As this is a State highway, the Town should approach RIDOT to try to get them to participate in the upgrading of several of these closed drainage systems to reduce flooding on local streets.

3. The Town should actively enforce the "No Dumping" policy at all areas within the Silver Creek Watershed. Residents should be made aware of this policy, including the ramifications of illegal dumping from both an environmental standpoint as well as from the enforcement angle. This education can be accomplished through the Public Meeting process as well as through local newspapers, flyers, etc.

4. The Town should implement Best Management Practices (BMPs) at the municipal discharges to reduce sediment loading into the channel. The suggested BMPs to reduce sediment, also known as total suspended solids (TSS) would be swirl concentrators, such as a Vortechnics® System. These systems have proven to reduce a net annual target of 80% TSS, if designed and sized properly, and maintained.

5. The Town should undertake a project to dredge the lower open water sections of the Silver Creek, to re-establish the salt marsh and increase available flood storage. This would allow for the large flows due to storms to flow out to Bristol Harbor more efficiently, resulting in a better eco-environment for the marsh and reduced flooding for property owners.

Cost Estimates

BETA has prepared preliminary cost estimates for the projects requiring replacement/installation of pipes or BMPs. Detailed breakdowns are included in the Appendix.

Sherry Avenue: Replace existing storm drains with pipes and drainage structures with capacity to convey the 10 year storm, with Vortechs : $675,000.

Perry Street: Install bituminous berm along pavement edge, replace existing drainage system with new pipes and catch basins, and incorporate high capacity grates: $550,000.

Highview Drive: Minor modifications to the existing closed drainage system, and possible increase in size of the existing drainage pond: $100,000.

Jane Lane: Replace selected pipes to increase capacity: $150,000.

Paul Street: Upgrade selected pipes: $120,000.

Chestnut Street: Install new 48" pipe in Chestnut Street, and replace existing 48" pipe with box culvert through cemetery: $1.1 million

Elbow Street: Install new pipes and erosion control, to be installed as same project as Chestnut Street: $80,000.

Other recommendations that should be implemented as part of the annual maintenance of stormwater facilities include catch basin cleaning, removal of sediments from channels, and removal of dumped organic materials (i.e. grass clippings, trees, etc.). These are acceptable maintenance activities that do not require permits from RIDEM or CRMC, and will increase available storage and extend the life of the existing systems while improving water quality.

Lord, Jessica (DEM)

RI Environmental Management
SEP 30 2022
Office of Water Resources

From: Diane Williamson <dwilliamson@bristolri.gov>
Sent: Friday, September 30, 2022 2:49 PM
To: Lord, Jessica (DEM)
Subject: [EXTERNAL] : RE: Proposed hotel off of Gooding Avenue
Attachments: doc01166120220930134224.pdf

Hello Jessica – There is no sewer along Gooding but it does cross Gooding to the east of the proposed development. See the highlighted sewer line on the attached map. According to the most recent meeting notes from our concept application review, the applicant could tie into this sewer line (an interceptor) provided they have a manhole at the connection. They will also have to provide flow estimates at capacity to evaluate the system requirements and a pre-treatment plan since a grease interceptor may be needed.

Let me know if you have any other questions.

Diane M. Williamson, AICP, CFM
Director of Community Development
Town of Bristol
10 Court Street, Bristol RI 02809
P: 401-253-7000 ext. 126
BRISTOL Rhode Island [bristolri.us]

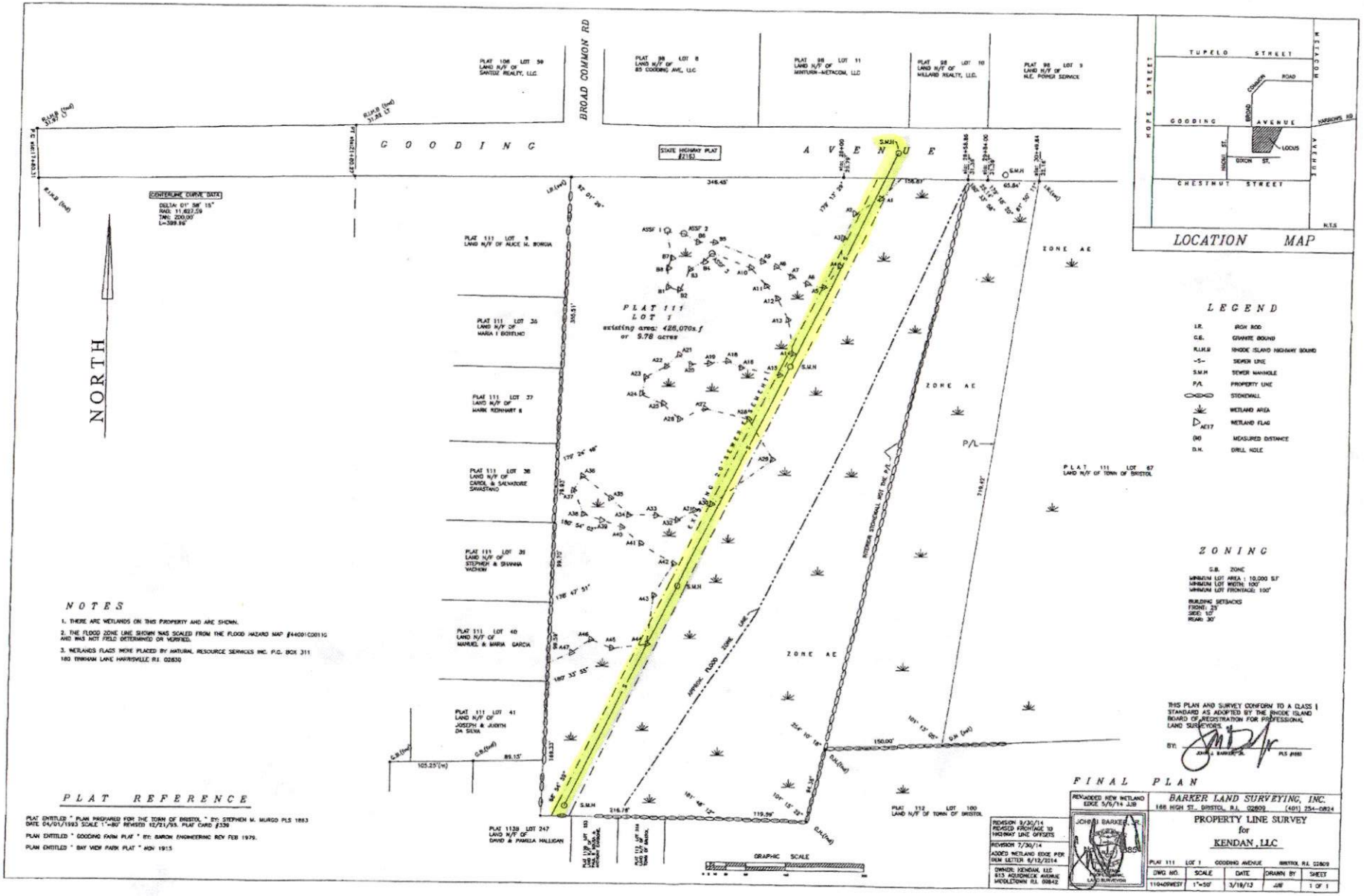
DISCLAIMER: This electronic mail, and any files transmitted with it, contains information intended solely for the use of the addressee(s). Any review, retransmission, dissemination or taking of any action in reliance upon this information by anyone other than the intended recipient(s) is strictly prohibited. If this message has been received in error, please notify the sender immediately and delete this message. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of the Town of Bristol. The recipient should check this email and any attachments for the presence of viruses. The Town of Bristol accepts no liability for any damage caused by a virus transmitted by this email.

From: Lord, Jessica (DEM) <Jessica.Lord@dem.ri.gov>
Sent: Friday, September 30, 2022 7:54 AM
To: Diane Williamson <dwilliamson@bristolri.gov>
Subject: Proposed hotel off of Gooding Avenue

> **Caution:** CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning,

I am the biologist reviewing the project for a proposed hotel off of Gooding Avenue in Bristol, RI and Marty told me you were the person to talk with regarding a question I have. I received a comment stating that there is no sewer connection on Gooding Avenue; however, the applicant shows a sewer connection to a sewer line along Gooding Avenue on the plans they submitted. I was hoping that you could confirm whether or not there is a sewer line along Gooding Avenue and if there is not one, is there one nearby that they would connect to instead?


BROAD COMMON RD
G O O D I N G A V E N U E
STATE HIGHWAY PLAT #2163
NORTH
PLAT 111 LOT 1
existing area: 426,070± s.f.
or 9.78 acres
ZONE AE
ZONE AE
ZONE AE
P/L
PLAT 111 LOT 57
LAND N/F OF TOWN OF BRISTOL
PLAT 112 LOT 100
LAND N/F OF TOWN OF BRISTOL
PLAT 111 LOT 5
LAND N/F OF ALICE M. BORGIA
PLAT 111 LOT 36
LAND N/F OF MARIA I BOTELHO
PLAT 111 LOT 37
LAND N/F OF MARK REINHART II
PLAT 111 LOT 38
LAND N/F OF CAROL & SALVATORE SAVASTANO
PLAT 111 LOT 39
LAND N/F OF STEPHEN & SHANNA VACHON
PLAT 111 LOT 40
LAND N/F OF MANUEL & MARIA GARCIA
PLAT 111 LOT 41
LAND N/F OF JOSEPH & JUDITH DA SILVA
PLAT 1139 LOT 247
LAND N/F OF DAVID & PAMELA HALLIGAN
PLAT 106 LOT 50
LAND N/F OF SANTOZ REALTY, LLC
PLAT 99 LOT 8
LAND N/F OF 83 GOODING AVE, LLC
PLAT 98 LOT 11
LAND N/F OF WINTHROP-MACOM, LLC
PLAT 98 LOT 10
LAND N/F OF MILLARD REALTY, LLC.
PLAT 98 LOT 9
LAND N/F OF M.E. POMOA SERVICE
CENTERLINE CURVE DATA
DELTA= 01° 38' 15"
RAD= 11,627.59
TAN= 200.00'
L=399.96'
ASSF 1
ASSF 2
ASSF 3
S.M.H
P/L
ROGER STONEWALL WAY THE P/L
APPROX. FLOOD ZONE LINE
EXISTING 20' SEWER EASEMENT
346.45'
156.83'
65.84'
316.45'
150.00'
119.59'
105.25'(m)
89.15'
LOCATION MAP
TUPELO STREET
HOPE STREET
COMMON ROAD
GOODING AVENUE
HARRIMAN HILL AVENUE
LOCUS
DIXON ST.
CHESTNUT STREET
N.T.S.
LEGEND
I.R. IRON ROD
C.G. GRANITE BOUND
R.I.H.B RHODE ISLAND HIGHWAY BOUND
-S- SEWER LINE
S.M.H SEWER MANHOLE
P/L PROPERTY LINE
STONEWALL
WETLAND AREA
AE17 WETLAND FLAG
(M) MEASURED DISTANCE
D.H. DRILL HOLE
ZONING
G.B. ZONE
MINIMUM LOT AREA : 10,000 S.F.
MINIMUM LOT WIDTH: 100'
MINIMUM LOT FRONTAGE: 100'
BUILDING SETBACKS
FRONT: 25'
SIDE: 10'
REAR: 30'
NOTES
1. THERE ARE WETLANDS ON THIS PROPERTY AND ARE SHOWN.
2. THE FLOOD ZONE LINE SHOWN WAS SCALED FROM THE FLOOD HAZARD MAP #44001C0011G AND WAS NOT FIELD DETERMINED OR VERIFIED.
3. WETLANDS FLAGS WERE PLACED BY NATURAL RESOURCE SERVICES INC. P.O. BOX 311 180 TINKHAM LANE HARRISVILLE RI. 02830
PLAT REFERENCE
PLAT ENTITLED " PLAN PREPARED FOR THE TOWN OF BRISTOL " BY: STEPHEN M. MURGO PLS 1883 DATE 04/01/1993 SCALE 1"=80' REVISED 12/21/93. PLAT CARD #339
PLAN ENTITLED " GOODING FARM PLAT " BY: BARON ENGINEERING REV FEB 1979.
PLAN ENTITLED " BAY VIEW PARK PLAT " NOV 1915
THIS PLAN AND SURVEY CONFORM TO A CLASS I STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS.
BY: JOHN J. BARKER JR. PLS #680
FINAL PLAN
REVISION 9/30/14 REVISED FRONTAGE TO HIGHWAY LINE OFFSETS
REVISION 7/30/14 ADDED WETLAND EDGE PER DEM LETTER 6/12/2014
OWNER: KENDAN, LLC 615 AQUIDNECK AVENUE MIDDLETOWN R.I. 02842
JOHN J. BARKER JR. PLS #680
REV:ADDED NEW WETLAND EDGE 5/6/14 JJB
BARKER LAND SURVEYING, INC.
166 HIGH ST. BRISTOL, R.I. 02809 (401) 254-0824
PROPERTY LINE SURVEY for KENDAN, LLC
PLAT 111 LOT 1 GOODING AVENUE BRISTOL R.I. 02809
DWG NO. 11040SWEST | SCALE 1"=50' | DATE 3/19/13 | DRAWN BY JJB | SHEET 1 OF 1
GRAPHIC SCALE

Lord, Jessica (DEM)

From: Emily Spinard <espinard@yahoo.com>
Sent: Monday, July 11, 2022 10:55 AM
To: Lord, Jessica (DEM)
Subject: [EXTERNAL] : Application 22-0264 to alter wetlands on Gooding Ave.

Dear Jessica,
Rather that missing phone calls, I opted to email you. Jane Kelly returned my call last week and she let us know you are the biologist who is now reviewing the application. As you are aware, Kendan sought this alteration under 15-0033.

If DEM is reviewing the same plans of 15-0033, those plans were already approved in the appeal process. And if the new DEM rules are not being used for review, what would cause a change in DEM's review of the new application?

We think there are changes and facts that DEM should be made aware of and affect DEM's review:
1. The site was cleared about 10 months ago, and erosion and sedimentation controls are not being maintained.
2. On the previous plans submitted, the applicant showed a sewer connection to Gooding Ave. There is **NO** sewer connection line on Gooding Ave., as the applicant indicates. However, there is an existing sewer easement that runs east of the proposed development in wetlands. Thus, a sewer connection to this sewer line will disturb wetlands.
3. Should the wildlife survey be updated, as the previous survey was done in 2015 and not included in the appeal?

Once again thank you for your time.

Emily Spinard

RI Environmental Management
JUL 1 2022
Office of Water Resources

[redacted] [redacted]

Lord, Jessica (DEM)

RI Environmental Management
JUL 07 2022
Office of Water Resources

From: Emily Spinard <espinard@yahoo.com>
Sent: Thursday, July 7, 2022 12:08 PM
To: Lord, Jessica (DEM)
Subject: [EXTERNAL] : application 22-0264

Dear Jessica,
I was informed that you will be reviewing application 22-0264 to alter wetlands. I have several questions pertaining to this application. My first question has to do with the plans for this application; the plans are not posted, so were plans submitted by the applicant? Second I do not know if you were involved with Kendan's application 15-0033 to alter wetlands, which appears identical to the area of the new application. My neighbors and I were very involved with the opposition of granting the original permit, which DEM denied. Since, Kendan's appeal of DEM's denial, opposition to this project has grown town because people have come to realize the importance of wetlands and the impact alteration of wetlands has on flooding. This area for alteration is part of the eastern branch of the Silver Creek Watershed and is subject to severe flooding. I have the data to share showing the impact of interior flooding in this area down to Bristol Harbor; there are many homes, nursing homes, and two schools that suffer from flooding. Altering this wetlands will increase flooding and cause great financial hardships. My final question pertains to the review of this recent application. It would be my understanding since it was submitted in 2022, the newly written DEM standards would apply.

I look forward to your response and assistance either by email or phone.

Thank you,

Emily Spinard (401-824-4946)

From: George Yioulos
Sent: Monday, December 29, 2025 12:27 PM
To: Diane Williamson <dwilliamson@bristolri.gov>
Subject: Support for hotel

Hi Diane-

I'm a local business owner here in Bristol (Zim Sailing on Broadcommon)

Eric Dickervitz said you would be a good person to email this to.

--

Basically, I wanted to express my support for our town getting another hotel.

We have guests and customers fly in from all over the world to visit - and they have to stay in:

- Middletown/Newport

- Swansea/Seekonk area

- Local airbnb

Having an economical lodging option, near all the manufacturing businesses, would be a good thing for the town. It would add jobs, keep more travel dollars local, and make it easier for a business like ours to continue to expand.

I'm not a very public guy, but anything I can do to offer support for this project, I'd love to do so.

Thank you so much, Happy Holidays.

--

George Yioulos

CEO

Starting Line Sailing

www.StartingLineSailing.com

STARTING LINE
SAILING

Starting Line Sailing, Inc.

Zim Sailing | *West Coast Sailing* | *Dwyer Mast & Rigging*

Melanie Wolfe

From: Diane Williamson
Sent: Tuesday, July 1, 2025 6:17 AM
To: Melanie Wolfe
Subject: Fw: Hotel on Gooding

For the pb packet

Get Outlook for iOS <https://aka.ms/o0ukef> _____

From: Liz Funt <elizabeth.funt@icloud.com>
Sent: Saturday, June 28, 2025 8:38:32 AM
To: Diane Williamson <dwilliamson@bristolri.gov>
Subject: Hotel on Gooding

Caution: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. When in doubt, contact your IT Department

Ms. Williamson,
We are vehemently against build in a hotel on the wetlands on Gooding.
My husband Seth and I are residents and own 57 Roosevelt Drive, as well as 29 Colonial.
Please note our opinion, if it matters, for the record. I have never heard of a single Bristolian that is FOR this project. If everyone is so against it, why is it still being considered?
Sincerely,
Elizabeth & Seth Funt. 561-398-0017
Sent from my iPhone

From: Kevin Pires
Sent: Wednesday, October 1, 2025 8:26 PM
Dear Town Administrator, Town Council, and Planning Board,

I am writing to express my strong opposition to the proposed hotel on Gooding Avenue. This project poses serious concerns- environmentally, structurally, and for the well-being and integrity of our community. Below, I have outlined key reasons why I believe this development would be harmful and why our town does not need a hotel:

- The proposed site sits on wetlands and within important wildlife habitats. Building here would destroy fragile ecosystems, drive away wildlife, and erase the natural flood protection that wetlands provide. These areas are not just 'empty land'—they are living systems that protect our town and sustain its beauty. Once they are paved over, they are gone forever. Every new development chips away at the small-town charm that makes our beloved Bristol special. If we keep building on what little untouched land we have left, there will come a point when we cannot turn back. We still have the chance to protect it—but only if our elected officials act now to stop this project before it's too late.
- Adding a hotel and parking lots will worsen flooding in the area. Heavy rain and storm surges will no longer be absorbed naturally, putting nearby homes, roads, and public infrastructure at real risk. This will be a real nightmare for people living next door to the proposed site on Gooding Ave., and to our neighbors on Andrews Ct.
- Gooding Ave. is simply not meant for this kind of commercial development. The traffic, the noise, and the constant glow of lights will disrupt the peace and quiet that families here value so deeply. It is already a very busy road, but this would change the character of our neighborhood in a way that cannot be undone. Beyond that, the location of the hotel offers nothing for hotel guests to enjoy nearby. Visitors would still have to get in their cars and drive elsewhere for restaurants, shops, and attractions—bringing more congestion to our roads while leaving our neighborhood to absorb all the disruptions, and none of the benefits.
- Ultimately, this development is far more likely to place a burden on taxpayers rather than provide any real benefit to the residents of our town. The people who live here will have little use for the hotel, yet we will undoubtedly be left to deal with the consequences if, and when, the project fails.

As Mr. Ruggiero aptly noted in a recent meeting, both Bristol and Portsmouth have attempted to sustain hotels in the past, and both ventures failed. We already have a hotel downtown that is never filled in the offseason, yet is in the heart of the downtown area. Why would this proposed hotel be any different? It surely will be empty between the months of November-April. Granted, I'm sure it will pick up a little bit during the summer, especially during the Fourth of July festivities. But once people realize it's not "close enough to the action", I fear they won't return, and the hotel will be sold off to someone that doesn't have the best intentions for this town. And if it's sold to the university, we'll lose out on the tax income I'm sure you're all hoping for.

Moreover, in speaking with neighboring residents, I have yet to find anyone who views this proposal favorably. The overwhelming sentiment is that this project poses more risks than benefits. It is, quite simply, a potential disaster for our community. I urge the Planning Board to reject this proposal outright in order to safeguard our town, our residents, and our environment.

If this developer sincerely believes this hotel is a viable long-term investment, they should be willing to enter into a binding 30-year agreement to continue operating it exclusively as a hotel, without selling or converting the property for other uses. I'm sure they will not agree to that but that will just show you where their true intentions lie.

In closing, we all, including yourselves, value and cherish the small-town charm that makes this community so special. Many of you, like us, grew up here and chose to raise your families here. We hope to preserve that same quality of life for our children, and for generations to come. Building a hotel of this nature would change the landscape of our quiet town forever—and not in a positive way.

Please, for the sake of our community and its future, reject this proposal and allow Bristol to remain the town we all know and love.

Respectfully,

Kevin Pires

TOWN OF BRISTOL
COMMUNITY DEV.
2025 OCT -9 PM 1:09

9 October 2025

To: dwilliamson@bristolri.gov etanner@bristolri.gov nathancalouro@gmail.com marypo2809@gmail.com mrtonyteixeira@yahoo.com aaron.ley@gmail.com sweeneyforcouncil@gmail.com sconte@bristolri.gov

From: Jim.Farley@me.com

Subject: Comfort Inn, A travesty that could have a long-term negative impact on Bristol's future.

Gentlemen and Ladies,

I was hesitant about attending the TRC meeting today, but it might be a good idea, considering the impact it might have on the town, both positive and negative. Of course, it's a matter of opinion, but with over 30 years of experience in planning and development, I thought it seemed appropriate to add my two cents.

First, the idea of a new hotel in town is an excellent and long-overdue concept. However, location is the primary item to be addressed. I cannot think of a worse location. Success is contingent on location, and this site is not the case. Gooding Avenue neither meets the requirement nor has a positive impact on the surrounding area.

Second, the hotel's entrance is situated in a primarily commercial area, which is not conducive to the proposed use.

Third, the area south of the proposal is residential and includes the new Mount Hope High School, which is currently under construction.

Fourth, the area under consideration is also located in or near a water flow issue that has existed or remains a concern. In either case, it is causing consternation. The problem is that the proposed development will have a more adverse impact on the area.

\Fifth, among several items discussed, I was particularly concerned about the reduction of rooms: from 80 to 40. Just the thought is ludicrous and shortsighted. Unfortunately, number 40 is not practical and compounds the problem. Quite frankly, it plays right into the developer's hands. The potential result: low-income housing or worse. A replica of the Metacom nightmare.

Sixth, it is interesting to note that this project, that's been around for several years, was rejected. Now, a few years later, the project is before us again. The most likely reason has a great deal to do with the new Mount Hope High School construction. An issue that has had a negative outlook for quite some time. Which, in turn, is expected to alleviate the Silver Creek overflow. The continued negative impact on the neighborhood exists. If that is the case, it would seem only appropriate that the developer share in the cost of eliminating the problem. And the burden of one issue that consistently hinders the proposal.

Seventh. On the other hand, the town continues to lack sufficient accommodation, and little has been done to alleviate the problem. From an economic development perspective, the lack of rooms has hindered our ability to accommodate potential guests and attract customers to town. Consider this: we have several venues in town that rely on weddings and other events that accommodate hundreds of guests. Most people are required to stay out of town due to a lack of available rooms. So where do they end up? Seekonk, Providence, Middletown, Newport, and an array of other locations that benefit from our events. What does that mean to the community, including restaurants, gift shops, bars, historical sites, museums, and others, that lose the opportunity to sell their wares and stay in business?

Eighth, whether this proposal is good or bad for Bristol has yet to be determined, but looking at it in a long-range perspective, how do we deal with failure? The conjecture: low-income, student housing, something similar to the complex on Metacom Avenue. Would it be fair to subject the neighborhood to another nightmare?

Ninth, as an alternative to Gooding Avenue, how about the consortium involved in this project shift its focus? Purchase the tower and use the existing site for the Comfort Inn.

Tenth, in a project this size, and as a result of today's Technical Review Committee, it is essential to have all the i's dotted and t's crossed before Final Approval.

Eleventh, do not rush this project through. There have been solid reasons why it has taken so long. The original proposal was closer to Metacom Avenue and has gradually moved down over the years. Ever hear the expression: "If at first you don't succeed, try and try again." Which, quite frankly, gained life when it could take advantage of the construction of a new high school. This would result in improved Silver Creek water flow, which has hindered any development. What evidence do we have that the proposed changes to the area will improve it? Lastly, who has the responsibility for failure? If it's the town of Bristol, we need to think about what we are committing to.

Twelfth, leave no stone unturned; there are far too many variables to do otherwise.

Thirteen, there is no doubt that this project would not have made first base had it not been for outside political influence. It was a bad idea when the project was first submitted, and despite efforts to move forward, it does not work. If anything, it compounds the problem and increases the environmental impact. Do we need more hotel space? Absolutely, but in an area that is conducive to increasing local shopping. Not on a side street, that is not a good location.

Respectfully submitted,
James W Farley

Tenth, in a project this size, and as a result of today's Technical Review Committee, it is essential to have all the i's dotted and t's crossed before Final Approval.

Eleventh, do not rush this project through. There have been solid reasons why it has taken so long. The original proposal was closer to Metacom Avenue and has gradually moved down over the years. Ever hear the expression: "If at first you don't succeed, try and try again." Which, quite frankly, gained life when it could take advantage of the construction of a new high school. This would result in improved Silver Creek water flow, which has hindered any development. What evidence do we have that the proposed changes to the area will improve it? Lastly, who has the responsibility for failure? If it's the town of Bristol, we need to think about what we are committing to.

Twelfth, leave no stone unturned; there are far too many variables to do otherwise.

Thirteen, there is no doubt that this project would not have made first base had it not been for outside political influence. It was a bad idea when the project was first submitted, and despite efforts to move forward, it does not work. If anything, it compounds the problem and increases the environmental impact. Do we need more hotel space? Absolutely, but in an area that is conducive to increasing local shopping. Not on a side street, that is not a good location.

Respectfully submitted,
James W Farley

TOWN OF BRISTOL
COMMUNITY DEV.
2025 DEC -8 AM 10: 57

December 8, 2025

Members of the Bristol Planning Board
Town of Bristol
Town Hall
10 Court Street
Bristol, RI 02809

RE: The proposed Gooding Avenue hotel ***is not consistent*** *with Bristol's Comprehensive Plan*

Dear Members of the Bristol Planning Board,

It is my opinion that this proposed hotel development does not comply with the following: *Town of Bristol Subdivision and Development Review Regulations* (Amended March 14, 2024). Article 8.6 states that development must be consistent with Bristol's Comprehensive Plan.

Enclosed is a detailed and cited review of the Town's 2016 adopted 2017 Comprehensive Plan, highlighting inconsistencies regarding the proposed 80-room hotel. Also, included are assessments of the following: Open Space Plan 2008, Natural Hazard Mitigation Plan 2016, and Storm Water Management revised 2008, all of which are incorporated into the Comprehensive Plan. Additionally, an assessment of the recent 2024 Hazard Mitigation and Flood Management Plan is attached.

What is noted and shared among all these plans is the **importance** of **preserving and protecting wetlands and controlling flooding**. The 2024 Hazard Mitigation and Flood Management Plan ranks **flooding** as a **high level of concern/risk rank**. (HMP 2024, p. 23) The Comprehensive Plan defines goals, objectives, and policies to protect wetlands and to control flooding. Also, the Comprehensive Plan outlines policies to protect the Town's historical character and integrity.

The following synopsis of cited page sections of the Town's Comprehensive Plan show that the proposed development **is not consistent** with the Plan and **does not comply** with Article 8.6. Therefore, **this proposed hotel development must not be approved**.

- Protect ecologically sensitive areas (p.12)
- Increase, acquire and protect areas of Silver Creek Watershed (p.12)
- Acknowledge importance of wetlands (p.50)
- Wetlands prevent flooding (p.115)
- Low impact development throughout the Silver Creek Watershed (p.217)
- Maintain Bristol's Character and make sure new development does not adversely impact integrity of the Town (p.3)
- Protect Silver Creek Watersheds from pollution/degradation (p.191)
- Maintain basic land use patterns (Map 3)
- Preserve Wetlands (Map 3)
- Prevent development from increasing flood damage potential (p.229)
- Increase forest cover by 25% (p.8)
- Protect the character of existing neighborhoods (Map 3)
- Do not over tax sewer system (p.18)

- Residents desire to retain Bristol's small character (p.48)
- Promote tourism and businesses that complement the Town's environmental, scenic and historic resources (p.103)
- Map all significant wetlands that should be protected from new development, regardless of zone or ownership concerns. (p.218)
- Protect mapped wetland areas through zoning and other local regulatory means so that new or expanding construction in such areas is not permitted. (p.218)

It is my intention to speak at the Public Hearing regarding these inconsistencies.

Thank you for your consideration of my review comments.

Sincerely,

Emily Spinard

Emily Spinard
35 Dartmouth Street
Bristol, RI 02809

Attachments: (Detailed review comments of the Town's Plans):

Bristol Comprehensive Plan 2016 adopted 2017
Open Space Plan 2008
Natural Hazard Mitigation Plan 2016
Phase II Storm Water Management Plan revised 2008
(total pages 9)

Comprehensive Plan Maps (total 5):
Map 3 Central Planning Area and Land Use Objectives
Map 8 Historical District
Map 10 Wetlands and Flood Zones
Map 11 Soils
Map 12 Open Space

2024 Hazard Mitigation and Flood Management Plan (2 pages)

TOWN PLANS IN SUPPORT OF PRESERVING WETLANDS AND CONTROLING FLOODING

I. Comprehensive Plan

Reference Document	Citation	Section	Reference Page
Comprehensive Plan 2016 Adopted January, 2017	It should provide the framework for all future private or public development projects. The Plan should encourage the asking and Answering of the following question: "How will this project or action affect the town in the long run."	Introduction (4)	viii
	E. Maintain the character of Bristol and make sure that new development does not adversely impact the integrity of the Town.	Ch. 1 Visions, Goals & Policies (land use)	3
	B. Acquire additional land for purely conservation purposes, to be left in its original pristine state and also to protect diminishing ecologically sensitive areas.	Ch. 1 Visions, Goals, & Policies (open space)	12
	D. Continue efforts to increase, acquire, and protect existing areas of the Silver Creek Watershed Area & Policies	Ch. 1 Visions, Goals, & Policies (open space)	12
	The community visioning process indicated that the residents of Bristol have a desire to retain Bristol's small town character and natural beauty. Part of the strategy to retain the Town's rural character is to implement conservation development techniques for future development. Conservation development is a design strategy to protect and preserve onsite and offsite natural resources from development impacts. As development sites are planned, topography,	Ch. 3 Land Use	48

Item C1.

soils, vegetation, natural drainage patterns, and other sensitive or unique landscape features are considered as important resources deserving of protection and enhancement. Stormwater best management practices (BMPs) are also integrated into the development site, with the primary goal of protecting and restoring natural hydrology, preventing flooding, and protecting habitat and water quality		
Another important land use consideration is the potential impact of a changing climate and the likely sea level rise associated with it. Rhode Island as a state has experienced s significant trend over the past 80 years toward a warmer and wetter climate region. Trends are evident in annual temperatures, annual precipitation, and the frequency of intense rainfall events. Inland, these trend have combined to produce an increase in river flooding. Some locations are experiencing more floods while other locations are seeing an increase in the severity of floods. This not only includes emphasis on more effective stormwater management, flood control and erosion management, but also acknowledgement of the importance of wetlands and floodplains as both habitat and scenic resources and necessary protection for vulnerable land.	Ch. 3 Land Use	50
Bristol's natural resources include water, soils, vegetation and wildlife. Water resources including freshwater bodies, coastal waters and wetlands are important for the community. Wetlands provide a value to prevent flooding, purify the groundwater, and as a wildlife habitat. Coastal waters are also important as residents enjoy swimming, boating, and fishing in the coastal waters of Bristol	Ch. 6 Natural, Cultural, & Historical Resources	115

Item C1.

TOWN PLANS IN SUPPORT OF PRESERVING WETLANDS AND CONTROLING FLOODING

Protect the following critical areas in Bristol: Silver Creek and Tanyard Brook Watersheds.	Ch. 10 Implementation Matrix (LU-8)	187
Expand and implement the Silver Creek Watershed Drainage Study from the headwaters north of Gooding Avenue to the Mouth at Bristol Harbor.	Ch. 10 Implementation Matrix (LU-9)	188
The Central Corridor h) North Central: Maintain the land use pattern presently in place while allowing for only minor infill development. Do not allow the wetlands to be diminished or degraded. If the area is to be developed, guide such development in a manner that protects significant amounts of the area as open space while allowing for a mixture of uses and densities that make the open space protection economically feasible, such as through conservation development.	Ch. 10 Implement Matrix (LU-11 h)	190
Protect Silver Creek from pollution and degradation.	Ch. 10 Implement Matrix (LU-11 k)	191
Low Impact Development techniques should continue to be required throughout the Silver Creek watershed area.	Ch. 10 Implementation Matrix (NHCR-11)	217
Require best management practices to preserve wetlands, flood plains, and other environmentally sensitive areas in proposed land development projects.	Ch. 10 Implementation Matrix (OSCR-7)	227

Item C1.

TOWN PLANS IN SUPPORT OF PRESERVING WETLANDS AND CONTROLING FLOODING

Continue to acquire additional acreage along the west and east branches of the Silver Creek watershed to add to the Town's greenbelt path system, protect sensitive wetlands and prevent development from increasing flood and storm damage potential.	Ch. 10 Implement Matrix (OSCR-19)	229
Establish priorities and continue to acquire land, rights-of-way, or easements along tributaries, estuaries, coastlines, and streams (for example Silver Creek) to buffer these areas from development and provide limited public access.	Ch. 10 Implement Matrix (NHCR-21)	220
Protect Silver Creek; Protect wetlands	Map 3 (land use)	
Map 11 shows the areas of eastern branch of Silver Creek watershed has seasonal high water table and hydric soil (severe constraints 0-18").	Map 11 (soils)	
Map 12 shows plat 111 lot 1 as private undeveloped land suitable for conservation and open space	Map 12	

Item C1.

II. Open Space Plan 2008

Reference Document	Citation		Section
Open Space Plan 2008	The goals of this committee are to advise the Town Council on open space preservation and acquisition efforts, act as a resource for other agencies with open space concerns, and advise the Planning Board on open space elements of the Comprehensive Plan. Committee members feel strongly that to be most effective, the committee must be both proactive discoverers of potential open space acquisitions, as well as reactive advisors to the Town.	Introduction	1
	Bristol's Comprehensive Plan places a strong emphasis on the preservation of open space and sensitive natural areas. The Comprehensive Plan also recognizes the need to protect ecologically sensitive areas, direct development away from flood prone areas, and provide greenbelts of open space as relief from development.	Introduction	1
	Silver Creek consists of two branches that originate in the north-central portion of town and flows southerly before meeting within a brackish tidal marsh that drains into Bristol Harbor. This waterway drains an area of approximately 1,500 acres, and is an important area for natural open space, wildlife habitat, and flood control. Flooding is a frequent problem in the Silver Creek watershed, most notably at the Chestnut Street and Hope Street Road crossings where flow is restricted.	Water Resources	5.3

	Several significant areas of freshwater wetlands can be found within Bristol. Most notable are wooded wetlands located within central portions of town along either branch of Silver Creek. Wetland resources such as those found in several area of Bristol help to control floodwaters by storing excess runoff during heavy periods of rain and snowmelt. Soils within the wetlands act as sponges and hold excess water until it can be slowly released into streams. Urban wetlands are particularly important because they help prevent flooded basements, roads, a recurring condition especially in the Silver Creek watershed.	5.3
	Privately owned unprotected open space: owner Kendan LLC; plat 111/1, Gooding Avenue; 9.8 acres; woodlands, wetlands.	chart 14
	Town owns parcels of open space adjacent to silver creek. Others are private and should be protected from development and encroachment into wetland. Open space acquisition efforts in this area should be focused on watershed protection, marshland habitat preservation and flood control.	7.1 (c)

III. Phase II Storm Water Management Program Plan revised 2008

Reference Document	Citation	
Phase II Storm Water Management Plan	"The Storm Water Phase II Final Rule is the Environmental Protection Agency's Effort to preserve, protect, and improve the Nation's water resources from polluted Storm water runoff."	1.1
	Sub-Watershed 4A – is located in central Bristol. The sub-watershed area is approximately two square miles. Storm water from the sub-watershed drains to Silver Creek, which discharges into Bristol Harbor.	3.2 (drainage systems)

Item C1.

	"Town will review all plans for construction projects to ensure compliance with soil erosion and sedimentation controls and structural and non-structural BMP requirements.	4-27	
	Design of the development shall be consistent with the Comprehensive Plan.	Appendix F	108

IV. Natural Hazard Mitigation Plan Update

Reference Document	Citation		
Natural Hazard Mitigation 2016	Most respondents (to online survey) are 'Very Concerned' with flood related hazards (61.54%).	Introduction	13
	According to Table 2-1 (Risk Assessment Matrix): there are vulnerable areas subject to flooding due to heavy rains and storms. These areas have historical and potential high risk, causing property damage and public safety and health concerns. 1. Local roads: Bridge at Silver Creek, Chestnut, Gooding and conduits under St. Mary's Cemetery. 2. Sewer Pump station at Silver Creek. 3. Silver Creek and Tanyard Brook watersheds. 4. Silver Creek Nursing Home	Table 2-1	
	According to Table 2-2 (Hazard Index) there is a high frequency of the natural hazard of inland/urban flooding/heavy rain. It shows damage as extensive and high hazard index of 7.	Table 2-2	

Item C1.

TOWN PLANS IN SUPPORT OF PRESERVING WETLANDS AND CONTROLING FLOODING

Flood magnitude increases with increasing recurrence interval. The Town of Bristol can be uniformly affected by riverine/flash flooding events, dependent upon the location (amount of impervious surfaces within the area), existing/incoming weather conditions, and time of year (frozen ground conditions can exacerbate flooding) Based on the increased frequency and severity of flash flooding events (two significant events) which caused numerous business, road and bridge closures... the Town is considered at high risk for future flash flooding events.	Section 2	35
Development has exacerbated the magnitude and frequency of urban flooding by increasing impervious surfaces, also increasing the rate of drainage collection, reducing the carrying capacity of the land, and often overwhelming sewer system infrastructure.	Section 2	35
Silver Creek The area of Hope Street where the Silver Creek discharges into Bristol Harbor frequently floods during heavy rain storm events, particularly when combined with high tides. This area combined with the Tanyard Brook area, have traditionally experienced the highest damages from flooding throughout the Town.	Section 2	36
Just prior to the March 2010 floods, the Town slip-lined the existing drainage pipe that extended from the High School property on the north side of Chestnut Street through St. Mary's cemetery and to the outlet structure on the south side of the cemetery. The March 2010 floods sent so much water into this drainage system that the outlet structure "blew out" and caused significant erosion at the outfall. The Town was able to secure a grant ($25, 000) from NRCS to re-grade the area and stabilize the banks with rip rap which replaced the destroyed outlet structure.	Section 2	36-37

Item C1.

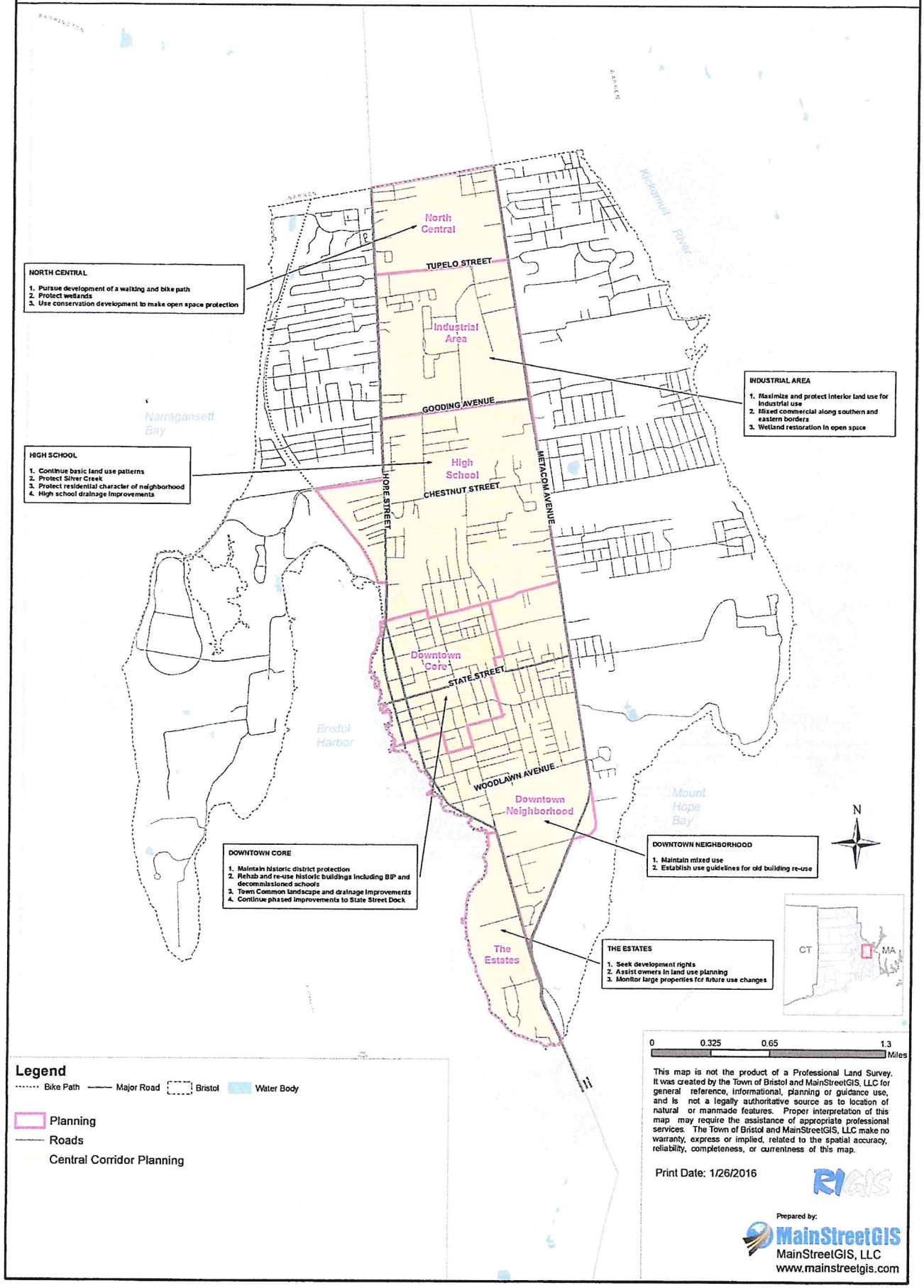
TOWN PLANS IN SUPPORT OF PRESERVING WETLANDS AND CONTROLING FLOODING

Given the size and geography of Bristol (as a peninsula), it is expected that all coastal areas, as well as the Silver Creek watershed are vulnerable to the impacts of sea level rise.	Section 2	45
Town Bridge (Route 114) at Silver Creek, which has been flooded in the past, now carries water and sewer lines that service the northwest portion of Bristol. The residents of Bristol, and all the commercial businesses in that area, are vulnerable to destruction of this bridge and the water and sewer lines that run underneath it. Breaks in the sewer line would not only leave residents without sewage disposal, but would also result in raw sewage discharge into Silver Creek. This section of Route 114 was closed during the March 2010 storm event.	Section2	64
The Comprehensive Plan is a planning document that outlines goals, policies, issues and actions to provide a framework for growth within the Town. In 2014, the Town adopted an updated Comprehensive Plan, which includes many of the mitigation actions included in the 2010 Hazard Mitigation Plan, still relevant for this 2015 Update. Moving forward, the Town will integrate new mitigation actions from this 2015 Update into the next update of the Comprehensive Plan. Land Use Element • *Action Item LU8 – Continue to protect the Silver Creek and Tanyard Brook Watersheds. *Action Item LU9 – Implement the Silver Creek Watershed Drainage Study.	Section 3	68
Guiteras School, Mt. Hope High School, Metacom Manor, Benjamin Church Manor, Silver Creek Manor, and Silver Creek Pump Station are major facilities at risk for flooding within the Eastern Branch of the Silver Creek Watershed.		Map A-3

Item C1.

Town of Bristol
Rhode Island
Comprehensive Plan, 2016

MAP 3
Central Planning Areas and Land Use Objectives



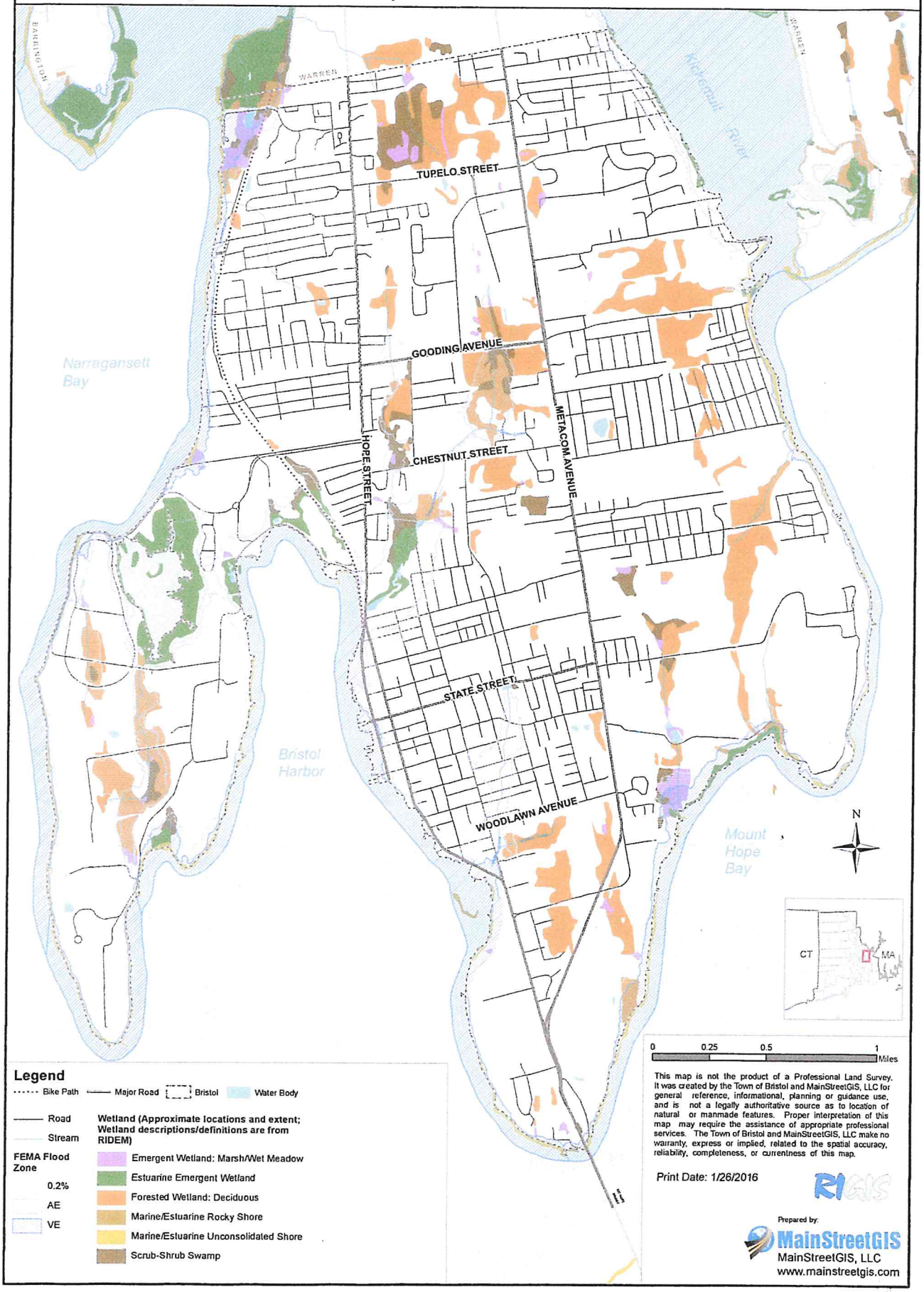
This map is not the product of a Professional Land Survey. It was created by the Town of Bristol and MainStreetGIS, LLC for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of Bristol and MainStreetGIS, LLC make no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Print Date: 1/26/2016

Prepared by:
MainStreetGIS
MainStreetGIS, LLC
www.mainstreetgis.com

Town of Bristol
Rhode Island
Comprehensive Plan, 2016

MAP 10
Wetlands & Flood Zones



Legend

Bike Path | Major Road | Bristol | Water Body

Road
Stream

FEMA Flood Zone
0.2%
AE
VE

Wetland (Approximate locations and extent; Wetland descriptions/definitions are from RIDEM)
Emergent Wetland: Marsh/Wet Meadow
Estuarine Emergent Wetland
Forested Wetland: Deciduous
Marine/Estuarine Rocky Shore
Marine/Estuarine Unconsolidated Shore
Scrub-Shrub Swamp

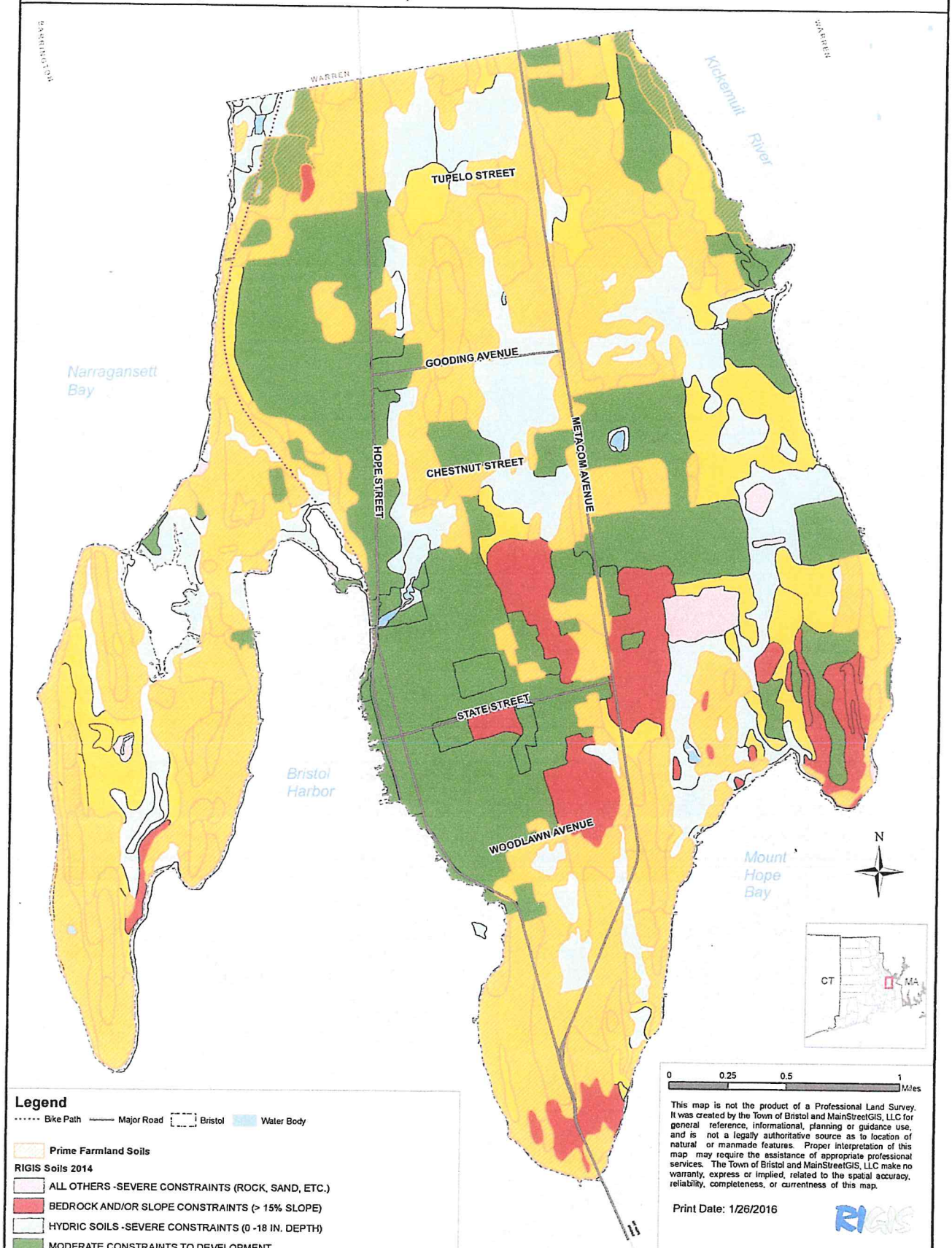
This map is not the product of a Professional Land Survey. It was created by the Town of Bristol and MainStreetGIS, LLC for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of Bristol and MainStreetGIS, LLC make no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Print Date: 1/26/2016

Prepared by:
MainStreetGIS
MainStreetGIS, LLC
www.mainstreetgis.com

Town of Bristol
Rhode Island
Comprehensive Plan, 2016

MAP 11
Soils



Legend

Bike Path — Major Road — Bristol — Water Body

Prime Farmland Soils

RIGIS Soils 2014

- ALL OTHERS -SEVERE CONSTRAINTS (ROCK, SAND, ETC.)
- BEDROCK AND/OR SLOPE CONSTRAINTS (> 15% SLOPE)
- HYDRIC SOILS -SEVERE CONSTRAINTS (0 -18 IN. DEPTH)
- MODERATE CONSTRAINTS TO DEVELOPMENT
- SEASONAL HIGH WATERTABLE (19 -42 IN. DEPTH)

0 0.25 0.5 1 Miles

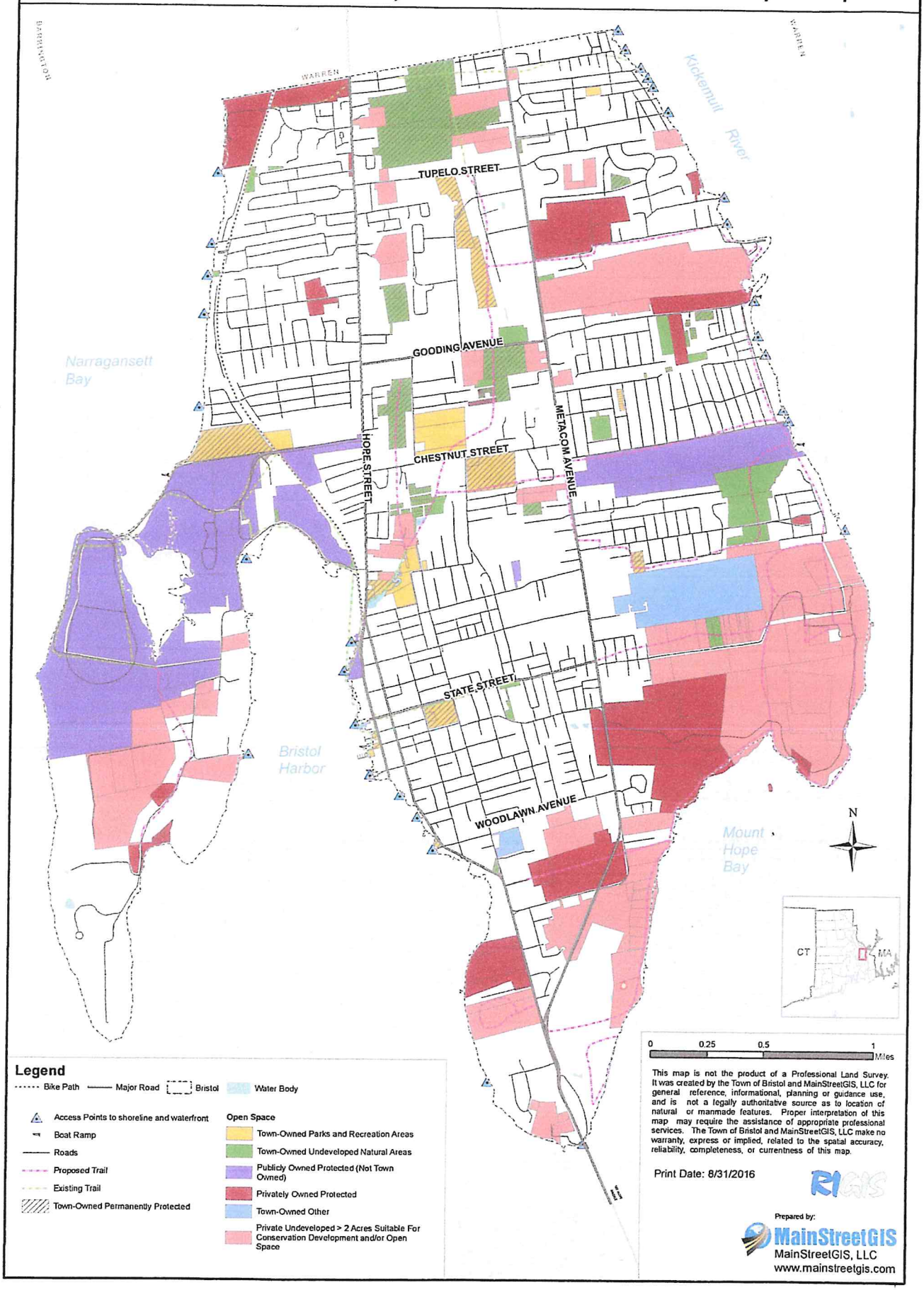
This map is not the product of a Professional Land Survey. It was created by the Town of Bristol and MainStreetGIS, LLC for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of Bristol and MainStreetGIS, LLC make no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Print Date: 1/26/2016

Prepared by:
MainStreetGIS
MainStreetGIS, LLC
www.mainstreetgis.com

Town of Bristol
Rhode Island
Comprehensive Plan, 2016

MAP 12
Open Space, Conservation, Recreation, and Other Undeveloped Properties



Legend

Bike Path — Major Road — Bristol — Water Body

Access Points to shoreline and waterfront
Boat Ramp
Roads
Proposed Trail
Existing Trail
Town-Owned Permanently Protected

Open Space

Town-Owned Parks and Recreation Areas
Town-Owned Undeveloped Natural Areas
Publicly Owned Protected (Not Town Owned)
Privately Owned Protected
Town-Owned Other
Private Undeveloped > 2 Acres Suitable For Conservation Development and/or Open Space

This map is not the product of a Professional Land Survey. It was created by the Town of Bristol and MainStreetGIS, LLC for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of Bristol and MainStreetGIS, LLC make no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Print Date: 8/31/2016

Prepared by:
MainStreetGIS
MainStreetGIS, LLC
www.mainstreetgis.com

2024 Hazard Mitigation and Flood Management Plan Update

Town of Bristol, Rhode Island

Silver Creek and Bristol Harbor

Adopted by the Town of Bristol, Rhode Island on April 17, 2024

(The following citations are from the above referenced document.)

Water Resources (Bristol Hazard Mitigation Plan (HMP)

Water resources including freshwater bodies, coastal waters and wetlands are important for the community. Wetlands provide a value to prevent flooding, purify the groundwater, and as a wildlife habitat. (Introduction p.10)

The most significant natural water features in Bristol are the Kickemuit River, Narragansett Bay, Bristol Harbor, and Mount Hope Bay. They define the town's land boundaries to the east, west, and south. The second largest water resource is the series of streams that crisscross the town. Two of note are Silver Creek and Tanyard Brook which run through developed areas. (Introduction p.11)

The Bristol Hazard Mitigation (BHM) Committee identified and included all flooding (riverine, coastal, flash, and street) as a hazard. The BHM Committee ranked flooding as a level of high concern/risk in Bristol. (Ch 3 Natural Hazards pp. 20-23)

According to the Rhode Island 2019 Hazard Mitigation Plan Update, "Flooding is a localized hazard that is generally the result of excessive precipitation. Flooding is the most commonly occurring natural hazard, due to the widespread geographical distribution of river valleys and coastal areas, and the attraction of human settlements to these areas. Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss." (Ch 3 p. 32) Moreover, Bristol areas susceptible to flooding are the low-lying coastal zones, which are the most vulnerable, as well as the developed floodplain hazards of Bristol, which include the Bristol Waterfront Historic District, Poppasquash Road and Bristol Marine, Tanyard Brook and Silver Creek Watersheds. Furthermore, the probability of flooding is highly likely, expected multiple times a year. (Ch. 3 p.33)

The HMP cited the following critical natural resources identified in the Comprehensive Plan and Open Space Plan (p.65):

- *Wetlands and salt marshes*
- *Creeks and brooks*
- *Floodplains*
- *Soils*
- *Habitats and endangered species*
- *Wooded areas*
- *Beaches*

As cited in the HMP weather related events impact the natural environment. Additionally, the HMP states that flood frequency and flood severity have significantly increased over the past 80 years. Also, climate change will result in more heavy rains. It is therefore reasonable to conclude that the critical natural resources will be more severely impacted. When the natural environment is impacted, there are losses of habitats, salinization of land/groundwater, threats to ecosystems, and damage to built environment. (Ch. 4 Risk Assessment p. 65)

In Chapter 5 *Programmatic Capabilities* the HMP specifies aspects from the Town's existing relevant plans and policies that were reviewed in the writing of the HMP. The following relevant mitigation actions were noted. (Ch. 5, pp. 76-79)

Land Use Element (CP)
Action Item LU8: Continue to protect the Silver Creek and Tanyard Brook Watersheds
Action Item LU9: Expand and implement the Silver Creek Watershed Drainage Study from the headwaters north of Gooding Avenue to the mouth at Bristol Harbor and

complete the recommended Phase 2 Tanyard Brook improvements.

Open Space, Conservation, and Recreation Element
Action Item OSCR11 – Require Best Management Practices (BMPs) to preserve wetlands, flood plains, and other environmentally sensitive areas.

Bristol HMP has incorporated the Comprehensive Plan, Open Space Plan, and Bristol 2016 Hazard Mitigation Plan. And by doing so has strengthened the policies and guidelines of the dire need to protect the Town's sensitive undeveloped wetlands, floodplains, and watersheds from development to protect the Town and Bristol residents from increased flooding.

TOWN OF BRISTOL
COMMUNITY DEV.

2025 DEC -8 AM 10: 57

December 8, 2025

Members of the Bristol Planning Board
Town of Bristol
Town Hall
10 Court Street
Bristol, RI 02809

RE; Proposed Gooding Avenue Hotel
STORMWATER MANAGEMENT REPORT

Dear Members of the Bristol Planning Board

I have reviewed the March 27, 2025 Stormwater Management Report by Kendar (D&M BOCA Development LLC) for the Master Plan submission. On behalf of local residents, we respectfully request that the Planning Board deny the approval of the Master Plan for the Major Land Development. It is my opinion that the report is incomplete and contains inaccurate information, resulting in unsupported conclusions concerning the impact of the proposed Hotel on downstream flooding.

The facts are:

- There is a bad flooding problem downstream of the proposed development that affects neighborhoods, Mount Hope High School, Gooding Avenue, Chestnut Street and Hope Street.
- The flooding issue is a concern of the neighborhood and Town, as expressed in the Petition signed by over 100 residents, and 35 opposition letters to RIDEM granting a wetland alteration permit.
- One of the major functional values of wetlands is flood storage and mitigation of downstream flooding.
- The Town of Bristol had commissioned a flood study, *Silver Creek Drainage Study*, Bristol, RI (Beta Engineers-Scientists, November 2007) to identify the flooding problem and recommend mitigation measures
- The Petition signatures have expressed their belief that flooding has increased since the Applicant cleared the hotel site in 2018.

The Applicant needs to seriously consider the potential impacts of their development by completing a comprehensive and sincere assessment. This assessment needs to include:

- Using **the appropriate infiltration rate (lower)** as identified by the National Resources Conservation Service (NRCS). Also, the effect of sea level rise on increasing flood level elevations needs to be considered.
- **Revising the *HydroCAD*** Stormwater model *to* incorporate the appropriate infiltration rate.
- **A flood analysis of the downstream effects** of the proposed development on the already programmatic flooding problem by using the appropriate method developed by the Army Corps of Engineers and utilized by Beta in their *Silver Creek Drainage Study* to determine the impact of filling in wetlands on downstream flooding.

- An assessment of the potential of **coincidental peaks that could occur downstream of the hotel**

Due to the technical nature of my findings on the Applicant's Stormwater Management Report, I am creating a PowerPoint presentation with visuals to clarify the main deficiencies. These issues indicate that current flooding concerns remain unaddressed, particularly since the Applicant has not evaluated how wetland filling affects downstream flooding. It is therefore reasonable to conclude that flooding will likely increase.

Master Plan approval should not be granted for the proposed Hotel due to missing or inaccurate details. I am prepared to speak and answer questions at the Public Meeting.

Thank you for your consideration of this request.

Sincerely:

Edward J. Spinard

Edward J. Spinard
Dartmouth Street, Bristol, RI

TOWN OF BRISTOL
COMMUNITY DEV.
2025 DEC -8 AM 10: 57

December 8, 2025

Members of the Bristol Planning Board
Town of Bristol
Town Hall
10 Court Street
Bristol, RI 02809

RE: *FISCAL IMPACT STUDY for D&M Development, proposed hotel*

Dear Members of the Bristol Planning Board,

Please find attached my evaluation of the applicant's Fiscal Impact Study (FIS) pertaining to the proposed 80-room hotel.

It is my opinion that the FIS does not adequately address projected occupancy, target market, and the potential for a conference center. Below is a summary of my concerns, which are outlined with a detailed assessment attached to this letter.

Projected Occupancy Compared to Actual Occupancy

- Occupancy determines hotel viability. Research shows ideal occupancy between 60%-70%, and that seasonality can cause fluctuations in occupancy.
- FIS projects 70% occupancy/365days/year (FIS p.4)
- Spurrier Consulting for D&M Development, LLC 2022 was sourced for this projection.
- This Spurrier source lacks external validation and is circular in that it only reverts back to the FIS. Therefore, the FIS projected occupancy is **not valid.**
- Comfort Inn & Suites reports a 49.8% occupancy rate as of March 2025 and 54.6% for the second quarter ending June 30, with August projections showing a 3% decrease. https://investor.choicehotels.com/news-details/2025
- Bristol Hotel's 1% Tax reports from 2023 and 2024 served as proxies to assess occupancy rates for hospitality venues in Bristol. (Source from RI Department of Revenue)
- Graphs display months on the x-axis (independent variable) and 1% hotel tax revenue per month (rounded to the nearest hundred dollars) on the y-axis (dependent variable)
- Graphs for each year indicate notable seasonal fluctuations; peaks for 6 months and sharp decline for 6 months
- Graphs confirm Bristol's hospitality market fluctuates seasonally, which contradicts and challenges the FIS unsubstantiated source projection of 70%/365days/year.

Conclusion: ***The proposed 80-room hotel occupancy is not viable due to the actual occupancy for Bristol, as identified in the RI Department Revenue graphs. These graphs show a significant seasonal occupancy variance. The revenue forecasts identified in the FIS are therefore not valid. Revenue forecasts are directly related to occupancy rates.***

Thank you for your consideration of my review.

Sincerely,

Emily Spinard

Emily Spinard
35 Dartmouth Street
Bristol, RI 02809

Attachments:

- Assessment of FIS (6 pages)
- Graph of RI 1% 2023 Bristol Hotel Tax
- Graph of RI 1% 2024 Bristol Hotel Tax
- Photo of Designed Flexibility of Comfort Inn *Rise & Shine* prototype https://www.businesstravelnews.com/Lodging/Choice-Hotels-Unveils-New-Comfort-Prototype
- Applicant's first floor plan submittal (A-101) showing lobby/lounge, breakfast room, breakfast serving area, and Flex Room, referred to Conference Room in FIS
- Photo of Comfort Inn prototype showing the Flex Room and flexible lobby/lounge space and breakfast room. https://www.businesstravelnews.com/Lodging/Choice-Hotels-Unveils-New-Comfort-Prototype

CONCERNS WITH THE FISCAL IMPACT STUDY

PROPOSED HOTEL DEVELOPMENT

FOR D & M DEVELOPMENT

May 2025

The Applicant submitted a Fiscal Impact Study (FIS) for the proposed 80-room hotel development. According to the FIS, "the FIS will estimate anticipated public revenues and expenses associated with the proposed development." (FIS p.2) Furthermore, it attempts to project future revenues and expenses related to this project. The FIS paints an optimistic picture of the development's fiscal impact on the Town of Bristol. However, a critical assessment raises significant questions about how realistic, factual, reliable, and valid the study's findings and conclusions truly are.

Issues with Source References

While reviewing the FIS, several issues and ambiguities arose, particularly concerning its source references. On page 4, the HOTEL TAX calculation references "Occupancy and Average Yearlong Room Rate projected by Spurrier Consulting for D&M Development, LLC in 2022. Also, projections from Choice Hotels." Upon researching the 'Spurrier source,' it only refers back to this very Fiscal Impact Study, with no evidence of an independent occupancy rate provided by Spurrier Consulting for this specific hotel proposal. Additionally, the mention of projections from Choice Hotels lacks any concrete reference citation, leaving the source of these numbers unverified.

Applicant Identification and Study Preparation

The cover sheet of the FIS indicates that the study was prepared for D & M Development. However, the Master Plan submitted to the Town identifies the Applicant as D & M Boca Development, LLC. This inconsistency presents a need for clarification: Which entity is developing this project? This lack of clarity raises further doubts about the study's reliability and transparency.

Erroneous and Unsubstantiated Data

Upon closer examination, it is my opinion that the FIS contains erroneous, unsubstantiated, and potentially misleading information. I intend to challenge the FIS's assumptions by submitting researched facts, including supporting graphs, and to highlight the negative financial impacts I believe this development would have on the Town of Bristol and its residents.

Hotel Tax and FIS Implications

According to widely published research, hotels require an ideal occupancy rate between 60% and 70% to be financially sustainable. For the proposed hotel, this translates to at least 48 rooms occupied at a 60% average yearly rate. Hotels located near supporting facilities—such as convention centers, airports, arenas, or city centers—tend to enjoy higher, less seasonally-affected occupancy rates. Seasonality, however, can cause occupancy rates to fluctuate by as much as 30%. https://dojobusiness.com/blogs/news/hotel-ideal-occupancy-rate

For example:

- The 60-room Comfort Inn & Suites in Plainville, MA, benefits from proximity to Gillette Stadium, Wrentham Village Outlets, Plainridge Park Casino, and Plainridge Race Course. https://www.orbitz.com/Plainville-Hotels-Comfort-Inn-Suites-Plainville-Foxboro.h3014653.Hotel-Information
- Similarly, the 88-room, 4-floor Comfort Suites in West Warwick-Providence is near TF Green airport, Warwick Malls, and located directly off Route 95. https://www.hotels.com/ho211500/comfort-suites-west-warwick-providence-west-warwick

By contrast, the Town of Bristol is a small, historical, and quaint town lacking these types of facilities. As a result, the proposed 80-room hotel would likely experience greater seasonality and sharper occupancy fluctuations, up to 30%, as indicated by the above references.

Problems with Revenue and Occupancy Projections

The FIS projects that the 1% hotel tax will generate $30,666, based on an assumed **70%** occupancy rate for **365** days and a room rate of $150 per night (FIS p.4). The source for this projection is cited as Spurrier Consulting for D&M Development, LLC in 2022, and projections from Choice Hotels. Yet, as mentioned, the so-called Spurrier reference refers back only to this FIS, with no externally validated occupancy rate or methodology. In effect, the study uses itself as its own reference, undermining the credibility of its analysis. Furthermore, the cited projections from Choice Hotels are not accompanied by any verifiable reference citation.

However, data from Choice Hotels (Comfort & Suites) for the three months ending March 2025 shows an occupancy rate of just 49.8%. https://investor.choicehotels.com/news-details/2025 This is significantly lower than the 70% occupancy assumed in the FIS and suggests that the revenue projection is overstated and unsupported. Additionally, the projected $150/night room rate is questionable; according to publicly available data from Choice Hotel via Google, nightly rates vary considerably by location and season. Without a clear source for this rate, the FIS assumption cannot be considered reliable.

Alternative Data: Rhode Island Hotel Tax Reports

To provide a more accurate and substantiated estimate of expected occupancy, I analyzed the Rhode Island 1% 2024 and 2023 Bristol Hotel Tax Reports (Year-over-Year Collections), using them as a proxy for hotel occupancy in Bristol. The data is sourced from the Rhode Island Department of Revenue for each month in the years of 2023 and 2024. To visualize the data, line graphs for each year were created, with months as the independent variable and the 1% tax revenue (rounded to the nearest hundred dollars) as the dependent variable. (See attached graphs.)

What do the Graphs Show?

The graphs paint a clear picture of pronounced seasonal swings in Bristol's hotel tax revenue, with notable peaks during the summer months. Taken together, these patterns indicate that Bristol's hospitality market is highly sensitive to fluctuations, and any forecast predicted on a flat, year-round occupancy rate is unlikely to reflect the real-world dynamics observed locally. As such, projected annual revenues based on stable occupancy are almost certainly overstated. Moreover, hotels in less commercially connected areas, like Bristol, will be especially vulnerable to these cycles.

Conclusion: The FIS's projected $30,666 revenue from the 1% hotel tax for this proposed hotel is questionable given the Rhode Island Department of Revenue's Bristol report, which highlights strong seasonality. Attached graphs confirm that occupancy can fluctuate by up to 30% due to seasonal effects.

Roger Williams University (RWU) Implied Role

The FIS notes that RWU is identified as a primary reason for the hotel chain's interest in investing in Bristol (p.2). The statement, "Likely the University strongly supports the addition of this hotel in such close proximity to their campus," suggests support from RWU; however, this has not been substantiated with documentation. As the FIS revenue projections are connected to RWU's implied support, supporting evidence is necessary. Additionally, the projected 70% occupancy rate year-round does not align with data from the Town's 1% hotel tax, raising questions about the assumptions regarding RWU's potential use of the hotel, possibly for student housing.

Conclusion: There is currently no documentation confirming RWU's support for the proposed development. The Applicant is requested to provide formal documentation from RWU, detailing any reasons for supporting the hotel and how it would benefit the university. It should also clarify whether RWU would consider the hotel for student housing purposes. A formal letter from the President of RWU, approved by the Board of Directors, indicating the University's position on the proposed hotel and the rationale for this stance, should be included.

Bristol Large Size Hotel History and Neighboring Portsmouth

Construction of the 6-story King Philip Inn, a 40,365 square foot, and 65-foot height hotel began in March 1990 with an opening date of September 1991. (Bristol Phoenix, July 25, 1991) King Philip Inn is located on a main road near Roger William's University (RWU). King Philip Inn did not survive as a hotel. As early as July 1991, the owner began to advertise one- and two-bedroom efficiencies. RWU leased rooms at King Philip for several years to house several hundred of their students. The University began to pull out students after spring of 2009. (Bristol Phoenix, February 19, 2009) However, students had the option to stay and rent. King Philip Inn, as a hotel, did not last long. It became King Philip Apartments & Suites, offering studio apartments and/or 2-bedroom 2-bath suites. (https://www.samsonrealty.com/kp/index.html)

Baypoint Inn right over the Mt. Hope Bridge in Portsmouth did not sustain as a hotel. It became a dorm option for RWU students. Although Baypoint will no longer house students as of July 2025, the facility is still operated by RWU. (https://pbn.com/roger-williams-university-discontinuing-residential-use-at-baypoint

Summary of the history and fiscal effects of large size hotels

1. When a hotel no longer operates as a hotel, the municipality does not collect the 1% hotel tax, nor does the state collect the sales tax. (King Philip) **Loss of projected revenue results.**
2. When RWU owns real estate (dorms) the town loses revenue from the property tax. (Baypoint). Bristol loses approximately $189,726/year in real estate tax from RWU owned Almeida Apartments. (Bristol real estate tax roll) **Loss of projected revenue results.**
3. When a failed hotel becomes an apartment complex/dorm there is a loss of commercial property. (Parcel for proposed hotel is zoned GB) ("*Do not allow industrial and commercial zoned parcels to be residential.*" Bristol Comprehensive Plan LU-6 p.187)

Large hotels have failed in Bristol and Portsmouth, causing a loss of hotel and property tax revenue and negatively affecting finances.

Concerns Regarding the FIS Tables and Additional Proposed Revenue and Expenses

Table #1 (p.3), which outlines total projected project revenue, states that "Total gross property tax revenue from the proposed 80-room Hotel and **Conference Center** development is $210,064."

The **Conference Center** represents a new component of the proposed hotel development and will have its own distinct impacts on the Town. Clarification is needed regarding the size of the Conference Center, its maximum allowable occupancy, anticipated utilization days, and parking

capacity. Furthermore, it is necessary to specify what portion of the projected $210,064 in revenue can be attributed to the Conference Center.

Also, the projected total appears to be inaccurate, as the existing real estate tax payment of $5,528 by the applicant does not represent new tax revenue.

Moreover, **Table #1** cites D&M Development, LLC as the source for the hotel's market value but does not reference comparable projects to substantiate this projection. Utilizing data from Comfort Inn & Suites may offer a more reliable basis for estimating projected revenues.

Additional Revenue (p.4)

One-time payments for permits and water and sanitation connections are not classified as revenue. These fees are associated with specific services that incur costs to the Town, such as inspections conducted during construction.

Expenses for Town services (p. 5) and ***Table #2***

These expenses must be clearly identified, sourced, and justified. Because if Table 2 uses unsupported and misleading revenue projections, any net revenue estimate for the Town is invalid.

Employment

The FIS notes that "the hotel use in Bristol will generate an additional **50 full-time equivalent jobs**…" (p.7). However, the document does not cite a reference source for this employment projection. While the FIS lists the types of jobs anticipated, it does not detail the number of positions by job type. The document also does not specify whether these jobs are seasonal or permanent, nor does it clarify how many positions are full-time versus part-time.

What is missing from the FIS?

- The **fiscal impact** of the proposed hotel on Bristol's B&Bs, hosting platforms, Harbor Inn, and Airbnb's has not been addressed or analyzed.
- Adverse effects of increased tourism

Explore Bristol, RI (https://www.explorebristolri.com/) provides a comprehensive visitor's guide to overnight accommodations. Options include the Bradford-Dimond Norris House, Governor Bradford House, The Munro House, William's Grant Inn, Captain William Richmond House, Evita Properties, and the 40-room Bristol Harbor Inn. In addition, a range of residential Airbnbs is available. The FIS has not addressed the potential financial implications of an 80-room hotel on these existing overnight accommodations.

Page 2 of the FIS notes, "with the 80-room hotel in place, Bristol will stand to attract many more tourists…" However, this assertion lacks specific supporting evidence or references. Furthermore, the report does not articulate the rationale for how an additional hotel would contribute to increased tourism. Moreover, the FIS also omits discussion of the potential negative impacts associated with higher tourist volumes—particularly for a small town such as Bristol.

Relevant concerns include overcrowding, strain on local infrastructure, road congestion, community resentment, and rising rental prices, among other documented challenges associated with increased tourism activity. https://sustainabletravel.org/what-is-overtourism/

Conclusion

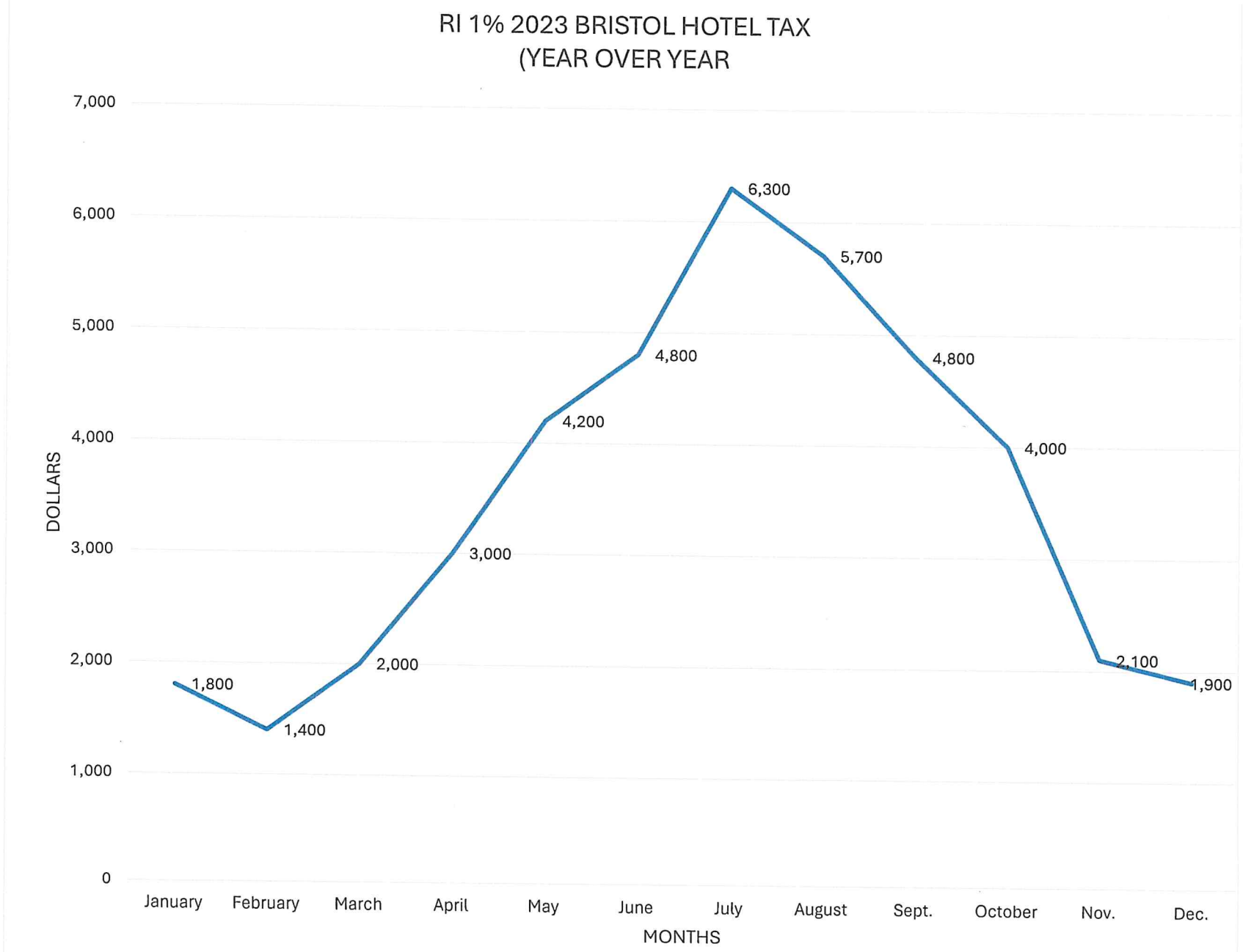
The Fiscal Impact Study for the proposed hotel development contains a number of problematic assumptions and unsubstantiated projections regarding both occupancy rates and hotel tax revenue. The sources cited are either circular or lack independent, verifiable references, undermining the validity of the fiscal benefits projected by the applicant. Furthermore, the documented occupancy rates for comparable hotels as well as the actual Town of Bristol hotel tax collections suggest that the FIS's projections are overly optimistic.

Before moving forward with this development, it is essential that the Town of Bristol seeks independent verification of projected revenues and costs, and demand transparency and accountability from all parties involved in the preparation and submission of fiscal analyses. Only through rigorous, evidence-based review can the true financial impact of this hotel proposal be understood, ensuring the best interests of Bristol and its residents are served.

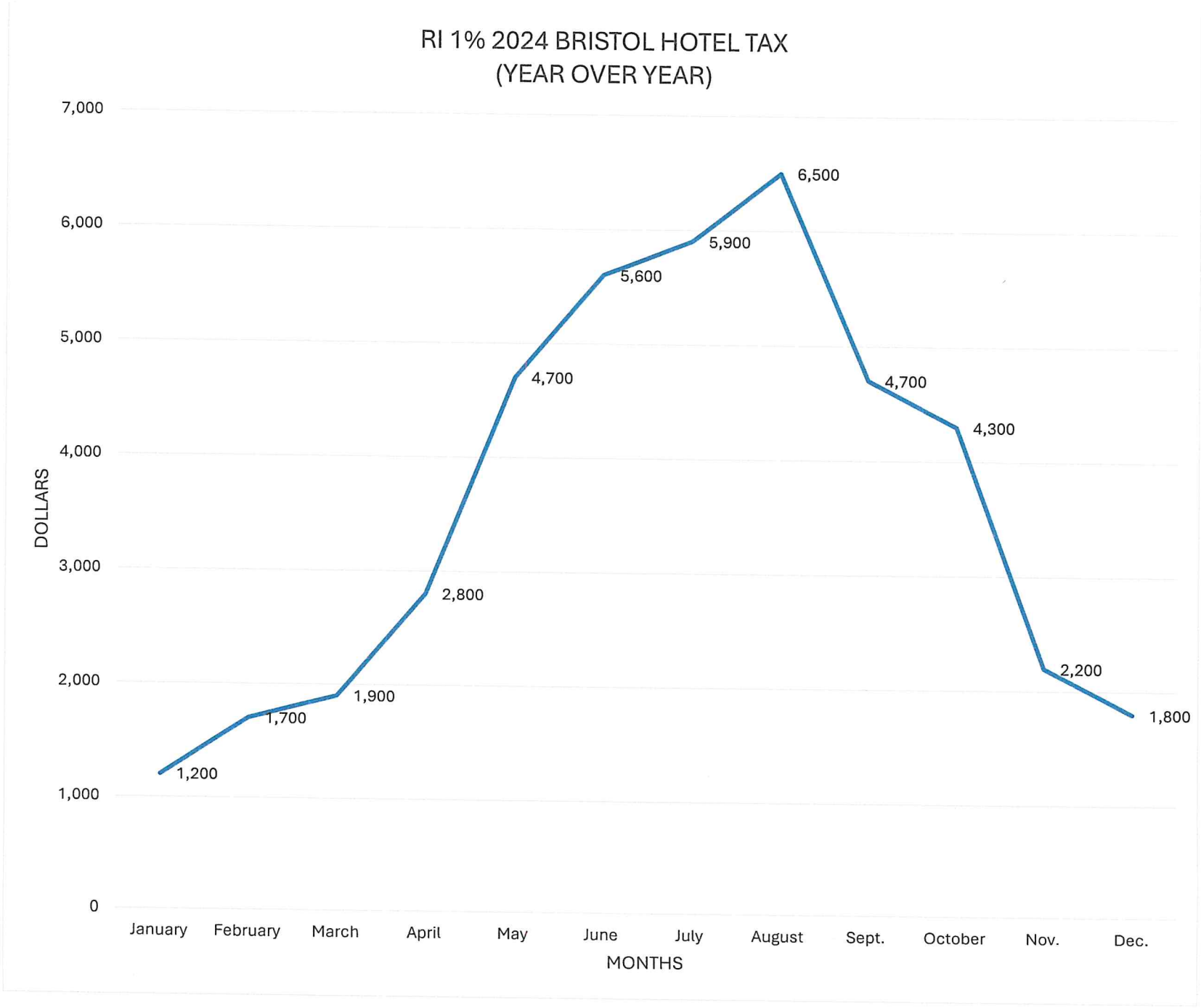
This discrepancy raises important questions: Are D & M Development and D & M Boca one and the same, or are they separate entities with different roles in the project? If the entities are separate, which holds ultimate responsibility and which should the Town engage with for oversight and accountability? Clarifying the true applicant and their relationship to the project is vital for transparency and for ensuring that any commitments made in the study are enforceable.

RECOMMENDATION

The FIS submittal does not appear to meet the requirements for a realistic and documented projection of revenues and expenses to the Town in relation to the proposed hotel development. Additionally, it does not provide the Planning Board or the Public with a comprehensive assessment of the fiscal impacts. Based on this review, it is recommended that the FIS be revised to include documentation and verification supporting its projections.


RI 1% 2023 BRISTOL HOTEL TAX
(YEAR OVER YEAR
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
DOLLARS
1,800
1,400
2,000
3,000
4,200
4,800
6,300
5,700
4,800
4,000
2,100
1,900
January
February
March
April
May
June
July
August
Sept.
October
Nov.
Dec.
MONTHS

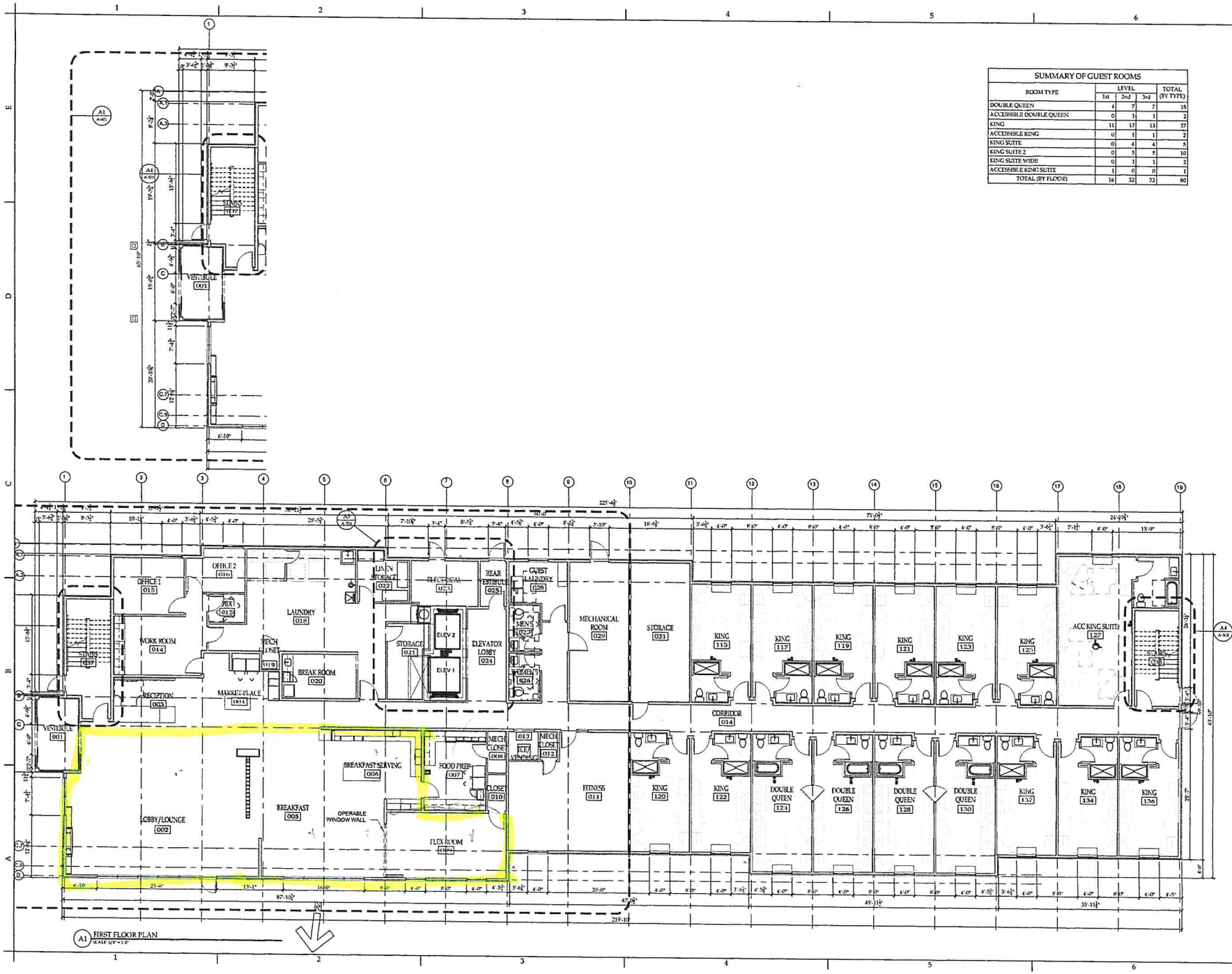
Item C1.


RI 1% 2024 BRISTOL HOTEL TAX
(YEAR OVER YEAR)
DOLLARS
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,200
1,700
1,900
2,800
4,700
5,600
5,900
6,500
4,700
4,300
2,200
1,800
January
February
March
April
May
June
July
August
Sept.
October
Nov.
Dec.
MONTHS

Item C1.

Designed for Flexibility

Our partitioned Flex Room seamlessly transitions from additional breakfast seating in the morning, to meeting space during the day, to a private evening reception space at night. Designed with versatility in mind, this and other multi-functio spaces allow owners to optimize operations and take advantage of the right revenue opportunities for their market.



SUMMARY OF GUEST ROOMS				
ROOM TYPE	LEVEL			TOTAL (BY TYPE)
	1st	2nd	3rd	
DOUBLE QUEEN	4	7	7	18
ACCESSIBLE DOUBLE QUEEN	0	1	1	2
KING	11	13	13	37
ACCESSIBLE KING	0	1	1	2
KING SUITE	0	4	4	8
KING SUITE 2	0	5	5	10
KING SUITE WIDE	0	1	1	2
ACCESSIBLE KING SUITE	1	0	0	1
TOTAL (BY FLOOR)	16	32	32	80

NOTICE

This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing. These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. W. Manhardt INTERIORS _____

SEAL:

TITLE:

FIRST FLOOR PLAN

SILVESTRI ARCHITECTS - PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4772

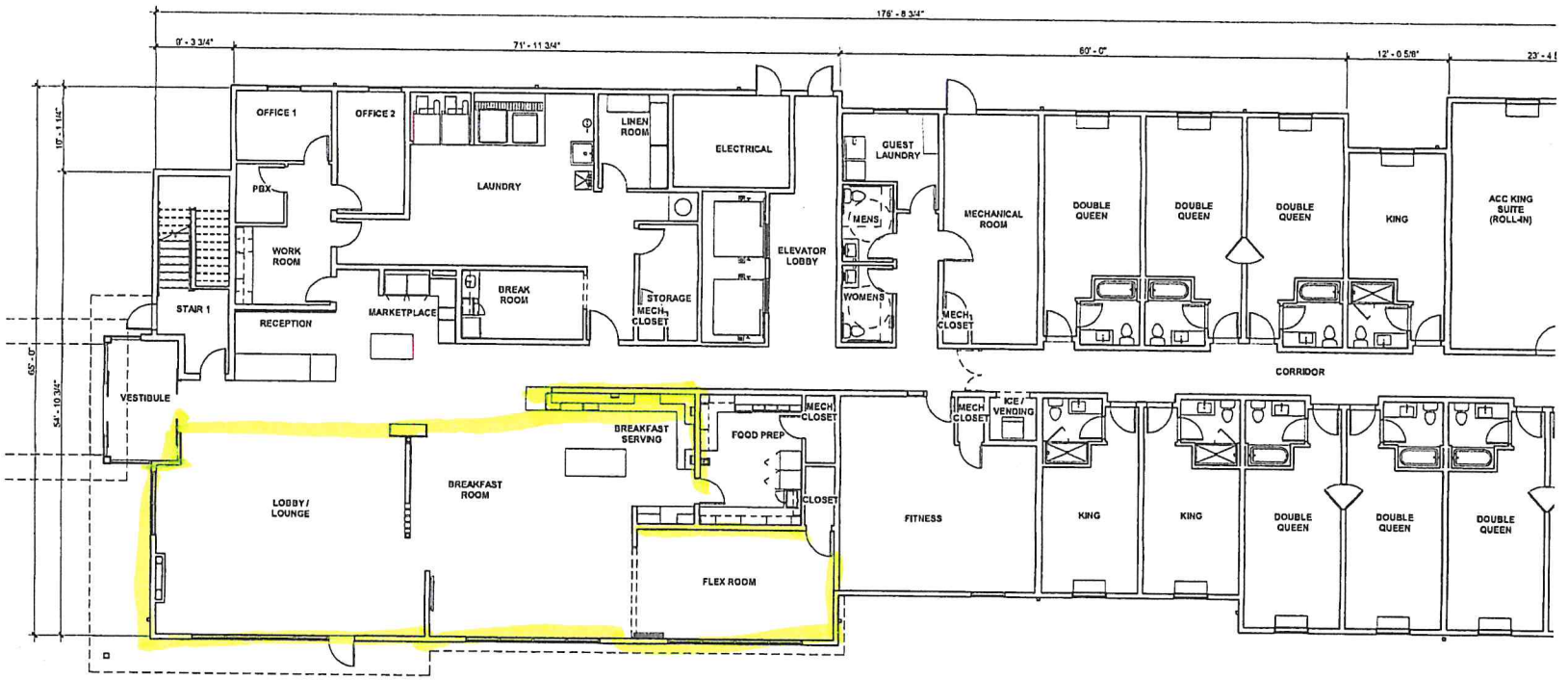
SA JOB #: 20038.01
DATE: 5/6/24

DRAWING #: A-101

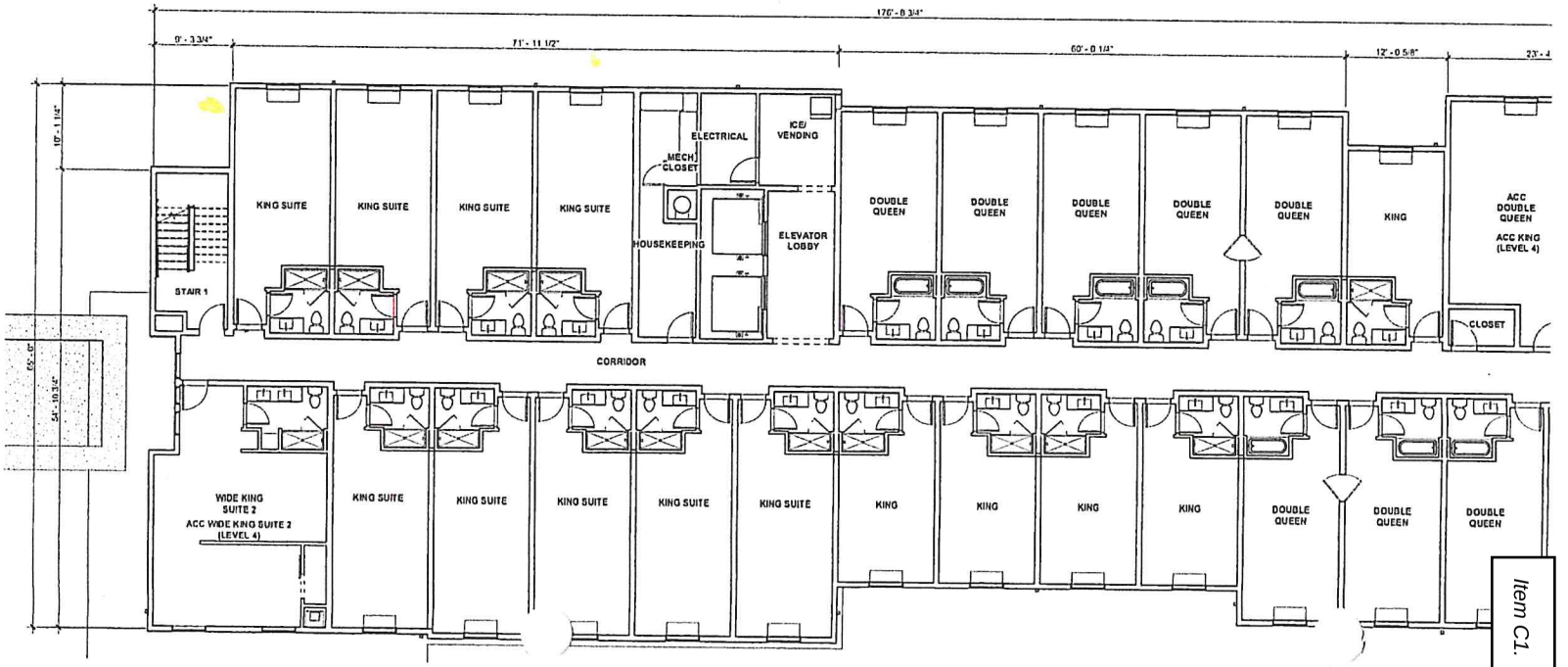
Item C1.

Comfort®
INN & SUITES
by CHOICE HOTELS

Floor Plans



Ground Level



Item C1.

TOWN OF BRISTOL
COMMUNITY DEV.
2025 DEC -8 AM 10: 57

December 8, 2025

Members of the Bristol Planning Board
Town of Bristol
Town Hall
10 Court Street
Bristol, RI 02809

RE; Proposed Gooding Avenue Hotel
ENVIRONMENTAL IMPACT STUDY Comfort Inn and Suites

Dear Members of the Bristol Planning Board

The proposed 80-room, 3-story hotel would impact 1.9 acres of forest and wetlands next to Silver Creek's flood-prone watershed and a residential area, making it one of the town's largest private developments on undeveloped land. The EIS should fully address the significant impacts. Still, the submitted Comfort Inn and Suites EIS only briefly examines the affected environment and environmental consequences of the project. In my opinion, it does not meet the required level of analysis under Section A, Environmental, of the Bristol Subdivision and Development Review Regulations. The EIS:

- It is poorly organized with no consistency between the Sections Site Analysis (Affected Environment) and Impacts (Environmental Impact)
- It provides incomplete information in the Site Analysis (Affected Environment) Section
- It provides misleading and incorrect information in the Impact (Environmental Impact) Section, resulting in unsupported conclusions
- It fails to identify and explain the mitigation measures that should be considered
- It fails to identify the unavoidable consequences of the proposed development
- It concludes in the Impact Section for the Environmental Resources that "There will be no adverse impact to _____as a result of this development."
- This is an incorrect statement as, by the very nature of the proposed development, it will harm the Environmental Resource, removing forest, filling in wetlands, destroying wildlife habitat, creating noise, lighting pollution, etc.
- The assessment is an identification of the level of the impact and whether that level is appropriate to the existing neighborhood and the Town.
- If the resource (Archaeological) being examined within the property limits of the proposed development does not occur on the property, then the statement: "There will be no adverse impact to _____as a result of this development" is valid and can be included under Environmental Consequences in that assessment for that Resources

- In several of the impact assessments on the Environmental Resources being examined, it makes the statement that "_____ will be provided at a preliminary plan stage."
- The EIS is required as part of the Master Plan stage, and it needs to be complete and not put off to a later date
- It does not address the Construction Impacts of the proposed project
- It does not address Hazardous Materials
- It does not include a Phase I Hazardous Assessment

Attached is a detailed page-by-page review supporting the conclusion that this document does not meet the requirements of Section A, Environmental, of the Bristol Subdivision and Development Review Regulations. Thus, in my opinion, it should not be accepted by the Bristol Planning Board as fulling the requirements for an Environmental Impact Study.

General Purpose of an EIS

An EIS evaluates the potential environmental impacts of the proposed hotel and its operations and how they will affect the adjacent neighborhood and the Town. It informs the Planning Board and the public about potential environmental consequences of the project. Typically, an EIS includes: a project description with alternatives, a baseline profile of the existing environment, predictions of environmental impacts, and measures to avoid or minimize those effects.

Thank you for your attention to this request. If members of the Planning Board have any questions, I will be prepared to address their questions at the Public meeting.

Sincerely

Edward J Spinard

Edward J. Spinard

Dartmouth St.

Attachment: Detail Review Comments (13 pages)

COMFORT INN AND SUITS
ENVIRONMENTAL IMPACT STUDY
REVIEW COMMENTS 12- 8-2025

Cover

- The title is incorrect should be Project Narrative and Environmental Study
- The photograph does not relate to the Project, more like a promotional photo for DiPrete Engineering

Table of Contents

- Site Analysis should identify all Environmental Resources examined in this Section (similar to the Impact Section)
- The Site Analysis Section (Affected Environment) should directly relate to the Impact Section (Environmental Impacts) 3, Affected Environment a) soils; 4.0 Environmental Impact a) Soils
- Appendix B) BETA Profile Figure is on page 20, not 19
- Should include a List of Figures and a List of Tables
- Appendix should be used to provide a complete listing of all references used in the EIS, including plans, reports, etc. with compete citations.

Page 3 – Executive Summary

- Should be Page 1, this is the first page of the EIS
- This is an Environmental Impact Study per Town regulation, not an Environmental Impact Statement
- Identify submission
- Identify Applicant
- The Executive Summary should provide a summary of Affected Resources examined, Environmental Impacts, Mitigation Measures considered, and Impact Results. A Table format could be used to present this information.

Page 4
2.0 Location

- Should read: There is approximately 506 **linear feet** of frontage on Gooding Avenue.
- Should include a zoning map
- This is a good place to identify alternative sites that could accommodate the hotel within the Town of Bristol.
- Should read: The development of the hotel is allowable under the General Business (GB) district of the Town of Bristol Zoning Ordinance (identify effective date)

3.0 Site Analysis

Soils

- All Sections should begin with an explanation of why the resource is being examined, including an identification of applicable Federal, State, Local Laws, Policies, Subdivision Regulations, and Performance Requirements
- The Soils Map by USDA Soil Conservation identified only Stissing (sf) soils
- The preparers have indicated that there are Pittstown soils in the project area.
- Provide a map showing the location of Tyson and Pittstown soils
- How were the location and identification of Pittstown soils determined
- Who identified the Pittstown soil locations, and what methods we use to make this identification
- When was the site analysis conducted to identify the soils
- When was the site analysis conducted to A to identify ground water levels and when
- How were the groundwater levels determined
- Were any observation wells placed within the project area
- Were the groundwater elevations observed during the wet season
- Show on a map the location of the groundwater elevations and depth to groundwater

Page 5
Agricultural Lands

- See Example included with thie latter

Topography

- Explain why Topography is being examined
- Should reference Rhode Island Stormwater Design and Installation Standards Manual and LID (Low Impact Development
- Provide a map/plan showing the topography of the project area.
- Statement "There are no areas that retain flood storage within the project area. All areas are drained to the wetlands on site".
- This statement is completely erroneous; the project area includes wetland areas that, as a functional value of wetlands, provide flood storage
- Also, the natural vegetation will absorb rainfall, reducing runoff, therefore reducing flood runoff into Silver Creek.
- This is why the applicant is required to prepare pre- and post-stormwater runoff rates
- Statements like this are not helpful to the evaluation by the Planning Board of environmental impacts resulting from the development.
- This statement shows a bias by the preparer in favor of the development of the hotel
- the preparer is supposed to present the facts and have the planning board determine their impacts, whether they are minor or significant

Structures

- Explain why Structures are being examined
- Provide a plan (aerial photo) showing structures
- Identify type of structure (commercial, residential)
- Identify size, height, and land coverage for each structure

Past and Present Use of the Site

- This section would be more appropriate as a discussion in the Location/Site Section

FEMA Floodplain

- This Section should be part of a discussion on Drainage and Flooding, which should be included in the Affected Environment.

Page 6

- This Section should be part of a discussion on Drainage and Flooding, which should be included in the Affected Environment.
- Show the project site on FEMA map
- Explain what may cause the flood elevation difference between Beta and FEMS, such as new rainfall amounts, more cross-sections in BETA producing better results, etc.
- The statement that: "The elevations do not impact the proposed development and as will be demonstrated in detail during the Preliminary Plan phase, the project will not increase downstream impacts from the existing floodplain."
- The statement should be included in the Environmental Impact Section
- The purpose of the EIS, as has been stated many times by the author of this review, is to provide an unbiased assessment at the time of its preparation, not to say or don't worry about this impact because we are going to study it at a later date.

Page 7

Existing Upland Vegetation (Forest)

- This Section should be titled Forest to be consistent with the Impact Section
- Why is the Forest an environmental resource
- Who performed the identification and when
- Reference source material
- Identify any unique vegetation and significant trees (Identify source)

Wetland and Hydric Soils

- Explain why wetlands are a resource, i.e they are protected by law because of their functional values
- Explain the functional values of wetlands
- Show a map of the different types of wetland and their location

- How were hydric soils identified, by whom, when, and what method was used

Page 8

Hydrology

- This Section should be part of a discussion on Drainage and Flooding, which should be added to the Affected Environment Description

Wildlife and Wildlife Habitat

- Explain why Wildlife is an environmental resource
- Identify source material and include a complete citation in the Appendix
- Explain how the DiPrete survey was conducted and by whom.
- Identify qualifications of person(s) conducting DiPrete's survey
- Provide notes on what was observed on the DiPrete survey, either through direct observation or signs
- Identify any Threatened or Endangered Species (identify source)

Need to add Sections to the Affected Environment to be consistent with the Impacts

Flooding and Drainage

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- Add the Hydrology paragraph to this Section
- Prepare a Narrative on the Silver Creek watershed (project site within this watershed)(show map)
- Prepare a Narrative on existing stormwater drainage conditions (flow path, surface conditions) (show map/plan)
- Discuss Flooding (existing page 6)
- Discuss existing flooding problems associated with Silver Creek
- Identify downstream flooding areas: residential areas, new high school, St Mary's Cemetery, nursing homes)

Surface Water Quality, Streams and Rivers

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- Identify the water quality of Silver Creek
- Identify the classic stream order, which is a "bottom up" hierarchy that allocates the number "1" to the river with its mouth at the sea (the main stem). Stream order is an important aspect of a drainage basin. It is defined as the measure of the position of a stream in the hierarchy of streams. Tributaries are given a number one greater than that of the river or stream into which they discharge. So, for example, all immediate tributaries of the main stem are given the number "2". Tributaries emptying into a "2" are given the number "3" and so on.[4]

Groundwater

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances

- Identify and explain the groundwater quality classification
- Identify a private well within the area, including location, depth and its use
- Identify potential sources of groundwater contamination i.e, hazardous materials stored on site, accidental spills, metals and oils from the parking lot area, biological fluids from dumpsters, landscape maintenance chemicals, salting etc.

Noise

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- Conduct existing sound monitoring program, identifying sound level along the project site property boundaries.
- Identify who conducted sound monitoring, qualifications and identify at what time and date it was conducted

Air Quality

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- Identify existing air quality
- Is the area, project site in compliance with air quality standards

Historic/Archaeological Areas

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- Explain why this environmental resource is being examined
- Provide a map (GIS online mapping) and a narrative explaining how these resources were examined

Traffic/Road Capacity

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- Summarize existing traffic conditions from the *Traffic Impact Assessment*
- Provide a map/plan showing the existing Level of Service

Natural Heritage Sites

- Identify applicable Federal, State, and Local Laws, regulations, and ordinances
- A review of Natural Heritage Areas available at the RIDEM Map Room depicts a Natural Heritage Area (ID 101) occurring within the southern two-thirds of the property. A Natural Heritage Area request was submitted to RIDEM on April 7, 2025. The report indicates that the northern leopard frog (Lithobates
- piopines) was observed east of Leila Jean Drive in 1985. This observation occurred beyond the subject property.
- The proposed project is not expected to impact this species. Northern leopard frogs typically utilize wetland habitats that contain slow-moving or still water along streams, wetlands with abundant emergent vegetation such as sedges and rushes, or permanent or temporary pools. The wetlands proposed to be altered by this project do not meet the habitat requirements for northern leopard frogs. (Explain and reference source) No individuals of this species were encountered during site visits performed by NRS or DiPrete Engineering.

Solid Waste Generation

- The project site is a forested and wetland area. There is no solid waste being generated from the site as it is currently not in any active use.

Coastal Resources and Features

- Describe Coastal Resources and Features
- Provide a map showing the closest Coastal Resources and Features to the project area

Utilities

Water Service

- Supply -Describe the source of water; capacity, current and future water use, available capacity
- Identify the location of the water main servicing the proposed development and it size
- Discuss that the hotel requires sprinklers for fire protection
- Estimate the water requirements for hotel occupants, kitchen, laundry, cleaning, and landscape maintenance
- Estimate the water requirements for fire protection
- Conduct a fire flow test to determine the quantity and pressure available from the existing water main and hydrants

Sanitary Sewer

- Treatment -Describe the wastewater treatment plant; its design capacity, current and projected wastewater quantities, and available capacity
- Estimate the wastewater requirements for hotel occupants, kitchen, laundry, and cleaning
- Describe the location and size of the sewer main to service the hotel
- Describe the pumping station that will service the hotel; current capacity and limitations

Page 8 and continue on Page 9

4. Impacts (Environmental Impacts)

This section needs to be completely redone. It is poorly written and organized; not consistent with the Affected Environment section; and is difficult to identify potential environmental impact from the proposed development and mitigation measures.

The purpose of this Section is to provide the Planning Board and the public with an indication of the likely environmental consequences of the proposed project. It identifies

potential effects of the project on the environment. It also identifies measures envisaged to avoid, prevent or reduce the effects on the environment (Add)

General Statement

- 1st paragraph beginning with "The submitted project propose……" should be placed in the Freshwater Wetlands section
- 2nd paragraph beginning with "The project site consists ……. " should be placed in the Freshwater Wetlands section
- 3rd paragraph beginning with "The Town of Bristol regulations ….. is appropriate for Impact discussion
- 4th paragraph beginning with " The project will result in minimal impacts……should be deleted. The Impact section will identify the environmental impacts on each resource. It is the responsibility of the Planning Board to examine the impacts and determine of they are minimal or significant. It is not within the scope of the preparers to make this determination. This paragraph clearly shows a bias on the preparers that is not within the scope of the EIS.
- 5th paragraph beginning with "The Master Plan Submission …..should be deleted. Each Resource Section should reference the applicable plans and reports that support the environmental analysis contained in the assessment
- Add a paragraph that explains the Impact section examines the environmental resources in the previous Affected Environment. The impact section identifies the environmental impact of the proposed development on the resource, identifies mitigation measures, and concludes with environmental consequences

Page 9 continue on Page 10

Freshwater Wetland

This is one of the major impacts of the proposed development. This section needs to identify the impacts to wetlands and the rationale for RIDEM to determine that the impacts did not result in a significant impact

- Organize Section: The impact section identifies the environmental impact of the proposed development on the resource, identifies mitigation measures, and concludes with environmental consequences
  - The first two paragraphs provide a good description of the environmental impact of the proposed development on freshwater wetlands
  - Reference Wetland Narrative Report submitted to RIDEM
  - Add a subparagraph Title: Mitigation Measures
  - Under Mitigation Measures include paragraph 3 beginning with "The alteration of these resource areas……"
  - Under Mitigation Measures, discuss Stormwater Treatment
  - Add a subparagraph Title:
  - Under Environmental Consequences and include paragraph 4 beginning with "The approved wetland alter……"

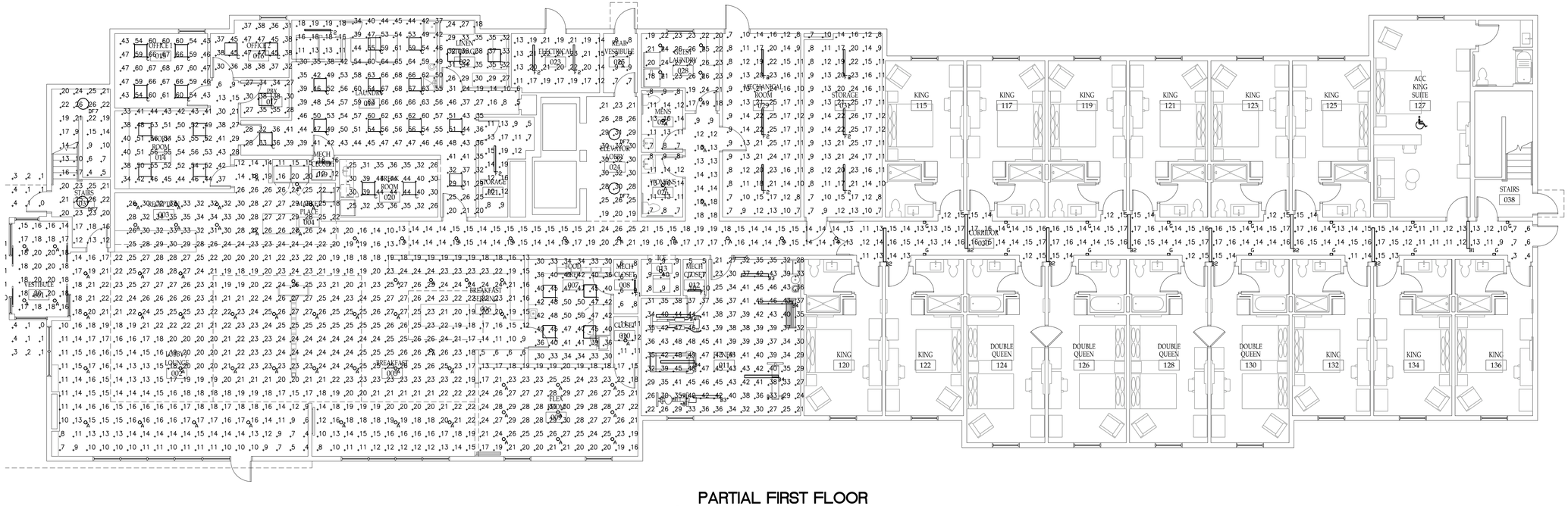
- Delete the remainder of the paragraph as it is subjective speculation
- Low quality history of disturbance; the sewer easement is not within the proposed hotel area; agricultural activity was last identified as occurring in 1938, how can you decide the area for the hotel was disturbed but the high value wetland to the East was not; how did the residential development disturb the hotel area wetlands?
- Should discuss wetland permit from RIDEM. As wetland areas will be lost due to the Hotel development, but RIDEM has made an evaluation that the wetland lost is acceptable.
- Explain RIDEM rationale for filling in wetlands
- The statement that the onsite wetlands do not provide stormwater runoff mitigation is wrong and should be deleted.
- This statement is completely erroneous, the project area includes wetland areas that as a functional value of wetlands, provide flood storage
- Also, the natural vegetation will absorb rainfall, reducing runoff therefore reducing flood runoff into Silver Creek.
- This is why the applicant is required to prepare pre and post stormwater runoff rates
- Last sentence: "There will be no adverse impact to freshwater wetlands as a result of this development. This should be deleted, and this section should identify the amount of wetlands that will be lost as a result of the hotel development

Page 10

c) Flooding and Drainage

This section needs to demonstrate the impacts on site drainage and downstream flooding in a comprehensive and objective assessment.

- Organize Section: The impact section identifies the environmental impact of the proposed development on the resource, identifies mitigation measures, and concludes with environmental consequences
- Delete the first sentence, this is a subjective judgment that needs to be fully examined
- Identify environmental impact, including loss of wetland areas that provide stormwater runoff and flood mitigation, and natural water quality treatment
- Identify mitigation measures by summarizing the Stormwater Report
- The Stormwater Management Report needs to be included as part of this EIS, and not "This Report will be provided for a detailed review by the town during the preliminary plan stage. Reference plans
- Discuss Silver Creek flooding problems
- Identify measures to mitigate downstream flooding by providing calculations and methods used to analyze downstream flooding impacts
- Delete last sentence: "There will be no adverse impacts to flooding and drainage on-site or off-site as a result of this development." This is a subjective conclusion by the preparers.



1 LP-1 PARTIAL FIRST FLOOR LIGHTING PHOTOMETRIC PLAN

SCALE: 1/8" = 1'-0"

2 LP-2 PARTIAL FIRST FLOOR LIGHTING PHOTOMETRIC PLAN

SCALE: 1/8" = 1'-0"

Luminaire Schedule					
Symbol	Label	Manufacturer	Catalog	Lamp Output	Input Power
○	A	Juno Lighting	6RLD G4 10LM 30K 90CRI 120 FRPC WWH M6	1081	12
▮	B1	LumenWerx	VIA5PD-HLO-FH-SW-80-350-30-4FT - GRID CEILING	1400	11
▮	B2	LumenWerx	VIA5PD-HLO-FH-SW-80-350-30-5FT - GRID CEILING	1400	14
▮	B3	LumenWerx	VIA5PD-HLO-FH-SW-80-1000-30-4FT - GYP CEILING	4000	34
▮	B4	LumenWerx	VIA5PD-HLO-FH-SW-80-1000-30-5FT - GYP CEILING	4000	42
□	C	Lithonia Lighting	CPX 2X2 3200LM 80 35K SWL MVOLT	3668	30
○	DF7	Brownlee Lighting Inc	2080-20-R49-35K	3797	45
▮	F1	Lithonia Lighting	CSS L24 2000LM MVOLT 40K 80CRI	2151	15
▮	F2	Lithonia Lighting	CSS L48 4000LM UVOLT 40K 80 CRI	4819	38
▭	G	Brownlee Lighting Inc	1345-B12-35K	1161	3

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Closet 010	+	11 fc	12 fc	11 fc	1.1:1	1.0:1
Corridor 030 (1st Fl.)	+	14 fc	17 fc	3 fc	5.7:1	4.7:1
Corridor 239 (2nd & 3rd Fl.)	+	14 fc	18 fc	4 fc	4.5:1	3.5:1
Corridor (1st Fl.)	+	16 fc	26 fc	9 fc	2.9:1	1.8:1
Elec. 242 (2nd & 3rd Fl.)	+	14 fc	17 fc	10 fc	1.7:1	1.4:1
Electrical 023	+	18 fc	23 fc	11 fc	2.1:1	1.6:1
Elevator Lobby 024	+	27 fc	32 fc	19 fc	1.7:1	1.4:1
Elevator Lobby 243 (2nd & 3rd Fl.)	+	26 fc	32 fc	19 fc	1.7:1	1.4:1
Fitness 011	+	37 fc	49 fc	21 fc	2.3:1	1.8:1
Food Prep 007	+	40 fc	50 fc	30 fc	1.7:1	1.3:1
Guest Laundry 026	+	23 fc	27 fc	17 fc	1.6:1	1.4:1
Housekeeping 240 (2nd & 3rd Fl.)	+	17 fc	25 fc	8 fc	3.1:1	2.1:1
Ice 013 (1st Fl.)	+	9 fc	10 fc	8 fc	1.3:1	1.1:1
Ice 244 (2nd & 3rd Fl.)	+	10 fc	11 fc	7 fc	1.6:1	1.4:1
Laundry 018	+	46 fc	68 fc	5 fc	13.6:1	9.2:1
Laundry Dryer Room	+	16 fc	19 fc	11 fc	1.7:1	1.5:1
Mech. 241 (2nd & 3rd Fl.)	+	9 fc	10 fc	8 fc	1.3:1	1.1:1
Mech. Closet 008	+	7 fc	9 fc	6 fc	1.5:1	1.2:1
Mech. Closet 012	+	7 fc	10 fc	5 fc	2.0:1	1.4:1
Mech. Closet 019	+	14 fc	16 fc	12 fc	1.3:1	1.2:1
Mech. Rm. 029	+	14 fc	25 fc	7 fc	3.6:1	2.0:1
Mens 027	+	11 fc	16 fc	7 fc	2.3:1	1.6:1
Office 015	+	57 fc	68 fc	43 fc	1.6:1	1.3:1
Office 016	+	40 fc	47 fc	30 fc	1.6:1	1.3:1
PBX 017	+	32 fc	38 fc	27 fc	1.4:1	1.2:1
Porte Cochere	+	7 fc	15 fc	0 fc	N/A	N/A
Reception, Lounge, Market Place, Breakfast, Flex Rm.	+	21 fc	35 fc	4 fc	8.8:1	5.3:1
Stair 037 (1st Fl.)	+	17 fc	26 fc	4 fc	6.5:1	4.3:1
Stair 237 (2nd & 3rd Fl.)	+	22 fc	27 fc	12 fc	2.3:1	1.8:1
Stair 238 (2nd & 3rd Fl.)	+	22 fc	27 fc	14 fc	1.9:1	1.6:1
Storage 021	+	12 fc	19 fc	5 fc	3.8:1	2.4:1
Storage 031	+	14 fc	26 fc	7 fc	3.7:1	2.0:1
Storage 032	+	31 fc	38 fc	18 fc	2.1:1	1.7:1
Vestibule 001	+	18 fc	20 fc	14 fc	1.4:1	1.3:1
Vestibule 025	+	8 fc	9 fc	7 fc	1.3:1	1.1:1
Womens 026	+	11 fc	16 fc	7 fc	2.3:1	1.6:1
Work Room 014	+	43 fc	56 fc	6 fc	9.3:1	7.2:1
Break Rm. 020	+	35 fc	44 fc	25 fc	1.8:1	1.4:1

NOTICE

This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing. These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. _____ INTERIORS _____

SEAL:

TITLE:

FIRST FLOOR LIGHTING PHOTOMETRIC PLAN

SILVESTRI
ARCHITECTS · PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

DATE:

DRAWING #: LP-1

Town of Bristol, RI
WATER POLLUTION CONTROL DEPARTMENT
2 PLANT AVENUE
BRISTOL, RI 02809-3015
(401) 253-8877 fax: (401) 253-2910

Jose' J. Da Silva, Superintendent

TOWN HALL
10 COURT STREET
BRISTOL, RI 02809
(401) 253-7000

8/25/2025

To: Planning Board.

Re: Sewer Revisions Submission (7-11-2025)
Master Plan Submission – Comfort Inn & Suites
Gooding Avenue, Assessor's Plat 111 Lot 1

Dear Mr. Duhamel

The Bristol Water Pollution Control Department has reviewed the referenced Master Plan submission as it relates to the proposed hotel's sanitary sewer service. The Department conceptually agrees with the proposed system that consists of:

- Small submersible pumping station to service the hotel
- Force main connection to the 15-inch gravity sewer easement east of the proposed hotel
- 8,000 gallon tank for storage of wastewater

Upon further thought on how best to address the concern of severe weather, especially rain events, the following should be added.

- That the controls for the pumps to the pump station shall be accessible outside adjacent to the station for servicing and for safety reasons, a standard practice. We ask that the Sewer Department be given keys to access the controls in time of severe storm events.
- That a Smart Level equipment device be installed and associated communication services for downstream manhole monitoring. Water Pollution Control Department shall receive signals and information. Equipment, monthly fees and maintenance to be paid for by Hotel.
- Furnish equipment and establish signal between hotel pump station operation and Water Pollution Control Department (On –Off-High- Alarm)
- Submit operation and maintenance procedures for Hotel operation of overflow valve.
- That the hotel enter an agreement with septage haulers in case of need to empty the holding tank if and when the 15" main is at capacity.

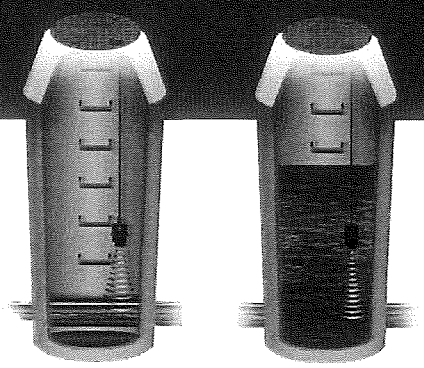
Sincerely,

Jose' Da Silva
Superintendent
Bristol WPCF

SMARTCOVER®

WE'VE GOT IT COVERED™

SmartLevel™
Sewer Level Monitoring



SmartLevel™ is the used for measuring and reporting sewer levels. SmartLevel provides collection systems with unmanned operations monitoring real time sewer levels 24/7/365. Any subtle nuances in level data are analyzed and when irregularities or anomalies are detected, the system sends notifications for situational assessment. Combined with the SmartTrend analysis tool, the system is able to indicate when and where there may be a potential pipe blockage due to debris, fats, roots. oil or grease causing levels to rise.

Our Subsonic® sensor measures from the bottom of the invert to the manhole cover using both ultrasonic and pressure readings, ensuring level is measured even if the sensor is submerged

Where it Works

SmartLevel is highly versatile for use within different environments:

- Wastewater collection system
- Raw water conveyance system
- Stormwater system
- Any open water channel
- High frequency cleaning locations
- Siphons and easements
- Older high risk pipes
- Flooding
- Lift station back up
- Environmental or politically sensitive areas

Featuring

- Hardware components engineered to function in wet, humid, corrosive conditions
- Flexible patented sensor designs and deployment
- NO CONFINED SPACE ENTRY* installation or service
- Reduces traffic management resources
- Secure, online dashboard with easy-to-read, visual reports
- Compact, long lasting battery
- Two-way communications permits remote settings management
- Fusion with rain, river and tide data
- Done-for-you analytics
- Works when there is no power
- Satellite coverage works with sites difficult to access and withstands cellular outages
- Variable timing options for data scan and notifications
- Built in tilt switch for real time entry detection
- Encrypted secure servers with redundancy
- Mobile app for iOS and Android
- API available
- Configurations for open channels, canals, holding tanks, lift stations, outfalls, reservoirs, and utility vaults

With the SmartCover mobile app, get the insights you want, when and where you need them. Available for both iOS and Android devices.

SmartCoverSystems.com

Copyright ©2021 SmartCover. All rights reserved. The trademarks, logos and service marks displayed in this document herein are the property of Hadronex, Inc., its affiliates or other third parties.

DiPrete Engineering

August 7, 2025

Diane M. Williamson, Administrative Officer
Bristol Department of Community Development
10 Court Street
Bristol, RI 02809

RE: Master Plan Incompleteness- supplemental submission
Proposed Comfort Inn, Gooding Avenue
Bristol, Rhode Island
Project #: 2536-001-B01

Dear Ms. Williamson:

DiPrete Engineering respectfully submits the following submission to remove the request for Master plan checklist waivers.

Items of the checklist that are provided include:

E2. Renderings, elevation or photographs to illustrate the visual impact of a proposed commercial development.

The Colored Elevation rendering is attached and the cadd drawing is provided on a zip file link.

E3g. a general view shed analysis showing the location and extent of significant views into the property from adjacent public streets.

The attached Colored Elevation is provided.

E26. A photometric plan.

The attached photometric plan analysis is provided.

E27. Renderings to illustrate the visual impact on abutting property.

The attached colored elevation is provided.

E28. Signage including location, size, design and illumination.

The attached elevation plan A201 has proposed 15 sf signage, back lit.

D15/E11. Provide written statement by the Bristol Water Pollution Control Department.

An update on the plan approval for tie into the Bristol of connection is provided dated 8/5/2025.

Other. Landscape Architecture Plan

Provided as requested.

Other. Architectural autocadd drawings

Provided as requested.

Please find below the link to the architectural drawings for the following:

Colored Elevation Rendering with Site Context

A201 Elevation PDF

Zipped file of CAD Base Plans

Zipped file of CAD Elevations

Lighting Photometrics of the building

2025-08-06 Sept Planning Bd

Please feel free to contact me if you have any further questions regarding this matter.

Sincerely,
DiPrete Engineering Associates, Inc.

Christopher Duhamel, PE, PLS
Principal
cduhamel@diprete-eng.com
cc: Dennis DeGrazia
Michael Kelly, Esq.

Comfort Inn & Suites
Planning Board Review
August 15, 2025

Bristol, RI

BTGA No. 2512

BREWSTER THORNTON GROUP ARCHITECTS LLP

DOCUMENTS REVIEWED

- Pre-Applicant Submission, dated 06/03/25
- Applicant Submission Revisions, provided 8/4/25
- Bristol Zoning Ordinance, dated May 19, 2025
- 2016 Bristol Comprehensive Community Plan
- Bristol Subdivision & Development Review Regulations, amended March 14, 2024
- Bristol Conservation Commission, Strategic Tree Canopy Plan, dated March 2024

EXISTING CONDITIONS

EXISTING SITE

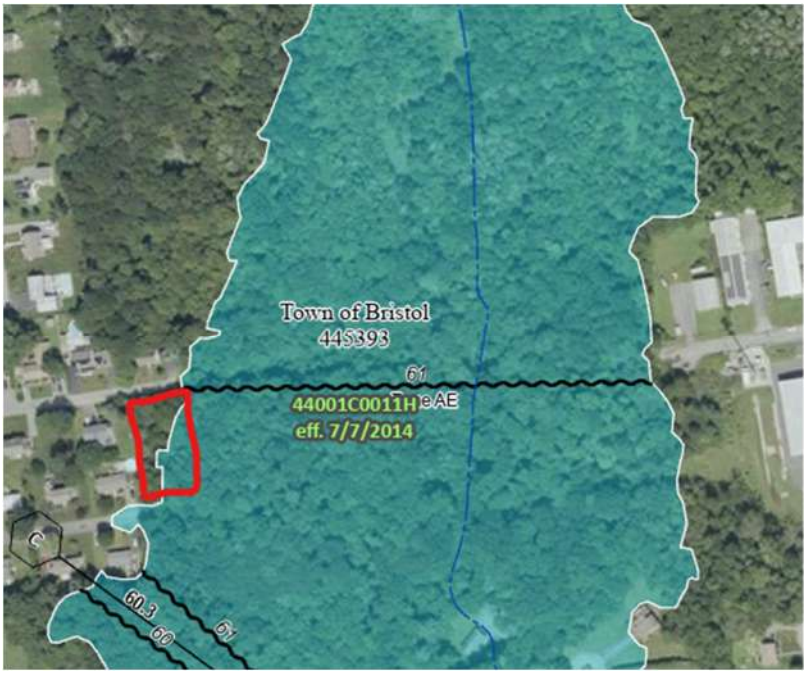
The property is approximately 9.78 acres of densely wooded land. A sewer easement intersects the property from roughly the Northeast corner to the Southwest corner. Wetlands have been identified on the opposite side of that easement from where the development is proposed.

Tax Map – Bristol GIS

Plat: 111 *(Bristol GIS Database-axisgis.com)*
Lot: 1 *(Bristol GIS Database-axisgis.com)*
Zone: General Business (GB) *(Bristol Official Map of Zoning Districts dated 8/3/22)*
Overlay Zones: None *(Bristol Official Map of Zoning Districts dated 8/3/22)*

FEMA Flood Zone *(FEMA Online Mapping refreshed June 2024)*

- Zone X: According to FEMA, no major flood concerns or additional requirements to protect against flooding.
- Zone AE: According to FEMA, this zone requires additional flood prevention measures but is only located in areas of the site not being proposed for development.



FEMA Flood Map (June 2024)

Dimensional Regulations *(Bristol Zoning Ordinance, Article IV)*

Minimum Lot Size: 10,000 SF

- The site complies with this requirement.

Minimum Width: 100 ft

- The site complies with this requirement.

Minimum Frontage: 100 ft

- The site complies with this requirement.

Maximum Lot Coverage by Structures: 40%

- The current proposed design complies with this requirement.

Maximum Lot Coverage by Structures and Pavement: 70%

- The current proposed design complies with this requirement.

Maximum Floor Area Ratio (FAR): 0.5

- The current proposed design complies with this requirement.

Minimum Setback From Residential Zones: 25'

- The current design complies with this requirement.

Minimum Side Yard Setback: 10'

- The current design complies with this requirement.

Minimum Rear Yard Setback: 30'

- The current design complies with this requirement.

Maximum Height Restriction: 35’

- The current design complies with this requirement.

Allowable Permitted Uses: Hotels are permitted in this Zone. *(Bristol Zoning Ordinance Section 28-82)*

NEIGHBORHOOD

Commercial properties primarily run along the Northern side of Gooding Avenue, opposite the site and designated for General Business or Manufacturing. To the South and East of the site, properties have been designated by the Town for Open Space (OS). To the West, General Business runs along Gooding Avenue, surrounded by moderately sized residential properties (R-15), including those immediately adjacent to this proposed development. *(Bristol Official Map of Zoning Districts dated 8/3/22)*

According to historic mapping, the zoning makeup of this area has not changed significantly for as long as mapping has been available (mid-1920s). *(RI DEM Maps & Arieal Photos online database).*

Properties to the North of the Site *(Google Streetview)*

Properties to the West of the Site *(Google Streetview)*

MATERIALS
The properties closest to this development are small, single-story homes of traditional New England style architecture. The adjacent commercial properties are a mix of styles, including flat and pitched roofs. Materials include block, red brick facades, and clapboard/shingle siding.

SIDEWALKS
The North side of Gooding Avenue has a sidewalk that runs the entire length from Metacom Avenue to Hope Street. The South side has a sidewalk that runs from Hope Street to the abutting property but does not extend into this property or beyond toward Metacom.

RETAINING WALLS
No retaining walls are currently present on this site.

LIGHTING
General pole street lighting is present along Gooding Avenue.

COMMUNICATION LINES
Above ground electrical and communication lines are present primarily along the North side of Gooding Avenue, connecting to a single pole on this site to the West corner where electrical transitions to underground.

LANDSCAPING
The properties in this neighborhood are landscaped and well-maintained. They all feature some element of a landscape/tree buffer from Gooding Avenue.

COMPREHENSIVE PLAN OBJECTIVES

Applicants should be considerate of the Town's overarching development goals, including:

- Promote Sustainability
- Promote Conservation
- Increase Sources of Taxable Revenue
- Provide Walkability
- Reduce Excessive Lighting in Residential Neighborhoods
- Promote Good Bristol-Appropriate Design
- Promote Development that is of Appropriate Scale in Relation to Surrounding Residential Neighborhoods
- Promote Safety
- Promote Positive Neighborhood Connections.
- Provide Workforce Opportunities in Town.
- Increase forest cover by 25%
- Promote Recycling
- Provide Parking without Losing Town Character

- Not Over-Tax the Sewer System
- Protect Silver Creek
- Continue Basis Land Use Patterns
- Protect the Residential Character of Existing Neighborhoods.

The Comprehensive Community Plan indicates this parcel of land is flagged for:

- Future Land Use: Mixed Use (Affordable Residential and Commercial)
- A National Historic Candidate.
- Suitable for conservation and open space.

PRECEDENT IMAGES

The following images are of existing Comfort Inn locations that are found to be good examples of designs that fit within the Bristol/New England character and still meet the hotel spatial requirements.

Middletown, RI (55 rooms)

Rockland, MA (101 rooms)

Conway, NH (57 rooms)

New Burke Mountain, VT (107 rooms)

Brunswick, ME (75 rooms)

Brunswick, ME (75 rooms)

Milton, ME (86 rooms)

Dover, NH (79 rooms)

Wilton, ME (86 rooms)

Wilton, ME (86 rooms)

RECOMMENDATIONS

The following recommendations focus on compliance with the reviewed documents, the proposed design, and meeting the overarching goals of the comprehensive plan to create a project that brings value to the Town of Bristol.

APPLICATION CHANGES

1. No signage plan has been provided to BTGA for review at this time.

Photometric Plan

1. Revise photometric plans to show exterior light levels, including any light levels onto the adjacent residential neighborhood. The plan should show no light pollution to the neighboring properties. Interior light levels are not required.

Site Plans

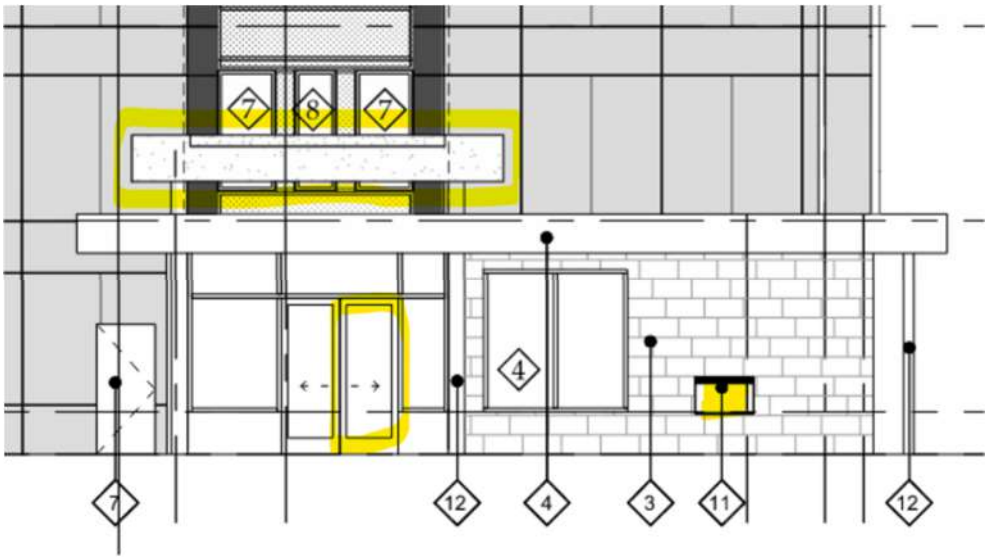
1. Revise the site plan to represent the residential neighbor's driveway and structures accurately.
2. Existing trees depicted appear to be fewer than those shown on Google Street View. A dense line of trees is seen along the residential neighbor's property and Gooding Avenue. Confirm tree placement is accurate.
3. Provide retaining wall design intent including heights and materials.
4. See recommendations throughout for recommended additional site requirements.

Landscape Plan

1. Overall, landscaping is well designed, distributed throughout the site, and provides street trees.
2. Revise the site plan to represent the residential neighbor's driveway and structures accurately.
3. The TRC and Planning Board may require the landscape plan to be reviewed by the Conservation Commission for approval.
4. All existing shrubs and ground cover are to be shown.
5. All plantings that are large for their species, rare to the area, or of other special horticultural or landscape value should be indicated on the plans.
6. The plan shall confirm that plantings are shown at their five (5) year growth stage.
7. The plan should include exterior lighting.
8. The plan should include all maintenance requirements.
9. Where existing plantings are to be retained, the plan shall indicate proposed methods of protecting them during construction.
10. Upon completion of all required plantings, a letter prepared and signed by a registered landscape architect shall be submitted to the Administrative Officer certifying that all landscape/buffer plantings have been properly installed in compliance with the approved landscape plan.
11. See recommendations throughout for recommended additional landscape.

Exterior Elevations

1. Revise the exterior elevation directional tags to be consistent with the plan/site/geographically direction. Consider revising the numbering system to be more logical.
2. Provide updated exterior elevations as they do not currently match the provided renderings.
3. Orient all plans consistently across sheets for readability and clarity.
4. Provide further clarification on the proposed fireplace noted on the exterior elevations.
5. Provide further clarifications on the concrete band shown above the main entry door.
6. The sidelight next to the main sliding glass door does not appear to be large enough to allow the door to open fully.



7. Key plan on elevations should be of the plan and not the RCP.
8. Provide elevation markers on all exterior elevations. Not provided on "B1".

9. Revise window tags for appropriate key notes. Keynote tags and window tags should not be the same design.
10. Confirm what existing elevation is being considered as the “Grade” level.
11. Keynotes 9 and 10 are missing on the exterior elevations.
12. See recommendations throughout for additional building design suggestions/requirements.

Renderings

1. Renderings show more exterior signs than permitted.
2. Renderings should show what will be seen from street level, not a cut through of grade. Show retaining wall materials.
3. The top renderings showing the Northern elevation appears to show grass and a large retaining wall to the East. Indicate how the land be held back to the North in that area.
4. Renderings showing the residential neighbors view are required. The provided renderings do not accurately represent their views.
5. Renderings to show the residential property to the West accurately. Not all structures are shown.
6. The adjacent commercial property is not shown accurately. It is not the same height as the proposed Comfort Inn.
7. The West elevation rendering is not shown accurately. The elevation of the building will be partially concealed by the ground. Plantings would not thrive below ground.
8. People shown in the renderings are not to scale.
9. Provide an awning over the entry door on the West elevation.

COMPREHENSIVE PLAN OBJECTIVES

Applicants should be considerate of the Town’s overarching development goals, including:

1. Promote Sustainability
2. Promote Conservation
3. Increase Sources of Taxable Revenue
4. Provide Walkability
5. Reduce Excessive Lighting in Residential Neighborhoods
6. Promote Good Bristol-Appropriate Design
7. Promote Development that is of Appropriate Scale in Relation to Surrounding Residential Neighborhoods
8. Promote Safety
9. Promote Positive Neighborhood Connections.
10. Provide Workforce Opportunities in Town.
11. Increase forest cover by 25%
12. Promote Recycling
13. Provide Parking without Losing Town Character
14. Not Over-Tax the Sewer System
15. Protect Silver Creek
16. Continue Basis Land Use Patterns

17. Protect the Residential Character of Existing Neighborhoods.

The Comprehensive Community Plan indicates this parcel of land is flagged for:

1. Future Land Use: Mixed Use (Affordable Residential and Commercial)
2. A National Historic Candidate.
3. Suitable for conservation and open space.

BUILDING DESIGN

1. Utilizing Bristol-appropriate materials such as clapboard siding, shingles, and field stone.
2. Provide a New England-style roof shape similar to other Comfort Inns designs in the local area to reduce the overall scale of the building in comparison to the majority one-story residential properties to the West.
3. Install any antennae attached to the building in compliance with Section 28-147 of the Zoning Ordinance.
4. Comply with the signage requirements noted in the SIGNAGE section of this report and within the applicable codes, including limitations on the quantity and size of signs allowed.

Below are example renderings that we believe meet the intent of the design guidelines and the Town of Bristol. The designs suggest materials, roof shapes, and landscaping that enhance the project and still meet the programmatic needs proposed by the applicant. These designs reflect elements of designs already produced by Comfort Inn in other New England locations.

Example Scheme A-1

Example Scheme A-2

Example Scheme A-3

Example Scheme A-4

Example Scheme B-1

Example Scheme B-2

Example Scheme B-3

Example Scheme B-4

CONSERVATION

The Bristol Subdivision & Development Review Regulations give the Planning Board the power to require improvements and dedication of land to mitigate negative impacts of the proposed development or require the applicant to pay a fee to offset these impacts to the site and/or Town.

1. Consider dedicating the portion of the site that is not currently proposed to be developed as Open Space/Conservation Land.
2. Preserve existing trees, especially old growth, wherever possible within the proposed developed area for neighbor buffering and streetscaping. Specifically, preserve the trees along the Western side of the proposed construction.
3. Consider contributing to forest conservation in other areas of Town to aid in the goal of increasing forested areas.

SUSTAINABILITY

The Town requires all developments to prioritize sustainability and energy efficiency through the appropriate selection of building orientation, materials, shading, landscaping, etc. Following LEED guidelines is encouraged. Low Impact Design (LID) strategies are required and must be consistent with the State of Rhode Island Stormwater Design and Installation Standards Manual.

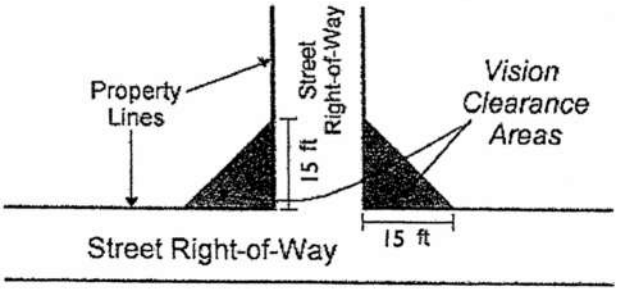
1. Sustainability is not only a priority for the Town of Bristol in their Comprehensive Plan, but an objective all design and construction professionals should ethically adhere to on every project. Consider opportunities for providing a good-faith effort in terms of sustainable development. Adhering to LEED Silver guidelines is a way to balance sustainability practices and would fit within the State of Rhode Island's standards for public projects. This may include, but is not limited to:
    a. Providing rooftop solar panels

b. Installation of low-flow fixtures
c. Installation of an energy-efficient heat source
d. Sourcing materials locally, whenever practical
e. Installing low-emitting, recycled materials
f. Requiring sustainable construction practices like recycling, no-idling policies, etc.

2. Provide evidence of Low Impact Design (LID) strategies and consistency with the State of Rhode Island Stormwater Design and Installation Standards Manual.

SITE IMPROVEMENTS

1. Consider providing one-way circulation in the rear parking area to reduce the overall footprint, create the feel of a smaller-scale parking area, and provide opportunities for plantings and tree shading.
2. Consider the location of the ADA parking spaces in conjunction with how visitors will access the building at any given point during their stay. Providing at least one accessible parking spot close to the main entrance may provide better accessibility for arriving guests, while the spots in the rear parking area may be best for current guests to access the elevators. This will be contingent on the proposed security access design and anticipated circulation.
3. Consider providing Bristol-appropriate materials for the retaining walls and garbage enclosure, such as field stone.
   The trash enclosure must be at least 6 feet in height and fully enclosed. Consider plantings and evergreens around this site feature to minimize its visibility. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.2 Public Improvement and Design Standards, Section K.*
4. Extend existing sidewalks along the site and provide a crosswalk for pedestrians to access the adjacent sidewalk to comply with the Town Comprehensive Plan goals.
5. Consider providing exterior seating areas around the development to promote connectivity per the Bristol Comprehensive Plan.
6. Do not install any improvements within the site triangle located at the site entrance. Bristol Zoning Ordinance Section 28-144.



RETAINING WALLS

Applicants shall be sensitive to and incorporate the natural grade of the site. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards.*

1. Buildings designed to make grade transitions or stepped retaining walls with landscaping is recommended.
2. Retaining walls shall be distributed throughout the site as necessary.

LIGHTING

Lighting should be installed to provide safety, including along sidewalks, entryways, in parking lots, and between buildings. Lighting levels must not infringe on adjacent residential properties per requirements noted throughout the Town of Bristol Subdivision and Development Review Regulations.

1. Provide lighting along the sidewalks, entry, and parking areas to promote safety. Consider dark sky requirements to reduce any unnecessary light pollution and not create a nuisance for the adjacent residential properties. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.1 General Provisions – Standards for Review, Section F.*

COMMUNICATION LINES

All new electric, communication (telephone, fire alarm, and cable TV), and street lighting lines shall be installed underground. Communication lines are not required to be placed underground for: minor subdivisions where no street creation is required, where utilities already exist aboveground; providing, however, that any new lines follow the existing aboveground utilities; or, where the Planning Board finds that aboveground utilities are consistent with the character of the existing neighborhood.

1. Additional overhead communication lines should not be installed on the Southern side of Gooding Avenue to be consistent with existing conditions. Install secondary lines underground to protect against natural disasters and localized loss of power, given the surrounding tree coverage.

SIGNAGE

The Bristol Zoning signage guidelines emphasize simplicity. Designs should be clean, bold, and easy to read. Guidelines specifically note signage to:

1. Have a maximum of three colors.
2. Be compatible with the surrounding area.
3. Compliment the building façade.
4. Use preferred materials like wood/metal.
5. Coordinate with adjacent businesses to have similar scale, height, etc.
6. Be limited to either one wall sign or one awning/canopy sign and either one window, protecting, or freestanding sign. (Total of two signs for any given building).

7. Be illuminated only with a continuous, stationary, shielded, white light source directed solely onto the sign without causing glare or shining onto residential properties and streets.
8. Not be affixed to any utility poles, government-regulated signs (stop signs, street signs, etc.), or natural objects like a rock or tree.
9. Note extend more than five feet above the roof line.
10. Cover architectural details of the building, including but not limited to moldings, cornices, or transom windows.
11. Not impede vision or obstruct access to any street, sidewalk, driveway, parking lot, loading zone, etc.
12. Not extend over any street or right-of-way without approval by the Town Administrator.
13. Have the street number visible to passing traffic.
14. Be limited to 15 SF each.
15. Free-standing signs must not exceed 12 feet in height, have a minimum of 4 feet in ground clearance, and be at least 10 feet from all lot lines (50 feet from residential zones).
16. Not be installed in the site triangle.
17. Given this business is open 24/7, there are no limits to signage lighting hours.

LANDSCAPING

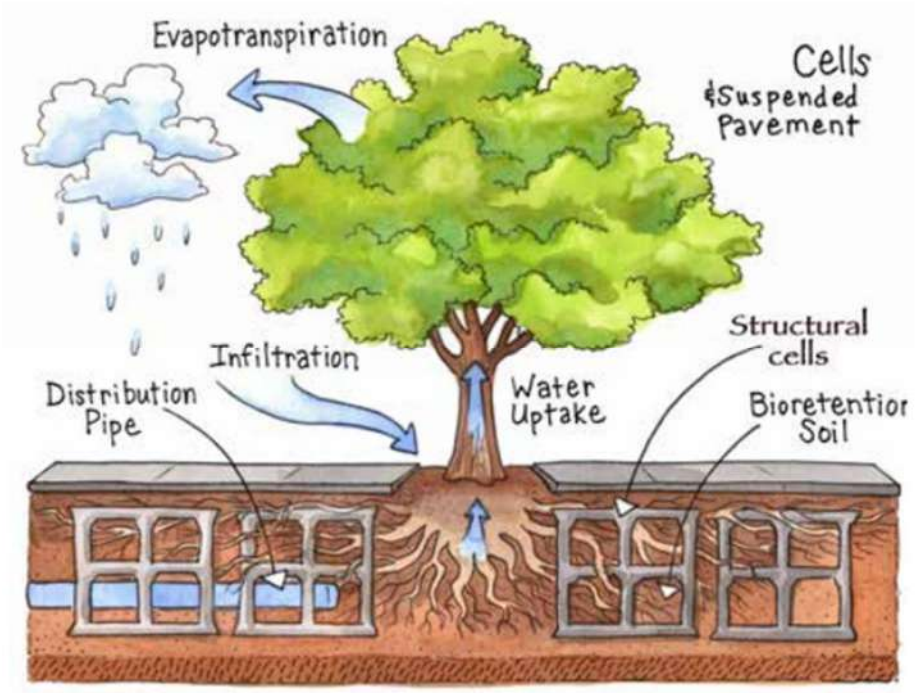
1. Landscaping shall be conceived in a total pattern throughout the site, integrating the various elements of a site design, preserving, and enhancing the site where appropriate. Landscaping and vegetative buffers shall be utilized to separate residential areas from major roadways, commercial, and manufacturing areas. The minimum amount of site area that should be landscaped is 30% in the General Business zone. Landscaping includes plant materials such as trees, shrubs, ground covers, grass, and flowers, and may also include other materials such as rocks, berms, woodlands, stone walls, and planters. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.2 Public Improvement and Design Standards, Section K.*

2. Landscaping must be provided at the following locations:
    a. All site entrances
    b. Public areas
    c. Parking areas
    d. Drainage facilities, such as retention/detention basins, or drainage swales
    e. Open Space areas
    f. Proposed recreation facilities
    g. Buffer areas
    h. Rubbish disposal areas as screening
    i. Lot areas that are disturbed during the construction process or where extensive grading removes a significant amount of natural vegetation
    j. Areas subject to regrading or stabilization for soil erosion and sediment control purposes

    Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.2 Public Improvement and Design Standards, Section K.

3. Install plantings and landscape materials must be appropriate for their intended use and local environment (Zone 6), soil conditions, and availability of water. The use of grasses that require minimal watering and fertilization is encouraged. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.2 Public Improvement and Design Standards, Section K and F.1 General Provisions-Standards for Review, Section E and H.*
4. Install plantings and landscape that promote conservation and sustainability to comply with the Towns Comprehensive Plan and Strategic Treen Canopy Plan.
5. Provide a substantial planting buffer between the proposed development, including the parking area, and the adjacent residential neighborhood. At a minimum, install compact evergreens at least six feet tall along the entire length of the West side of the developed area. *Bristol Zoning Ordinance Section 28-155.*
    a. When selecting plantings being used as a buffer, consider their buffering capabilities during all seasons.
    b. Consider installing solid fencing along this buffer zone. Materials should be consistent with Bristol guidelines. Chain link fencing is not appropriate for this location.
    c. Consider including maintenance and replacement requirements for all buffer plantings and fencing to ensure damage and deterioration do not negatively affect the neighbors in the future.
6. Do not remove any suitable topsoil. Provide evidence of topsoil condition and preservation to the Authorities Having Jurisdiction before needed Town approvals are made throughout the process. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.2 Public Improvement and Design Standards, Section K.*
7. Install street trees along Gooding Avenue. Street trees must be planted at not less than 30 feet apart, but not more than 50 feet. Trees must not be planted within 25 feet of a street corner/intersecting right-of-way. Trees shall be of nursery stock grown under local climatic conditions and of a type as recommended by the Bristol Conservation Commission and approved by the Planning Board. Species that have been introduced to this region by way of Bristol are preferred. See the Bristol Development regulations for a list of approved species. The average trunk diameter measured at a height of six (6) inches above the finished grade shall be a minimum of 2½ inches at the time of planting. Street trees shall have a minimum overall height of eight (8) feet. Street trees shall be of symmetrical growth, free of insect pests and disease, suitable for street use, and durable under the maintenance contemplated. Existing trees on the site, which are suitable for use as street trees, may be used if inspected and approved by the Tree Warden before planting. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards, F.2 Public Improvement and Design Standards, Section B.*
8. Install all trees per the Conservation Commission recommendations, noted in the Strategic Tree Canopy Plan, dated March 2024.

Bristol Conservation Planting Guide



Recommended Tree Installation Near Sidewalks (Bristol Conservation)

9. Planting shall be done during the proper season, and no planting shall be done in frozen soil or during unfavorable weather conditions. Each tree shall be planted plumb, slightly lower than where it stood in the nursery (in relation to the finished grade) and shall be thoroughly watered when the hole is two-thirds full of loam. Loam shall be clean, of good quality, and of such fertility and composition that it will continuously support plant growth. After watering, the filling shall be complete, and the loam thoroughly tamped. After planting, a three-inch mulch of well-seasoned manure or peat shall be applied over the disturbed ground, and a shallow watering basin provided

around the tree. Each tree shall be secured by double staking in such manner as to ensure maximum stability and to prevent whipping of the tree in high winds. Such staking shall be accomplished with a pair of 2 ½ inches by 8 feet stakes driven plumb 2 ½ feet into the ground and tied at the tops and bottoms with figure-eight hitches of No. 4 gauge wire encased in rubber hose or its equivalent. All trees shall be watered and maintained by the applicant to ensure that suitable growth has been established and maintained. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards.*

10. Vegetated buffers shall be planted and maintained where required to avoid adverse impacts from adjacent uses. The width of such buffer easement shall be determined by the Planning Board. The applicant shall propose plantings within the buffer as well as a maintenance plan, which shall be reviewed by the Bristol Conservation Commission and approved by the Planning Board. The maintenance plan shall include a provision whereby failure to maintain the buffer will result in maintenance by the Town at the owner's expense. The buffer easement may be bounded as determined by the Planning Board by either a stone wall, split rail fence, or other similar treatment to demarcate the easement area. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards.*
11. If the topsoil on a site is suitable for landscaping, then it shall not be removed. To the maximum extent practicable, the applicant shall minimize the areas of the site to be regraded or disturbed. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards.*
12. It is the Town's goal to protect and preserve healthy trees and other plant specimens that are large for their species, rare to the area, or of special horticultural or landscape value. Applicants are encouraged to incorporate these natural features into the design of the development. *Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards.*

SCREENING

Town of Bristol Subdivision and Development Review Regulations, Appendix F, Design and Construction Standards and Bristol Zoning Ordinance Article VIII.

1. Fencing, walls, or vegetative screening are required along the perimeter of any development where a buffer is deemed needed to preserve public viewsheds, provide acoustic separation, and minimize the impacts on the surroundings, especially in locations adjacent to residential districts. The proposed plan provides an evergreen buffer along the East and South perimeter of the proposed developed area. Regulations require a double row of compact evergreens at least four feet tall. The proposed design locates the main entry away from the adjacent residential district. Windows and doors along the Western façade of the building are limited to the stairwell and likely an emergency stair exit door, located half a story or more below grade.
2. Do not cut down trees along the western side of the property to maintain old-growth vegetation between the building/parking area and the existing residential neighbors.
3. Off-street parking larger than 10 spaces should be screened from the view of residential districts and public streets. The proposed design locates the majority of parking in the rear of the building,

which would be largely screened from public view but currently may have sight lines from the adjacent residential properties to the West.

4. Service areas should be screened from public and residential views.
    a. The current design provides an enclosure around their trash collection area. Install dense plantings or fencing around the transformer to conceal it from the view of Gooding Avenue and the adjacent neighbors. Comply with all RI Energy transformer design guidelines. Consider painting bollards a color that helps conceal them from view.
    b. The loading zone is located at the rear of the building, screened from public view, but may have sight lines from the adjacent residential properties to the West.
5. Utility areas must be screened from public and residential views. The current design places the ground-mounted transformer at the front Northwest corner of the property, closest to the road and residential neighborhood. Bollards are shown to protect the transformer, but no screening is currently proposed in the documents provided.

PLANTING NOTES:

1. CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS BY NOTIFYING DIG-SAFE AT 811 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION OR SITE PREPARATION AND ANY/OR ALL LOCAL UTILITY COMPANIES AS REQUIRED.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS BY THE CONTRACTOR. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR THIS PROJECT.
3. CONTRACTOR TO PROVIDE A TWO (2) YEAR GUARANTEE FOR ALL MATERIALS. CONTRACTOR GUARANTEES THAT PLANTS WILL REMAIN HEALTHY FOR TWO (2) GROWING SEASONS. CONTRACTOR TO MAINTAIN ALL PLANTING AND LAWNS UNTIL FINAL PROJECT ACCEPTANCE. GUARANTEE PERIOD TO COMMENCE AT FINAL ACCEPTANCE. ANY REPLACEMENT PLANTS SHALL BE OF THE SAME SIZE AND SPECIES AS SPECIFIED WITH NEW GUARANTEE COMMENCING ON THE DATE OF REPLACEMENT.
4. ALL PLANT MATERIAL SHALL CONFORM, IN ALL RESPECTS, TO THE GUIDELINES OF "THE AMERICAN STANDARD FOR NURSERY STOCK," LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION, INC. ALL PLANTS SHALL BE NURSERY GROWN AND SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS.
5. PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
6. ALL PLANTS TO BE PLANTED SO THAT AFTER SETTLEMENT THEY BEAR THE SAME RELATION TO THE SURROUNDING GROUND AS TO THEIR ORIGINAL GRADE BEFORE DIGGING.
7. CREATE SAUCER AROUND INDIVIDUAL PLANTS CAPABLE OF HOLDING WATER . ALL PLANTS TO BE FLOODED WITH CLEAN WATER TWICE WITHIN THE FIRST 24 HOURS OF PLANTING. ADDITIONAL WATERING SHALL BE MADE AS REQUIRED TO KEEP PLANTS FROM WILTING AND DRYING OUT UNTIL FINAL ACCEPTANCE.
8. ALL PLANTS TO RECEIVE A MINIMUM OF (2) INCHES TO A MAXIMUM OF THREE (3) INCHES OF AGED PINE BARK MULCH AND SHALL COVER PLANTING BEDS WITHIN 72 HOURS AFTER PLANTING AS SHOWN ON DRAWINGS.
9. TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
10. RECOMMENDED DATES FOR PLANTING ARE MARCH 15 TO JUNE 15 AND SEPTEMBER 15 TO NOVEMBER 15.
11. ALL LANDSCAPED AREAS SHALL BE KEPT FREE OF WEEDS AND DEBRIS. ALL VEGETATION WITHIN SAID AREAS SHALL BE MAINTAINED FREE OF PHYSICAL DAMAGE CAUSED BY CHEMICALS, INSECTS, DISEASES, LACK OF WATER OR OTHER CAUSES. DAMAGED PLANTS SHALL BE REPLACED WITH THE SAME OR SIMILAR VEGETATION ON AN ANNUAL BASIS.
12. LOAM MOVED ON SITE TO BE STOCKPILED AND RETAINED AND TO BE USED AS REQUIRED FOR THE LANDSCAPE DESIGN. LOAM SHALL NOT BE MIXED WITH ANY UNSUITABLE MATERIALS OR SUBSOIL. EXCESS LOAM TO REMAIN ON THE OWNER'S PROPERTY AND ONLY REMOVED WITH THE OWNERS PERMISSION. NEW LOAM SHALL BE FRIABLE, FERTILE, MEDIUM TEXTURED SANDY LOAM THAT IS FREE OF TOXIC MATERIALS TO HEALTHY PLANT GROWTH AND SURVIVAL. LOAM SHALL BE FREE OF MATTER 1" OR GREATER IN DIAMETER AND WHEN TESTED SHALL HAVE A PH BETWEEN 5.5 AND 7.5. CONTRACTOR TO PROVIDE 8 INCHES OF GOOD QUALITY, LOAM AND/OR REUSE EXISTING LOAM TO PROVIDE A MINIMUM 6 INCH DEPTH. CONTRACTOR TO LOAM AND SEED ALL DISTURBED AREAS USING AN ENDOPHYTE ENHANCED MIX (AVAILABLE FROM ALLEN'S SEED STORE, SOUTH COUNTY TRAIL, EXETER, RI) OR APPROVED EQUAL. APPLY AT A RATE OF 5-7 LBS. PER 1000 SQUARE FEET. CONTRACTOR SHALL SOD OR OVERSEED ANY AREAS NOT COVERED SUBSTANTIALLY WITH GRASS AFTER ONE YEAR FROM PLANTING.
13. ANY DISTURBED AREA DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL STATE BY THE CONTRACTOR BEFORE COMPLETION OF THE PROJECT.
14. THESE PLANS ARE FOR LANDSCAPE PLANTING ONLY.
15. LIGHTING DESIGN BY OTHERS.
16. THESE PLANS ARE NOT FOR CONSTRUCTION AND ARE FOR PERMITTING PURPOSES ONLY.

NOTE:

1. SEE LANDSCAPE NOTES AND DETAILS SHEET FOR TOWN OF BRISTOL REGULATIONS REFERENCED.

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5890 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

REGISTERED LANDSCAPE ARCHITECT
ALEXANDRA C. AVERY
NO. 431

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE ORIGINAL WET SEAL AND SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SEQUENCES AND PROCEDURES OF CONSTRUCTION IN CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND NOT GUARANTEED TO BE ACCURATE OR COMPLETE. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES.

No.	Date	Description	By
0	08/07/2025	Landscape Plan Submission	A.C.A.

Drawn By: D.R.N. Design By: K.J.D.

LANDSCAPE PLAN
Comfort Inn & Suites

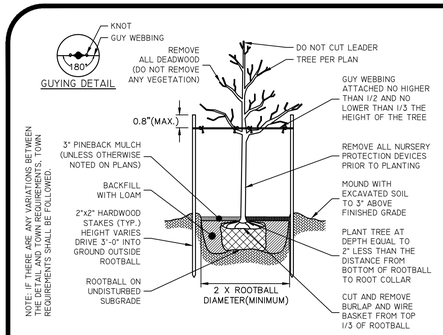
AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

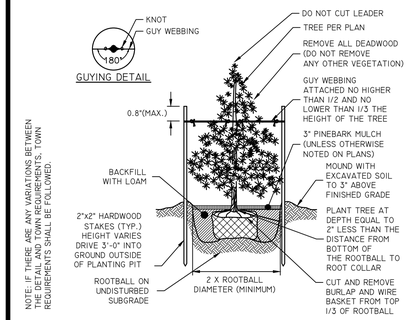
SHEET — OF 2

z:\domain\projects\2536-001 gooding avenue\autocad drawings\2536-001-larc.dwg Plotted: 8/7/2025



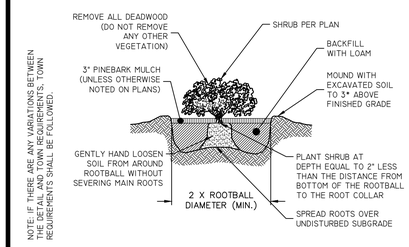
LARGE TREE STAKING AND PLANTING DETAIL
(2" CALIPER AND GREATER)

NOT TO SCALE



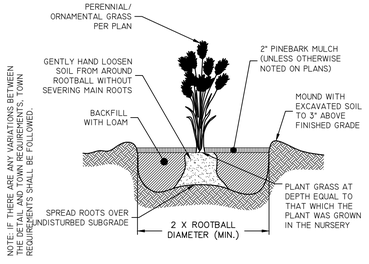
EVERGREEN TREE PLANTING DETAIL
(4'-0" HIGH AND GREATER)

NOT TO SCALE



CONTAINER GROWN SHRUB PLANTING DETAIL

NOT TO SCALE



PERENNIAL/ORNAMENTAL GRASS PLANTING DETAIL

NOT TO SCALE

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL
TREES						
	AC	1	Acer japonicum 'Green Cascade'	Green Cascade Fullmoon Maple	4`/5` B&B	
	CC	9	Crataegus crus-galli	Cockspur Hawthorn	B&B	2.5" CAL MIN
	KP	1	Koelreuteria paniculata	Golden Rain Tree	B&B	2.5" CAL MIN
	LS	5	Liquidambar styraciflua 'Slender Silhouette'	Slender Silhouette Sweet Gum	B&B	2.5" CAL MIN
	SR	4	Syringa reticulata	Japanese Tree Lilac	B&B	2.5" CAL MIN
	TC	2	Tilia cordata	Littleleaf Linden	B&B	2.5" CAL MIN
	ZS	2	Zelkova serrata	Japanese Zelkova	B&B	2.5" CAL MIN

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	FIELD2
SHRUBS						
	CS	3	Cornus sericea	Red Twig Dogwood	3/4` HT	
	HA	12	Hydrangea arborescens 'Incrediball'	Incrediball White Hydrangea	5 gal	
	HQ	12	Hydrangea quercifolia 'Sike's Dwarf'	Sike's Dwarf Oakleaf Hydrangea	3 gal	
	IC	39	Ilex crenata 'Helleri'	Heler Japanese Holly	5 gal	
	ISC	9	Ilex crenata 'Sky Pencil'	Sky Pencil Japanese Holly	4/5` HT	
	IS	12	Ilex glabra `Shamrock`	Shamrock Inkberry Holly	5 gal	
	PL	13	Prunus laurocerasus 'Otto Luyken'	Otto Luyken English Laurel	5 gal	
	RR	27	Rosa x 'Radwhite'	White Knock Out® Rose	3 gal	
	TT	29	Thuja occidentalis 'Techny'	Techny Arborvitae	4/5` HT	
GRASSES						
	CXA	10	Calamagrostis x acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	2 gal	
	CM	29	Carex muehlenbergii	Sand Bracted Sedge	1 gal	
	FG	51	Festuca glauca 'Elijah Blue'	Elijah Blue Fescue	1 gal	
	PV	22	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	2 gal	
	PAH	42	Pennisetum alopecuroides 'Hameln'	Hameln Fountain Grass	2 gal	
PERENNIALS						
	AB	18	Astilbe x arendsii 'Bridal Veil'	Bridal Veil Astilbe	1 gal	
	HP	12	Hosta plantaginea	Fragrant Hosta	1 gal	
	LM	60	Liriope muscari 'Monroe's White'	Monroe's White Lilyturf	1 gal	

BRISTOL ZONING REG ART VIII

(3) *Setbacks*. No parking or loading space or aisle (back-up space) shall be less than ten feet from any front lot line. No parking space or aisle shall be less than five feet from any building, except where greater setbacks are required. Parking spaces less than ten feet from any building shall be separated from such building by raised curb, bumper or wheel guards. The requirements of this subsection shall not apply to detached single or two-family dwellings.

(10) *Screening*. Where a loading area or an off-street parking area for four or more cars is located in or adjacent to a residential zone or use, a landscaped buffer of at least three feet in width, together with an opaque fence or a compact evergreen screen not less than five feet in height shall separate such area and the adjoining property or street.

(11) *Landscaping*. For parking areas with more than 20 spaces located in any zone, the interior of such parking areas shall be suitably landscaped with trees, shrubs, vegetation or ground cover. Such areas shall be appropriately located to prevent long, uninterrupted rows of parking spaces. landscaped areas shall be separated and protected from parking areas by curbing or other means. Where trees are required, such trees shall meet the requirements set forth in the design guidelines of the town subdivision and development review regulations at F.2.B(13). The following landscaping shall be provided:

a. Along the street frontage, a three-foot planted strip with one shade tree for every 40 feet of frontage.
b. Along interior lot lines, a three-foot planted strip with one shade tree for every 50 feet of interior lot lines. A hedge of compact evergreens or other suitable plantings may be substituted for the planted strip.
c. The interior of such parking areas shall have a minimum of ten square feet of landscaping for each parking space, and shall be shaded by deciduous trees. At maturity, each tree shall be presumed to shade a circular area having a radius of 15 feet with the trunk as the center. There shall be sufficient trees so that, using this standard, 20 percent of the parking area will be shaded. Trees shall be surrounded by a minimum of 180 square feet of unpaved area, which may be counted towards calculating the required landscaping.

Parking area or *lot* means all that portion of a development that is used by vehicles, the total area used for vehicular access, circulation, parking, loading, and unloading.

BRISTOL SUBDIVISION REG F.2.B(13)

(13) Street Trees.

Where existing tree growth is determined by the Planning Board or Technical Review Committee (TRC) to be insufficient, the Planning Board or TRC shall require the applicant to plant street trees along both sides of all new streets within developments or along the existing streets abutting the development in accordance with the approved landscape plan. Street trees shall be appropriate for the terrain, soil and climatic conditions encountered in the development, and in accordance with the following standards:

(a) Location - Street trees shall be planted within street rights-of-way along both sides of the street.

(b) Spacing - Trees shall be planted at distances of not less than thirty (30) feet nor more than fifty (50) feet apart along each side of the street pavement. At street corners, trees shall not be planted within twenty- five (25) feet of the intersecting right-of-way lines.

(c) Type - Trees shall be of nursery stock grown under local climatic conditions and of a type as recommended by the Bristol Conservation Commission and approved by the Planning Board. Species which have been introduced to this region by way of Bristol are preferred, including the following. For additional recommended tree species, reference Appendix H.

(d) Size - The average trunk diameter measured at a height of six (6) inches above the finished grade shall be a minimum of two and one half (2½) inches at time of planting. Street trees shall have a minimum overall height of eight (8) feet.

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5890 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

REGISTERED LANDSCAPE ARCHITECT ALEXANDRA C. AVERY NO. 431

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER.
DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SEQUENCES AND PROCEDURES OF CONSTRUCTION FOR CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.
EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND MAY BE INCOMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES.

No.	Date	Description	By:
0	08/07/2025	Landscape Plan Submission	A.C.A.
			Design By: K.J.D.
			Drawn By: D.R.N.

LANDSCAPE NOTES & DETAILS

Comfort Inn & Suites

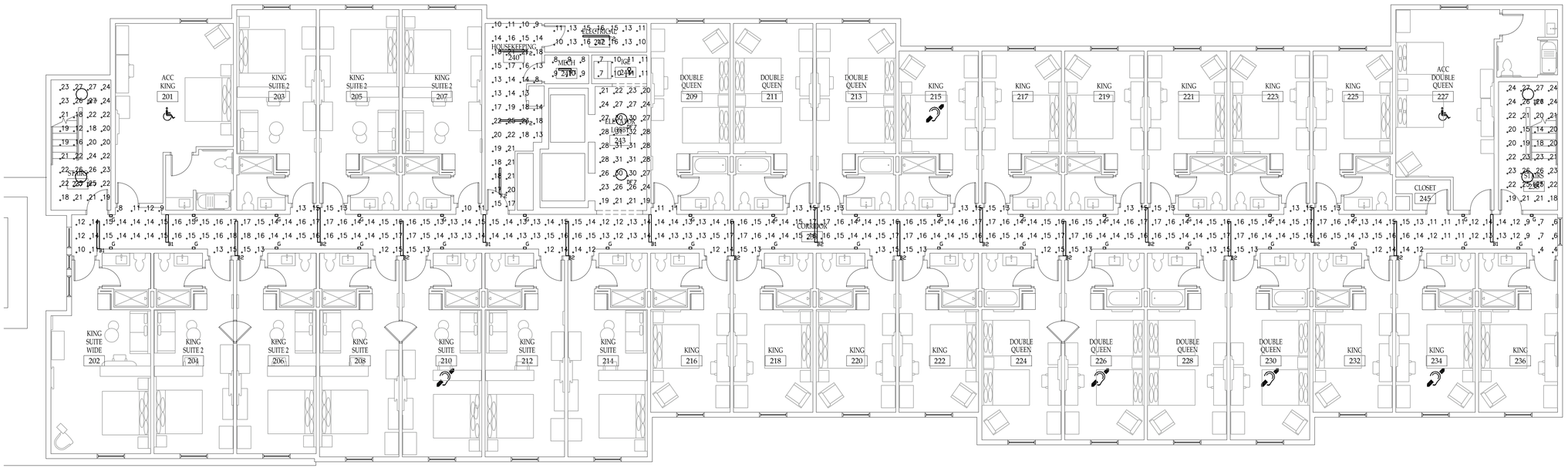
AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant
D&M BOCA DEVELOPMENT, LLC
92 Fiaunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 2 OF 2

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

z:\dema\projects\2536-001 gooding avenue\autocad drawings\2536-001-larc.dwg Plotted: 8/7/2025



TYPICAL SECOND AND THRID FLOOR LIGHTING PHOTOMETRIC PLAN

1 / LP-2 SCALE: 1/8" = 1'-0"

NOTICE

This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing.These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. _____ INTERIORS _____

SEAL:

TITLE: TYPICAL SECOND AND THRID FLOOR LIGHTING PHOTOMETRIC PLAN

SILVESTRI
ARCHITECTS · PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

DATE:

DRAWING #: LP-2

FUSS & O'NEILL

MEMORANDUM

TO: Diane M. Williamson, Administrative Officer
Bristol Department of Community Development
10 Court Street, Bristol, RI 02809

FROM: Amy Johnson, PE

DATE: August 22, 2025

RE: Master Plan Review - Comfort Inn and Suites
Gooding Avenue Hotel Special Permit and Site Plan Review
Fuss & O'Neill Reference No. 20250382.A10

Fuss and O'Neill has reviewed the documents and correspondence listed below submitted by the Application and Applicant's representatives for the above-reference project and offers the review comments listed below. This review is limited Master Plan Major Land Development submission requirements related to the proposed commercial development.

- Architectural Colored Elevations "Comfort Inn & Suites, Gooding Avenue, Bristol, RI 02809", Dated March 12, 2024, Prepared by Silvestri Architects.
- Architectural Plans "Comfort Inn & Suites, Gooding Avenue, Bristol, RI 02809", Dated May 6, 2024, Prepared by Silvestri Architects.
- Request for Certificate Tax Year 2024, dated May 16, 2025
- Fiscal Impact Study, Proposed Hotel Development, Town of Bristol RI, Prepared by: JDL Enterprises – Joseph D. Lombaro, AICP, Dated May 2025
- Application Form for Major Land Developments and Major Subdivisions, dated May 15, 2025
- Major Subdivision or Major Land Development Checklist, dated May 20, 2025
- Plans Entitled "Comfort Inn & Suites, Located on Gooding Avenue, Bristol, Rhode Island, Prepared for Diane Williamson, Dated February 28, 2024, Revised June 5, 2025
- Project Narrative & Environmental Impact Statement, prepared by DiPrete Engineering on behalf of the Applicant D&M Boca Development, LLC, dated June 5, 2025
- "Master Plan Incompleteness Response to Comments" prepared by DiPrete Engineering, dated June 6, 2025
- "Comfort Inn Master Plan Re-submission, Incomplete Application" Letter prepared by Diane Williamson to Applicant, dated June 16, 2025
- Memorandum "Comfort Inn & Suites Request for Waivers", prepared by Diane Williamson, Department of Community Development Director, to the Planning Board, dated July 7, 2025.
- Email "RE: Memorandum to the Planning Board" sent by Micheal Resnik to Diane Williamson, dated July 8, 2025.

The following documents were provided in the Master Plan submission prepared by DiPrete Engineering, but not reviewed by Fuss & O'Neill as they are not required as part of the Master Plan review.

- Permit to Alter Freshwater Wetlands, prepared by RIDEM dated December 6, 2024

- Traffic Impact Assessment, Prepared by Solli Engineering, sated April 14, 2023, Revised January 10, 2024
- Water Availability Request, Bristol County Water Authority, Dated January 27, 2025, prepared by D&M Boca Development, LLC.
- Stormwater Management Report, prepared by DiPrete Engineering, dated January 19, 2018, revised March 27, 2025
- Abutter Map with 200' buffer and Abutter List generated from Town of Bristol Assessor Database and GIS data, dated April 8, 2025
- Letter "Gooding Avenue Hotel Availability of Sanitary Sewer" prepared by Jose Da Silva, Superintendent of Water Pollution Control Department, to DiPrete Engineering, dated May 26, 2023
- Email "Hotel on Gooding" prepared by Liz Funt, sent to Diane Williamson, dated June 28, 2025
- Letter "Comfort Inn Hotel, Gooding Ave, Bristol, RI" prepared by Jose Da Silva, Superintendent of Water Pollution Control Department, to Diane Williamson, dated July 2, 2025

Major Land Development Checklist Comments

The following items from the Town of Bristol Master Plan Major Land Development Checklist are missing from the Applicants Submission:

1. Required Forms and Documents:
    a. Per checklist item A.1: "Completed Application Form". Provide name of President or Secretary of D&M Boca Development, LLC.

2. General Information
    a. Per checklist item B.6: Provide deed book and page for parcel information on plans.
    b. Per checklist item B.7: Sheet 4 Existing Resource Plan is missing from the cover page. Revise.
    c. Per checklist item B.9: Names, addresses, and Plat/Lot identified of abutting property owners and property **within 200' of parcel**(s). This information shall be provided on the plans. Revise plans to include information for owners and properties within 200' of parcel.
    d. Per checklist item B.10: "Names and addresses of any agencies or adjacent communities requiring notification under these regulations". Provide information on Plan as required.

3. Existing Conditions
    a. Per checklist item C.9: FEMA 100-Year floodplain boundary is shown on plans, but specific base flood elevation is not listed and FEMA boundary in existing legend should relate to base flood elevation for clarity.
    b. Per checklist item C.11: If there are no soil contaminants present on site, please note this within the plans.
    c. Per checklist item C.15: Boundaries of applicable watershed for the parcel. The Post-Development Wastershed Map does not show the most up to date layout of the site based on the June 6th plans. For example, the landscaped items shown on the plan do not match the current layout. Revise the watershed figures to illustrate the current site layout.
    d. Per checklist item C.20.d Wellhead protection area is not listed under General Note 6 on the General Notes and Legend Plan Sheet 3 of 13.

4. Supporting Materials:
    a. Per checklist item E.2 & E.27: Provide renderings or photographs to illustrate the visual impact of commercial development on abutting properties.
    b. Per checklist item E.3.(g) The narrative does not address a general viewshed analysis, showing the locations and extent of significant views both from and within the proposed development parcel as well as anticipated views into the property from the adjacent public or private streets and properties. Provide in resubmission for Master Plan to be deemed complete.
    c. Per checklist item E.11: "For subdivisions/developments proposing service by public sewer, copies of a written statement from the Bristol Water Pollution Control Department that the proposed plan, with plan revision date indicated, has been reviewed and which provides: a. Approval of connection to the existing sewer main as depicted on the plan; and b. If extension is proposed, approval of extension of the sewer main as depicted on the plan."
        i. Per the letter from Town of Bristol, Diane Williamson, dated July 7, 2025, stating the latest plans (June 6, 2025) do not provide enough detail for the approval of the proposed sewer connection which is checklist requirement for the Master Plan. Resolve the concerns of the Bristol Water Pollution Control Department outlined in the July 2, 2025 letter from Superintendent Jose Da Silva and provide correspondence regarding resolution and approval of service to the development.
    d. Per checklist item E.14 Provide written comments on the plans by the listed officials, committees, directors, and departments.
    e. Per checklist item E.26 Provide a Photometric Plan.
    f. Per checklist item E.28 Provide plan showing proposed signage location, size, design, and illumination.

Plan Comments

1. General Notes & Legend (Sheet 3 of 13)
    a. General Note 10 states that the site has no waivers. Revise if waiver requests are maintained.
2. Existing Resource Plan (Sheet 4 of 13)
    a. Side yard setback is on the western property line is mislabeled as front yard setback.
3. Erosion & Sediment Control Plan (Sheet 5 of 13)
    a. Limit of disturbance on plan sheet legend does not match line type on General Notes and Legend Sheet (Sheet 3 of 13).
    b. Temporary 68' contour does not tie into existing contours within Filtrexx sediment perimeter control. Revise erosion control or temporary contour, as needed.
    c. Label elevations of temporary contours.
4. Site Layout Plan (Sheet 6 of 13)
    a. Provide detail for how compact parking stalls will be demarcated from standard parking stalls.
    b. Along the southern boundary of the development, the retaining wall is shown on top of the vegetative screening. Revise plan to show spacing between vegetative screening and retaining wall and update limit of disturbance as needed.
    c. Provide intent for crosswalk location across drive aisle and drop off lane.
5. Grading Plan (Sheet 7 of 13)
    a. Add contour labels to all proposed contours.

   b. Add spot grades between the two 76' contours in the north end of the site to the west of the driveway to clarify grading intent.
   c. Add spot grades within concrete plaza to show grading intent at building entrance on the east side.
   d. Add spot grades within parking lots, on south side of the building, to show how runoff will be conveyed to the catch basins along the southern perimeter of the parking lot or the slot drain across the sidewalk. The building's finish floor elevation is lower than rim elevations of catch basins within the parking lot.
6. Drainage and Utilities Plan (Sheet 8 of 13)
   a. Provide rim and invert information for DMH-8 (Bypass) and DMH-9 (Bypass).
   b. Provide rim elevation of Slot Drain-20.
   c. Rim elevation does not appear accurate for DI-5 based on proximity to 78' contour. Revise rim elevation.
   d. Cover of DMH-3 is located within the curb line and the structure will conflict with the installation of the concrete curb. Revise location of DMH-3.
7. Underground System A & Details (Sheet 10 of 13)
   a. Based on Slot Drain-20 rim elevation of 76.72' on the Grading Plan Sheet and assuming a typical curb reveal of 6", the parking lot finish grade is 76.22' at the bottom of curb. The top stone elevation over the UIS-A is listed at 76.50'. The 18" minimum cover is not provided over the system in this location.
   b. Provide maximum loading and minimum cover requirements for pipes within the UDS-A system.
   c. Based on groundwater table findings in TP-7 and TP-5 the groundwater table elevation is approximately 76' and 73.7', respectively. Provide buoyancy calculations for UDS-A since the system is located within the groundwater table.
8. Underground System B, Sand Filter & Details (Sheet 11 of 13)
   a. Separation of bottom of sand filter practice and groundwater table is 1-ft and not in compliance with the minimum separation requirement of 3 feet per 250-RICR-150-10-8.21.B.7.

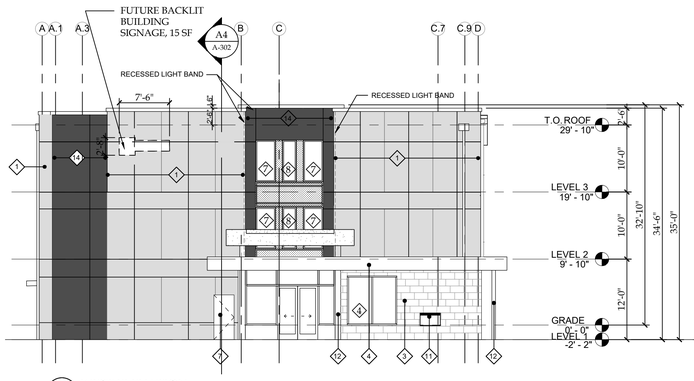
Please contact Amy Johnson at (401) 861-3073 if you have any questions.

Peer Reviewer Contact Information:
Amy Johnson, PE
Project Manager
Office: 5 Fletcher Street Suite 1
Kennebunk, ME 04043
email: amy.johnson@fando.com

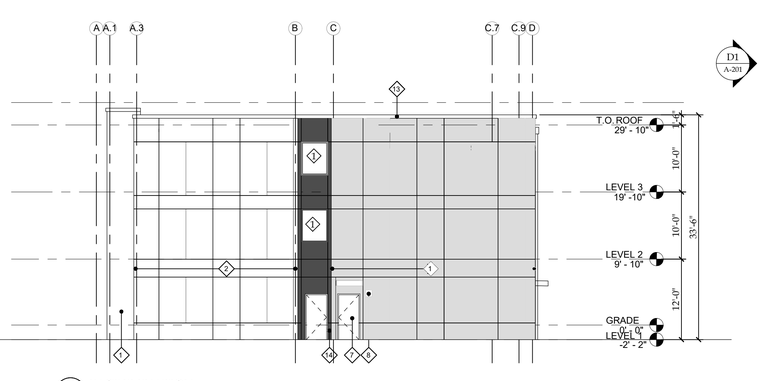
TRC Representative Contact information:
Bree D. Sullivan, PE
Associate | Office Manager
Office: 600 Unicorn Park Drive
Woburn, MA 01801
email: bree.sullivan@fando.com
Phone: 781-287-9919

AJ:mjt

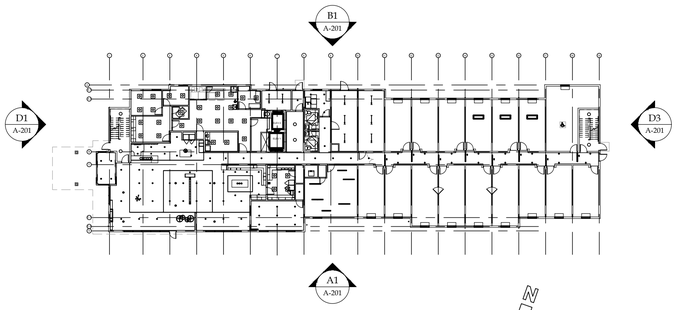
KEYNOTE LEGEND - EXTERIOR ELEVATIONS			
NUMBER	MATERIAL	NOTE	TEXT
1	EIFS	SMOKIE AZURITE (SW-9148)	PTD
2	EIFS	ICICLE (SW-6238)	PTD
3	CORONADO STONE	FRENCH LIMESTONE - COUNTRY BEIGE	PREFINISHED
4	SIGNATURE LIGHTED AWNING	PREFABRICATED LIGHT BOX, SEE ARCHITECTURAL SPECIFICATIONS	PREFINISHED
5	WINDOW FRAME	INTEGRATED PTAC GRILLE WHERE SHOWN - CLEAR ANODIZED ALUMINUM	PREFINISHED
6	EIFS	QUEST GRAY (SW-7080)	PTD
7	DOOR & DOOR FRAME	MATCH ADJACENT WALL COLOR	PTD
8	LIGHTING WALL PACK	EXT-404	-
11	FIREPLACE	DOUBLE-SIDED SEE-THRU	-
12	STEEL COLUMN WRAP	BRUSHED STAINLESS STEEL	PREFINISHED
13	PARAPET COPING	MATCH ADJACENT WALL COLOR	PTD
14	EIFS	COMFORT BLUE PER ARCHITECTURAL SPECIFICATIONS AND OWNER SELECTED BASE PAINTS	PTD



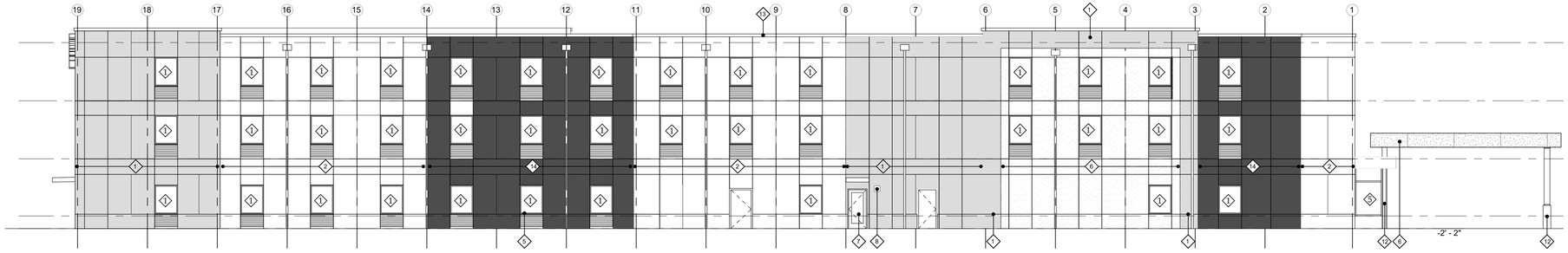
D1 WEST ELEVATION
SCALE: 3/32" = 1'-0"



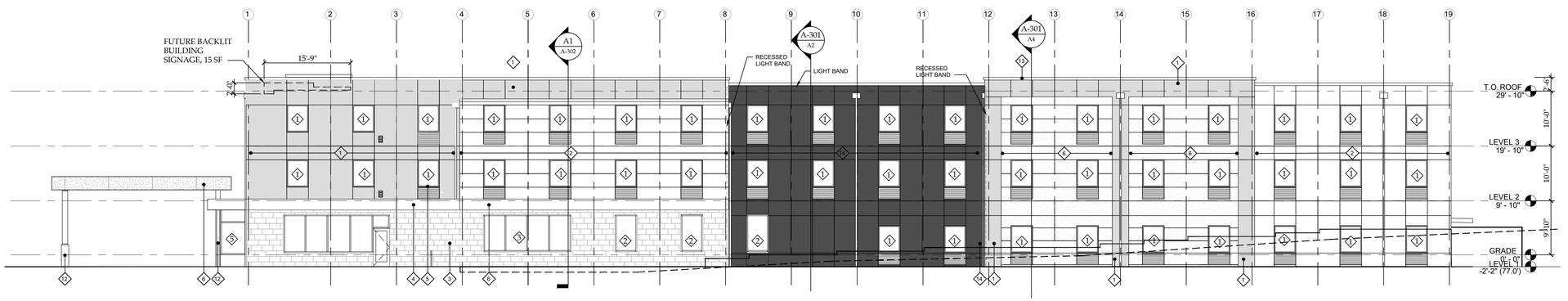
D3 EAST ELEVATION
SCALE: 3/32" = 1'-0"



E5 KEY PLAN
SCALE: NTS



B1 NORTH ELEVATION
SCALE: 3/32" = 1'-0"



A1 SOUTH ELEVATION
SCALE: 3/32" = 1'-0"

NOTICE
This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing.These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort™ INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM:
PRINCIPAL P.Silvestri
PROJ. ARCH. _____
DRAFTER _____
JOB CAPT. W. Manhardt
INTERIORS _____

SEAL:

TITLE:

EXTERIOR ELEVATIONS

SILVESTRI
ARCHITECTS · PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

DATE: 8/6/25

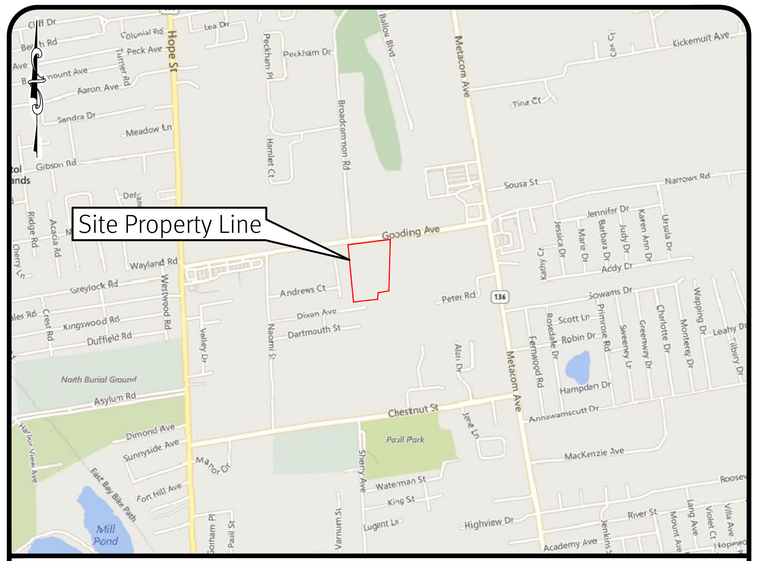
DRAWING #: A-201

Master Plan Submission

Comfort Inn & Suites

Located on Gooding Avenue
Bristol, Rhode Island

Assessor's Plat 111 Lot 1



Location Map Scale: 1" = 1000'

Sheet Index

1 Cover Sheet
2 Aerial Half Mile Radius
3 General Notes and Legend
4 Existing Resource Plan
5 Erosion & Sediment Control Plan
6 Site Layout Plan
7 Grading Plan
8 Drainage and Utilities Plan
9 RIDOT ROW Improvements
10 Underground System A & Details
11 Underground System B, Sand Filter B & Details
12 Detail Sheet - 1
13 Detail Sheet - 2

14 Property Line Survey (Sheet 14 of 14) by Barker Land Surveying

SESC / O&M
The Soil Erosion and Sediment Control Plan (SESC) and Operations and Maintenance Plan (O&M) are required documents with this plan set and must be maintained by the contractor and owner onsite.

RIDOT
The Proposed Improvements Will Not Increase the Rate of Stormwater Runoff Onto the State Highway. All Work Within the State Right of Way Must Conform to the RI Standard Specifications, Details, and Addendums.

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5890 fax 401-464-6066 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8567
REGISTERED PROFESSIONAL ENGINEER CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT IS STAMPED BY THE CONSTRUCTION OFFICIAL AND SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

ALL ENGINEERING ONLY VARIANCES PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER AND SIGNED BY OWNER OF PROPERTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA REGULATIONS APPLICABLE TO THE SPECIFICATION OF THIS PLAN AND DESIGN.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTE ON SHEET 3.

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.K.
4	06-04-2025	Revisions	K.J.D.
3	05-07-2025	RIDOT Response to Comments	K.J.D.
2	12-12-2024	RIDOT Response to Comments	K.J.D.
1	07-29-2024	RIDOT Response to Comments	K.J.D.
0	05-31-2024	Initial Submittal	K.J.D.

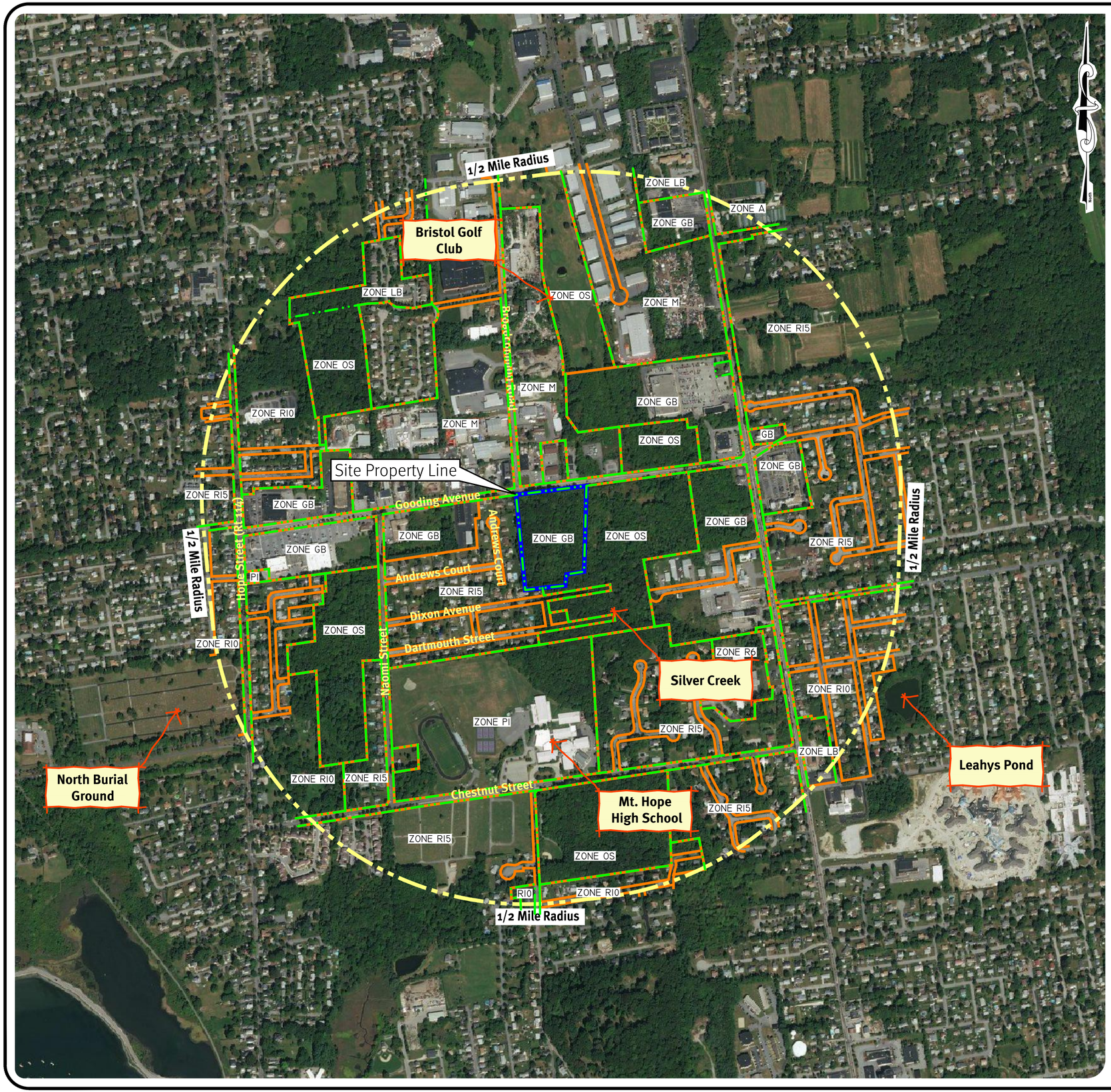
Drawn By: D.R.N. Design By: K.J.D.

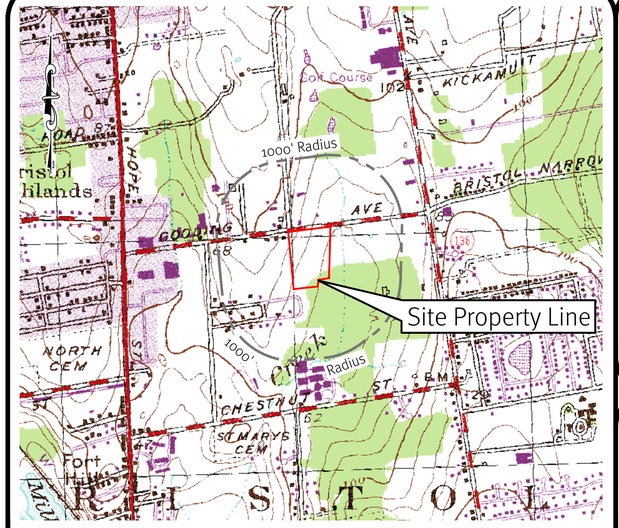
Cover Sheet
Comfort Inn & Suites
AP 111 Lot 1
Bristol, Rhode Island
Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 1 OF 14

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

z:\dereain\projects\2536-001 gooding avenue\autocad drawings\2536-001-cvsr.dwg Plotted: 7/14/2025





USGS Map Scale: 1"=1000'

PHOTO OBTAINED FROM NEARMAP.
DATE OF PHOTOGRAPHY 09-12-2024.

Scale: 1"=400'
0 200' 400' 800'

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5950 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 18557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED, DATED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING. TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER INDICATES THAT DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE CONSTRUCTION AND FOR COMPLIANCE WITH ALL APPLICABLE LAWS, RULES, REGULATIONS AND ORDINANCES OF ANY PUBLIC BODY HAVING JURISDICTION OVER THE PROJECT AND OSHA REQUIREMENTS. DIPRETE ENGINEERING DOES NOT HAVE CONTROL OVER AND IS NOT RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK OR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK OR FURNISHING MATERIALS FOR THE PROJECT, NOR DOES DIPRETE ENGINEERING HAVE AUTHORITY OVER OR RESPONSIBILITY FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY THE CONTRACTOR OR THE SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND HAVE BEEN DETERMINED FROM AVAILABLE INFORMATION. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTES ON SHEET 4.

No.	Date	Description	By
5	07-09-2025	Sheet Revisions	J.A.K.
4	06-05-2025	Revisions	K.M.D.
3	04-07-2025	PB/CRMC Response to Comments	K.M.D.
2	12-12-2024	RIDOT Response to Comments	K.M.D.
1	09-27-2024	PB/CRMC Response to Comments	J.A.K.
0	07-29-2024	RIDOT Submission	J.A.K.

Drawn By: D.R.N. Design By: K.J.D.

Aerial Half Mile Radius

Comfort Inn & Suites

AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160.
North Dartmouth, MA 02747

SHEET 2 OF 14

DE Job No: 2336-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

z:\deman\projects\2336-001 gooding avenue\autocad drawing\2336-001-cvar.dwg Plotted: 7/14/2025

General Notes:

1. THE SITE IS LOCATED ON THE TOWN OF BRISTOL ASSESSOR'S PLAT 111 LOT 1.
2. THE SITE IS APPROXIMATELY 9.78 ACRES, IS ZONED GB, AND IS CURRENTLY WOODED.
3. THE APPLICANT OF AP 111 LOT 1 IS:
   D&M BOCA DEVELOPMENT, LLC.
   92 FAUNCE CORNER ROAD, SUITE 160
   NORTH DARTMOUTH, MA 02747
4. THIS SITE IS LOCATED IN FEMA FLOOD ZONES X AND AE. REFERENCE FEMA FLOOD INSURANCE RATE MAP 44001C0011H, MAP REVISED JULY 7, 2014.
5. THIS PLAN IS SUBSTANTIALLY CORRECT IN ACCORDANCE WITH A CLASS IV STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS. THIS PLAN IS NOT TO BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY AND MAY BE SUBJECT TO SUCH CHANGES AS AN ACCURATE BOUNDARY SURVEY MAY DISCLOSE.
6. THE SITE IS WITHIN A:

   CONTAINS PRIME FARMLAND SOILS – NOT WITHIN DEVELOPMENT AREA
   SILVER CREEK WATERSHED

   THE SITE IS NOT WITHIN A:

   GROUNDWATER PROTECTION AREA
   NATURAL HERITAGE AREA
   GROUNDWATER PROTECTION OVERLAY DISTRICT
   RICRMC SAMP
   NOT A TMDL IMPAIRED WATERWAY (SILVER CREEK) AS IDENTIFIED RIDEM
   NOT A TMDL IMPAIRED WATERWAY (TANYARD BROOK) AS IDENTIFIED RIDEM DRINKING SUPPLY WATERSHED
   OWTS CRITICAL RESOURCE AREA
   ON THE NATIONAL REGISTER OF HISTORIC PLACES
   THE TOWN OF BRISTOL'S HISTORIC DISTRICT
   TANYARD BROOK WATERSHED
7. THE FOLLOWNG DOCUMENTS ARE CONSIDERED PART OF THE PROJECT PLANS AND THE CONTRACTOR / OWNER MUST MAINTAIN THESE DOCUMENTS AS PART OF A FULL PLAN SET:
   - SOIL EROSION AND SEDIMENT CONTROL PLAN (SESC). THE SESC CONTAINS THE FOLLOWING:
     - EROSION CONTROL MEASURES
     - SHORT TERM MAINTENANCE
     - ESTABLISHMENT OF VEGETATIVE COVER
     - CONSTRUCTION POLLUTION PREVENTION
     - SEQUENCE OF CONSTRUCTION
   - OPERATIONS AND MAINTENANCE PLAN (O&M). THE O&M CONTAINS THE FOLLOWING:
     - LONG TERM MAINTENANCE
     - LONG TERM POLLUTION PREVENTION
8. THIS PLAN SET REFERENCES RIDOT STANDARD DETAILS (DESIGNATED AS RIDOT STD X.X.X.). RIDOT STANDARD DETAILS ARE AVAILABLE FROM RIDOT AND ONLINE AT: HTTP: //WWW.DOT.RI.GOV/BUSINESS/CONTRACTORSANDCONSULTANTS.PHP.
9. THE SITE IS TO BE SERVICED BY PUBLIC WATER AND PUBLIC SEWER.
10. THE SITE WILL FULLY COMPLY WITH ALL OF THE TOWN OF BRISTOL RULES AND REGULATIONS INCLUDING THE SUBDIVISION AND DEVELOPMENT REVIEW REGULATIONS AND THE ZONING ORDINANCE. THE SITE DOES NOT REQUIRE ANY VARIANCES, SPECIAL USE PERMITS, OR WAIVERS.
11. THE DRAINAGE SYSTEM IS DESIGNED TO MEET THE TOWN OF BRISTOL SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WITH THE USE OF CATCH BASINS, CULVERTS, AND UNDERGROUND DRAINAGE BASINS. THE STORMWATER MANAGEMENT SYSTEM MEETS THE RIDEM BEST MANAGEMENT PRACTICES.
12. THE SITE IS PROPOSED TO BE BUILT IN 1 PHASE.
13. TEST PITS AND SOIL EVALUATIONS WERE COMPLETED BY SITEC, INC. ON 12/12/2014.

Soil Information:

(REFERENCE: USDA NATURAL RESOURCES CONSERVATION SERVICE)

SOIL NAME	DESCRIPTION
PmA*	PITTSTOWN SILT LOAM, 0 TO 3 PERCENT SLOPES
Se	STISSING SILT LOAM
UR	URBAN LAND

NOTE: *PRIME FARMLAND
**FARMLAND OF STATEWIDE IMPORTANCE

Plan References:

PLAN ENTITLED "PROPERTY LINE SURBEY FOR KENDAN, LLC" BY BARKER LAND SURVEYING, INC. REVISED 9/30/14.

Lidar Note:

CONTOUR DATA SHOWN ON THIS PLAN CONFORMS TO A T–4 TOPOGRAPHICAL SURVEY STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS; SAID DATA IS BASED ON ELEVATION INFORMATION THAT WAS COLLECTED WITH AIRBORNE LIDAR TECHNOLOGY FOR THE ENTIRE AREA OF RHODE ISLAND BETWEEN APRIL 22 AND MAY 6, 2011 AS PART OF THE NORTHEAST LIDAR PROJECT. THIS DATA'S POSITIONAL ACCURACY AND RELIABILITY HAS NOT BEEN VERIFIED BY DIPRETE ENGINEERING AND IS SUBJECT TO CHANGES AN AUTHORITATIVE FIELD SURVEY MAY DISCLOSE.

State Permits:

1. RIDEM PERMIT TO ALTER FRESHWATER WETLANDS: WETLANDS APP NO. 22–0264, RIPDES FILE NO. RIR101247, AND GROUNDWATER DISCHARGE/UIC NO. 001650 APPROVAL LETTER DATED DECEMBER 6, 2024.
2. RIDOT PHYSICAL ALTERATION PERMIT APPLICATION NO. 24–20. PERMIT APPROVAL IS PENDING.

Suitable Area Summary:

TOTAL UNSUITABLE AREA = 6.81 ACRES (DELINEATED WETLANDS)
TOTAL SUITABLE AREA = 9.78 – 6.81 = 2.97 ACRES

Demolition Notes:

1. ALL EXISTING UTILITIES SHOWN ARE FROM VISIBLE INFORMATION, DRAWINGS FROM OTHERS, OR INFORMATION PROVIDED TO DIPRETE ENGINEERING AND ARE SUBJECT TO CHANGE. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM AFOREMENTIONED PLANS OF RECORD AND ARE APPROXIMATE ONLY. PRIOR TO CONSTRUCTION, THE PROPER UTILITY ENGINEERING DEPARTMENTS SHALL BE CONTACTED AND THE ACTUAL LOCATION OF SUBSURFACE STRUCTURES SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. CALL THE DIG SAFE CENTER TOLL FREE AT 1–888–344–7233 72 HOURS PRIOR TO EXCAVATION. NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO EXCAVATION. ANY DAMAGE TO UTILITIES WHICH ARE SHOWN ON THE PLANS OR DETAILED BY DIG SAFE SHALL BE THE SITE CONTRACTORS RESPONSIBILITY.
2. CONTRACTOR TO OBTAIN ALL FEDERAL, STATE, AND MUNICIPAL APPROVALS PRIOR TO THE START OF CONSTRUCTION.
3. CONTRACTOR TO PERFORM DAILY SWEEPING AT CONSTRUCTION ENTRANCE DURING DEMOLITION AND CONSTRUCTION TO MINIMIZE SEDIMENTS ON GOODING AVENUE.
4. ANY DAMAGE TO THE PROPERTY CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND LEGALLY DISPOSING (R&D) ALL MATERIALS INDICATED ON THE PLANS UNLESS SPECIFIED OTHERWISE HERE IN. R&D MATERIALS TO INCLUDE BUT NOT LIMITED TO PAVEMENT, GRAVEL, CATCH BASINS, MANHOLES, GRATES/FRAMES/COVERS, AND ANY EXCESS SOIL THAT IS NOT INCORPORATED INTO THE WORK.
6. IN ADDITION TO THOSE AREAS SPECIFICALLY DESIGNATED ON THE PLANS, ALL DISTURBED AREAS INCLUDING THE CONTRACTOR'S STOCKPILE AND STAGING AREAS WITHIN THE LIMIT OF WORK SHALL BE RESTORED TO MATCH THE DESIGN PLANS.

Traffic Notes:

1. DURING CONSTRUCTION TRAFFIC CONES ARE TO BE USED FOR SEPARATION OF ACTIVE TRAFFIC FROM WORK ZONE.
2. DURING CONSTRUCTION FLAGGERS SHALL BE EMPLOYED TO ENSURE SAFETY FOR INTERACTION OF CONSTRUCTION VEHICLES AND ACTIVE TRAFFIC.
3. ALL SIGNS, FLAGGERS, TRAFFIC CONTROL DEVICES, AND TEMPORARY TRAFFIC ZONE ACTIVITIES SHALL MEET THE REQUIREMENTS OF THE MUTCD LATEST EDITION AND SUBSEQUENT ADDENDA.
4. TEMPORARY CONSTRUCTION SIGNS SHALL BE MOUNTED ON RIDOT APPROVED SUPPORTS AND SHALL BE REMOVED OR COVERED WHEN NOT APPLICABLE.
5. ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES CURRENT EDITION.

As-Built Notes:

1. ALL COMPONENTS OF THE DRAINAGE MUST BE ASBUILT PRIOR TO COVERING. ENGINEER TO BE NOTIFIED PRIOR TO COVERING SURVEY ASBUILT LOCATIONS. ENGINEER WILL NOT ACCEPT FIELD MEASUREMENTS FROM THE SITE CONTRACTOR.

RIDOT Notes:

1. ALL WORK TO BE DONE WITHIN THE STATE RIGHT OF WAY MUST CONFORM TO RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AUGUST 2023 EDITION WITH ALL REVISIONS. STANDARD DETAILS FOR THIS WORK ARE R.I. STANDARD DETAILS 1998 EDITION (AMENDED OCTOBER 2022) WITH ALL REVISIONS.
2. CONTRACTOR MUST OBTAIN A UTILITY CONNECTION PERMIT FOR WORK WITHIN THE STATE RIGHT–OF–WAY (ROW) PRIOR TO CONSTRUCTION. THE PHYSICAL ALTERATION PERMIT (PAP) IS NOT A SUBSTITUTE FOR THE UTILITY PERMIT AND THE PAP DOES NOT CONSTITUTE AN APPROVAL OF ANY UTILITY WORK.
3. ALL TRAFFIC CONTROL MUST CONFORM TO THE MUTCD, LATEST EDITION, WITH ALL REVISIONS.
4. NO LANE OR SHOULDER CLOSURES ARE ALLOWED TO BE PERFORMED WITHIN THE STATE ROW DURING PEAK TRAFFIC HOURS.
5. SEWER AND WATER CONNECTIONS WITHIN THE STATE ROW WILL REQUIRE A SEPARATE RIDOT UTILITY PERMIT, WHICH CONTRACTOR MUST OBTAIN BEFORE CONSTRUCTION.
6. THE DRAINAGE SYSTEM IS DESIGNED TO DECREASE BOTH STORMWATER RUNOFF RATE, AND STORMWATER RUNOFF VOLUME TO THE STATE ROW FROM PRE–DEVELOPMENT TO POST–DEVELOPMENT. THERE SHALL BE NO INCREASE IN RUNOFF TO THE STATE ROW FROM THE PROPOSED DEVELOPMENT.
7. WORK WITHIN THE STATE'S ROW WILL CONFORM TO PROPOSED PUBLIC RIGHTS–OF–WAY ACCESSIBILITY GUIDELINES (PROWAG). WORK ONSITE WILL CONFORM TO AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) UNLESS THE WORK IS ON STATE OWNED LAND.
8. AS–BUILTS ARE REQUIRED FOR ALL DRAINAGE CONNECTIONS WITHIN THE STATE ROW. AS–BUILTS MUST BE PROVIDED TO THE RIDOT STORMWATER OFFICE AND INCLUDE, INVERTS, MATERIALS, AND PIPE SIZES.

Layout and Materials:

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 5 FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE PRECAST CONCRETE OR AS LABELED ON THE PLANS.
4. SIDEWALK SHALL BE CONCRETE, STAMPED CONCRETE OR AS LABELED ON THE PLANS.
5. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
6. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
7. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
8. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.

Grading and Utility Notes:

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL SOIL EROSION AND SEDIMENT CONTROL ONSITE. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER, THE DIRECTOR OF PUBLIC WORKS, THE TOWN ENGINEER, AND RI DEPT. OF ENVIRONMENTAL MANAGEMENT AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
2. CONTRACTOR TO OBTAIN ALL FEDERAL, STATE, AND MUNICIPAL APPROVALS PRIOR TO THE START OF CONSTRUCTION.
3. CONSTRUCTION TO COMMENCE SPRING 2025 OR UPON RECEIPT OF ALL NECESSARY APPROVALS.
4. ALL WORK PERFORMED HEREIN SHALL BE GOVERNED BY THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AND TOWN OF BRISTOL STANDARD SPECIFICATIONS AND DETAILS.
5. SEQUENCE OF CONSTRUCTION PROVIDED IN SESC MAY BE MODIFIED AS FIELD CONDITIONS WARRANT WITH PRIOR APPROVAL FROM THE OWNER OR OWNER'S REPRESENTATIVE.
6. THE CONTRACTOR SHALL COORDINATE WITH ALL OF THE APPROPRIATE UTILITY COMPANIES FOR AGREEMENTS TO SERVICE THE PROPOSED BUILDING. THIS SHALL BE DONE PRIOR TO CONSTRUCTION. NO REPRESENTATIONS ARE MADE BY DIPRETE ENGINEERING THAT UTILITY SERVICE IS AVAILABLE.
7. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINISH GRADING AND DRAINAGE AROUND THE BUILDING TO ENSURE SURFACE WATER AND/OR GROUND WATER ARE DIRECTED AWAY FROM THE STRUCTURE.
8. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
9. ALL PROPOSED UNDERGROUND UTILITIES SERVING THE SITE AND BUILDINGS TO BE COORDINATED WITH APPLICANT, ARCHITECT, AND ENGINEER PRIOR TO INSTALLATION.
10. ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION INCLUDING ALL REVISIONS.
11. ALL RETAINING WALLS AND STEEP SLOPES ARE SHOWN SCHEMATICALLY ONLY AND DIPRETE ENGINEERING IS NOT PROVIDING THE DESIGN OF THESE ITEMS. THE ACTUAL WALLS AND SLOPES ARE TO BE BUILT UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER AND CERTIFIED TO THE OWNER PRIOR TO THE COMPLETION OF THE PROJECT. SHOP DRAWINGS TO BE SUBMITTED PRIOR TO CONSTRUCTION.
12. ALL CUT AND FILL AREAS ARE TO BE DONE UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER WITH TESTING AND CERTIFICATION TO BE PROVIDED TO THE APPLICANT AT THE COMPLETION OF THE PROJECT. DIPRETE ENGINEERING ASSOCIATES, INC. IS NOT PROVIDING THE FILL SPECIFICATION, GEOTECHNICAL ENGINEERING, STRUCTURAL ENGINEERING SERVICES, OR SUPERVISION AS PART OF THESE DRAWINGS.
13. ALL COMPONENTS OF THE DRAINAGE, SEWER AND WATER SYSTEMS MUST BE ASBUILT PRIOR TO COVERING. ENGINEER TO BE NOTIFIED PRIOR TO COVERING TO SURVEY ASBUILT LOCATIONS. ENGINEER WILL NOT ACCEPT FIELD MEASUREMENTS FROM THE SITE CONTRACTOR.
14. NO STOCKPILING OF MATERIAL TO BE LOCATED IN THE RIGHT OF WAY AND NO OPEN TRENCHES ARE TO BE LEFT OVERNIGHT.
15. ALL LOAM IN DISTURBED AREAS TO BE STOCKPILED FOR FUTURE USE.
16. ALL EXCESS SOIL, TREES, ROCKS, BOULDERS, AND OTHER REFUSE, SHALL BE DISCARDED OFF SITE IN AN ACCEPTABLE MANNER AT AN APPROVED LOCATION. STUMPS SHALL BE GROUND ONSITE OR REMOVED.
17. NO STUMP DUMPS ARE PROPOSED ONSITE.
18. IF CONCRETE TRUCKS ARE WASHED OUT ONSITE, ALL WASHOUT MUST BE COMPLETED IN THE DESIGNATED CONCRETE WASHOUT AREA.

ADA Notes:

1. ALL IMPROVEMENTS SHALL COMPLY WITH THE "AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG)" BY THE DEPARTMENT OF JUSTICE.
2. MAXIMUM RUNNING SLOPE ALONG ALL ACCESSIBLE PATHS OF TRAVEL SHALL BE 4.5% OR 0.045 '/, AND MAXIMUM CROSS SLOPE ALONG ALL ACCESSIBLE PATHS OF TRAVEL SHALL BE 0.015'/,.
3. MAXIMUM SLOPE IN ALL DIRECTIONS FOR ALL ACCESSIBLE PARKING SPACES AND LOADING AREAS SHALL BE 0.015'/,.
4. A 5'x5' LANDING WITH A MAXIMUM SLOPE OF 1.5% OR 0.015'/, IN ALL DIRECTIONS SHALL BE PROVIDED IN FRONT OF ALL PUBLICLY ACCESSIBLE BUILDING ENTRANCES/EGRESSES.
5. SIDEWALK CURB RAMPS SHALL COMPLY WITH DIPRETE ENGINEERING DETAILS THAT MEET OR EXCEEDING RIDOT STANDARDS 43.3.0, 43.3.1, & 43.4.1 AS SHOWN ON THE DETAIL SHEET.
6. PLEASE NOTE THAT THE GRADING AND PLAN VIEWS AS WELL AS THE STANDARD DETAILS MAY NOT SHOW THE DETAIL NECESSARY TO CONSTRUCT WALKWAYS AND RAMPS TO ADA STANDARDS. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE LEVEL OF CARE NECESSARY TO BE CERTAIN THAT THE CONSTRUCTED PRODUCT MEETS ADA STANDARDS. IN THE EVENT OF ANY CONFLICTS THE CONTRACTOR SHALL NOTIFY THE DESIGNER BEFORE CONSTRUCTION FOR ADVICE IN FINDING A RESOLUTION.

Soil Erosion and Sedimentation Control Notes:

1. ALL EROSION CONTROL, TEMPORARY SWALES, TEMPORARY SEDIMENTATION TRAPS, ETC. SHALL BE INSTALLED PER THE RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL LATEST EDITION AND THE SOIL EROSION SEDIMENTATION CONTROL PLAN (SESC).
2. TEMPORARY SWALES SHALL BE USED TO CONTROL RUNOFF DURING CONSTRUCTION. TEMPORARY SWALES SHALL BE VEGETATED AFTER CONSTRUCTION. EROSION CONTROL MATS SHALL BE INSTALLED IF NECESSARY TO PREVENT EROSION AND SUPPORT VEGETATION. AFTER CONSTRUCTION IS COMPLETE AND TRIBUTARY ARES TO THE SWALES HAVE BEEN STABILIZED, THE TEMPORARY SWALES SHALL BE CLEARED AND FINAL DESIGN, INCLUDING INSTALLATION OF THE GRASS SWALE SHALL BE PER THE DESIGN PLANS.
3. ONCE THE SEDIMENTATION TRAP IS NO LONGER REQUIRED AND ALL TRIBUTARY AREAS HAVE BEEN STABILIZED, THE TEMPORARY SEDIMENTATION TRAP SHALL CLEANED AND BROUGHT TO FINAL DESIGN GRADES.
4. INLET PROTECTION SHALL BE INSTALLED ON ALL CATCH BASINS ONCE CONSTRUCTED.
5. SEE SECTION 2.2 OF THE SESC FOR SEQUENCE OF CONSTRUCTION ACTIVITY.
6. SEE SECTION 2.2 OF THE SESC FOR PROJECT PHASING.
7. CONTRACTOR MAY MODIFY SEQUENCE OF CONSTRUCTION WITH APPROVAL FROM DESIGN ENGINEER.
8. FOR CONSTRUCTION PHASING SEE SECTION 2.2 OF SOIL EROSION AND SEDIMENT CONTROL PLAN.

Abbreviations Legend

AP	ASSESSOR'S PLAT	OHW	OVERHEAD WIRE
BC	BOTTOM OF CURB	PE	POLYETHYLENE
BT	BOTTOM OF TESTHOLE	℄	PROPERTY LINE
BIT	BITUMINOUS (BERM)	PR	PROPOSED
BIO	BIORETENTION	PVC	POLYVINYL CHLORIDE
BW	BOTTOM OF WALL (FINISHED GRADE AT BOTTOM OF WALL)	R	RADIUS
		R&D	REMOVE AND DISPOSE
CB	CATCH BASIN	RCP	REINFORCED CONCRETE PIPE
(C)	CALCULATED	RIHB	RHODE ISLAND HIGHWAY BOUND
℄	CENTERLINE	RL	ROOF LEADER
(CA)	CHORD ANGLE	ROW	RIGHT OF WAY
CLDIP	CONCRETE LINED DUCTILE IRON PIPE	S	SLOPE
CO	CLEAN OUT	SD	SUBDRAIN
CONC	CONCRETE	SED	SEDIMENT FOREBAY
(D)	DEED	SE	SLAB ELEVATION
DCB	DOUBLE CATCH BASIN	SF	SQUARE FOOT
DI	DROP INLET	SFL	STATE FREEWAY LINE
DMH	DRAINAGE MANHOLE	SFM	SEWER FORCE MAIN
DP	DETENTION POND	SHL	STATE HIGHWAY LINE
EOP	EDGE OF PAVEMENT	SMH	SEWER MANHOLE
ESC	EROSION AND SEDIMENT CONTROL	SNDF	SAND FILTER
EX	EXISTING	SS	SIDE SLOPE
FES	FLARED END SECTION	STA	STATION
FFE	FINISH FLOOR ELEVATION	TC	TOP OF CURB
GFE	GARAGE FLOOR ELEVATION	TD	TRENCH DRAIN
GWT	GROUND WATER TABLE	TF	TOP OF FOUNDATION
HC	HANDICAPPED	TRANS	TRANSITION
HW	HEADWALL	TW	TOP OF WALL (FINISHED GRADE AT TOP OF WALL)
HC	HIGH CAPACITY CATCH BASIN GRATE		
HDPE	HIGH DENSITY POLYETHYLENE	TYP	TYPICAL
ID	INLINE DRAIN	UDS	UNDERGROUND DETENTION SYSTEM
INV	INVERT	UIS	UNDERGROUND INFILTRATION SYSTEM
IP	INFILTRATION POND	UP	UTILITY POLE
LF	LINEAR FEET	WO	WALKOUT
LOD	LIMIT OF DISTURBANCE	WQ	WATER QUALITY
LP	LIGHT POLE		
(M)	MEASURED		
N/F	NOW OR FORMERLY		

Site Callouts Legend

NOT ALL ITEMS SHOWN WILL APPEAR ON PLANS

7.2.4	RIDOT STD PRECAST CONCRETE CURB STOP
4W45	4" WHITE STRIPING 2' ON CENTER AT 45°
ADAS	ADA SPACE PAVEMENT MARKINGS MUST COMPLY WITH ALL ADA AND MUTCD REGULATIONS AND REQUIREMENTS.
ADAR	ADA CURB RAMP MUST COMPLY WITH ALL ADA REGULATIONS AND REQUIREMENTS.
ADAV	VAN ADA SPACE PAVEMENT MARKINGS MUST COMPLY WITH ALL ADA AND MUTCD REGULATIONS AND REQUIREMENTS.
CWK	CROSSWALK PAVEMENT MARKINGS. SOLID 2' WHITE LINES SPACED 4' OC (REFERENCE MUTCD SECTION 3B.18)

Existing Legend

(AS SHOWN ON PROPOSED PLANS)

NOT ALL ITEMS SHOWN WILL APPEAR ON PLANS

- PROPERTY LINE
- ASSESSORS LINE
- BUILDING
- BRUSHLINE
- TREELINE
- GUARDRAIL
- FENCE
- RETAINING WALL
- STONE WALL
- MINOR CONTOUR LINE (2)
- MAJOR CONTOUR LINE (10)
- WATER LINE (W)
- SEWER LINE (S)
- SEWER FORCE MAIN (SFM)
- GAS LINE (G)
- ELECTRIC LINE (E)
- OVERHEAD WIRES (OHW)
- DRAINAGE LINE (D)
- SOILS LINES (HkC, CaD)
- 50' PERIMETER WETLAND
- 100' RIVERBANK WETLAND
- 200' RIVERBANK WETLAND
- NATURAL HERITAGE AREA
- FEMA BOUNDARY (ZONE X / ZONE X)
- STREAM
- WETLAND LINE & FLAG (B1, B2)
- NATURAL HERITAGE AREA
- NAIL FOUND/SET
- DRILL HOLE FOUND/SET
- BOUND FOUND/SET
- SIGN
- BOLLARD
- SOIL EVALUATION
- CB CATCH BASIN
- DCB DOUBLE CATCH BASIN
- DMH DRAINAGE MANHOLE
- FES FLARED END SECTION
- GUY POLE
- EMH ELECTRIC MANHOLE
- UP UTILITY/POWER POLE
- LIGHTPOST
- SMH SEWER/SEPTIC MANHOLE
- SV SEWER VALVE
- CLEANOUT
- HYDRANT
- IRRIGATION VALVE
- WV WATER VALVE
- WELL
- MONITORING WELL
- UNKNOWN MANHOLE
- GV GAS VALVE
- BENCH MARK
- STREAM FLOW DIRECTION

Proposed Legend

NOT ALL ITEMS SHOWN WILL APPEAR ON PLANS

- PROPERTY LINE
- BUILDING SETBACKS
- TREELINE
- CHAINLINK FENCE
- GUARDRAIL (RIDOT STD 34.2.0, 34.4.0 OR APPROVED EQUAL)
- RETAINING WALL
- MINOR CONTOUR LINE (308)
- MAJOR CONTOUR LINE (310)
- SPOT ELEVATION (+312)
- EDGE OF PAVEMENT
- CONCRETE CURB (RIDOT STD 7.1.0)
- BUILDING FOOTPRINT
- BUILDING OVERHANG
- BUILDING ENTRY
- ASPHALT PAVEMENT
- STAMPED CONCRETE
- CONCRETE SIDEWALK
- SAWCUT LINE
- SIGN (RIDOT STD 24.6.2 AS APPLICABLE)
- SINGLE LIGHT
- DOUBLE LIGHT
- OVERHANGING LIGHT
- ACCESSIBLE PARKING SPACE SYMBOLS (VAN)
- TRANSFORMER PAD WITH BOLLARDS (PER NATIONAL GRID STANDARD)
- PARKING COUNT (1)
- DRAINAGE LINE
- ROOF LEADER (RL)
- GAS LINE (G)
- WATER LINE (W)
- HYDRANT ASSEMBLY
- WATER SHUT OFF
- WATER VALVE
- THRUST BLOCK
- SEWER LINE (S)
- OVERHEAD WIRE ELECTRIC, TELEPHONE, CABLE LINE (OHW, ETC)
- LIMIT OF DISTURBANCE – NO EROSION CONTROL
- STRAW WATTLE, SILT FENCE (RIDOT STD 9.2.0) OR APPROVED EQUAL AT LIMIT OF DISTURBANCE
- 2:1 SLOPES
- UNDERGROUND SYSTEM OUTLINE
- POND ACCESS
- RIP RAP
- SAND FILTER
- CATCH BASIN
- DOUBLE CATCH BASIN
- MANHOLE
- FLARED END SECTION
- HEAD WALL
- SHRUB
- TREE

Utility Note:

ALL UNDERGROUND UTILITIES SHOWN ON THESE PLANS WERE PROVIDED BY OTHERS AND ARE APPROXIMATE ONLY. LOCATIONS MUST BE DETERMINED IN THE FIELD BEFORE EXCAVATION, BLASTING, UTILITY INSTALLATION, BACKFILLING, GRADING, PAVEMENT RESTORATION, AND ALL OTHER SITE WORK. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE CONTACTED INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THESE DOCUMENTS. CONTACT DIG SAFE A MINIMUM OF 72 WORKING HOURS PRIOR TO ANY CONSTRUCTION AT 811. DIG SAFE IS RESPONSIBLE FOR CONTACTING MEMBER UTILITY COMPANIES. DIG SAFE MEMBER UTILITY COMPANIES ARE RESPONSIBLE TO MARK ONLY THE FACILITIES THAT THEY OWN OR MAINTAIN. NON DIG SAFE MEMBER COMPANIES ARE NOT NOTIFIED BY DIG SAFE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE AND NOTIFY IF ANY PRIVATELY OWNED OR NON DIG SAFE MEMBER UTILITIES ARE IN THE AREA.

PER THE CODE OF FEDERAL REGULATIONS – TITLE 29, PART 1926 IT IS THE SITE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ACCURATE UNDERGROUND UTILITY LINE LOCATIONS FROM THE UTILITY COMPANIES, UTILITY OWNERS AND, OR VIA UNDERGROUND UTILITY LOCATION EQUIPMENT AS NEEDED TO ESTABLISH ACCURATE LOCATIONS PRIOR TO ANY EXCAVATION. THE USE OF PROFESSIONAL UTILITY LOCATING COMPANIES PRIOR TO ANY EXCAVATION IS RECOMMENDED.

DIPRETE ENGINEERING IS NOT A PROFESSIONAL UTILITY LOCATION COMPANY, AND IS NOT RESPONSIBLE FOR UNDERGROUND UTILITIES, DEPICTED OR NOT, EITHER IN SERVICE OR ABANDONED. ANY SIZES, LOCATIONS, EXISTENCE, OR LACK OF EXISTENCE OF UTILITIES SHOWN ON THESE PLANS SHOULD BE CONSIDERED APPROXIMATE UNTIL VERIFIED BY A PROFESSIONAL UTILITY LOCATION COMPANY. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED.

Permit Note:

THE PURPOSE OF THIS PLAN SET IS TO OBTAIN A PERMIT FROM THE REGULATORY AGENCY IT WAS SUBMITTED TO. THIS PLAN SET CONTAINS THE REQUIRED INFORMATION NECESSARY FOR APPROVAL BY THE SPECIFIC AGENCY IT WAS SUBMITTED TO AND MAY NOT HAVE INFORMATION NECESSARY FOR OTHER REGULATORY AGENCIES. THIS PLAN SET MUST NOT BE CONSTRUED AS A FULL CONSTRUCTION OR BID SET. ADDITIONAL DETAIL IS REQUIRED FOR CONSTRUCTION AND BID DOCUMENTS, SUCH AS (BUT NOT LIMITED TO) FINE GRADING, GRADING BETWEEN THE CONTOUR INTERVAL, ADDITIONAL SURVEY/ MAPPING, BUILDING SHAPE/ LOCATION, ADA, UTILITY CONNECTIONS, UTILITY CROSSINGS, SURFACE AND GROUND WATER MITIGATION, SOIL STABILITY AND CONSISTENCY, SPECIFIC END USER NEEDS, CONSTRUCTABILITY ISSUES, ETC. ANY USER OF THESE PLANS SHOULD UNDERSTAND THIS LIMITATION.

DiPrete Engineering
Boston • Providence • Newport
90 Broadway Newport, RI 02840
tel 401.619.5990 fax 401.464.6006 www.diprete-eng.com

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS A FULL SET OF PLANS AND SPECIFICATIONS IS STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS, METHODS, SAFETY, TIMELINESS AND ADHERENCE TO OSHA REGULATIONS AND REQUIREMENTS AND PERFORMANCE OF THE WORK.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTES ABOVE.

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.R.
4	06-05-2025	Revisions	K.T.R.
3	04-02-2025	RIDOT Response To Comments	N.W.P.
2	11-12-2024	RIDOT Response To Comments	N.W.P.
1	07-29-2024	RIDOT Submission To Comments	J.A

Legend

NOT ALL ITEMS SHOWN WILL APPEAR ON THE SURVEY

BUILDING		NAIL FOUND/SET	
AP	ASSESSOR'S PLAT	DRILL HOLE FOUND/SET	
N/F	NOW OR FORMERLY	IRON ROD/PIPE FOUND/SET	
(D)	DEED	BOUND FOUND/SET	
(M)	MEASURED	SIGN	
(CA)	CHORD ANGLE	BOLLARD	
HC	HANDICAPPED	SOIL EVALUATION	
	PROPERTY LINE	CB CATCH BASIN	
	ASSESSORS LINE	DCB DOUBLE CATCH BASIN	
	TREELINE	DMH DRAINAGE MANHOLE	
	GUARDRAIL	FES FLARED END SECTION	
	FENCE	GUY POLE	
	RETAINING WALL	EMH	
	STONE WALL	UP UTILITY/POWER POLE	
2	MINOR CONTOUR LINE	LIGHTPOST	
10	MAJOR CONTOUR LINE	SMH SEWER/SEPTIC MANHOLE	
W	WATER LINE	SEWER VALVE	
S	SEWER LINE	CLEANOUT	
SFM	SEWER FORCE MAIN	HYDRANT	
G	GAS LINE	IRRIGATION VALVE	
E	ELECTRIC LINE	WATER VALVE	
OHW	OVERHEAD WIRES	WELL	
D	DRAINAGE LINE	MONITORING WELL	
		UNKNOWN MANHOLE	
		GAS VALVE	
		B-1 WETLAND FLAG	
		BENCH MARK	
		SHRUB	
		TREE	

General Notes

1. THE PARCEL IS FOUND ON ASSESSOR'S PLAT 111, LOT 1 IN THE TOWN OF BRISTOL, BRISTOL COUNTY, RHODE ISLAND.
2. THE OWNER PER THE ASSESSOR'S ONLINE DATABASE IS KENDAN, LLC.
3. THE PARCEL IS LOCATED IN ZONE X & AE PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 44001C0011H, DATED JULY 7, 2014.
4. THE PARCEL IS ZONED GB PER THE ASSESSOR'S ONLINE DATABASE. PLEASE CONTACT THE ZONING DEPARTMENT FOR ANY ADDITIONAL INFORMATION OR FOR A CERTIFICATE OF ZONING.
5. THERE WERE NO CEMETERIES, GRAVE SITES AND OR BURIAL GROUNDS OBSERVED WITHIN THE LIMITS OF THE SITE.
6. FIELD SURVEY PERFORMED BY BARKER LAND SURVEYING, INC. THIS PLAN REFLECTS ON THE GROUND CONDITIONS AS OF THAT DATE.
7. ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM ONLINE GIS DATA TOGETHER WITH EXISTING PLANS BY OTHERS. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR MISSING UNDERGROUND UTILITIES, EITHER IN SERVICE OR ABANDONED, NOT OBSERVED AT THE TIME OF THE SURVEY. (PLEASE CONTACT DIGSAFE 72 WORKING HOURS PRIOR TO ANY CONSTRUCTION AT 1-888-344-7233).
8. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR ANY UNKNOWN OR UNRECORDED EASEMENTS, DEEDS OR CLAIMS THAT A TITLE REPORT WOULD DISCLOSE.

Plan References:

1. PLAN ENTITLED "PROPERTY LINE SURBEY FOR KENDAN, LLC" BY BARKER LAND SURVEYING, INC. REVISED 9/30/14.

Lidar Note:

CONTOUR DATA SHOWN ON THIS PLAN CONFORMS TO A T-4 TOPOGRAPHICAL SURVEY STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS; SAID DATA IS BASED ON ELEVATION INFORMATION THAT WAS COLLECTED WITH AIRBORNE LIDAR TECHNOLOGY FOR THE ENTIRE AREA OF RHODE ISLAND BETWEEN APRIL 22 AND MAY 6, 2011 AS PART OF THE NORTHEAST LIDAR PROJECT. THIS DATA'S POSITIONAL ACCURACY AND RELIABILITY HAS NOT BEEN VERIFIED BY DIPRETE ENGINEERING AND IS SUBJECT TO CHANGES AN AUTHORITATIVE FIELD SURVEY MAY DISCLOSE.

SURVEYOR'S CERTIFICATE

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR-00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON NOVEMBER 25, 2015, AS FOLLOWS:

- COMPILATION PLAN — CLASS IV
(NOT A BOUNDARY SURVEY)

THIS COMPILATION PLAN HAS BEEN PREPARED FROM SOURCES OF INFORMATION AND DATA WHOSE POSITIONAL ACCURACY AND RELIABILITY HAS NOT BEEN VERIFIED. THE PROPERTY LINES DEPICTED HEREON DO NOT REPRESENT A BOUNDARY OPINION, AND OTHER INFORMATION DEPICTED IS SUBJECT TO SUCH CHANGES AS AN AUTHORITATIVE FIELD SURVEY MAY DISCLOSE

THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: COMPILATION PLAN FOR USE IN PERMITTING PLAN SET.

DiPrete Engineering
99 Broadway Newport, RI 02840
tel 401-619-5890 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER CIVIL

THIS PLAN & DEPICT NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED "ISSUED FOR CONSTRUCTION" AND SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.
DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER EMPLOYED BY DIPRETE ENGINEERING. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION IN CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND ANY OSHA REGULATIONS.
EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTE ON SHEET 5.

No.	Date	Description	By:
5.	09/09/2025	Sewer Revisions	J.A.K.
4.	08/27/2025	BLDG Submission	N.M.P.
3.	05/27/2025	BLDG Response To Comments	N.M.P.
2.	02/12/2025	BLDG Response To Comments	N.M.P.
1.	07/24/2024	BLDG Response To Comments	J.A.K.
0.	07/08/2024	BLDG Submission	J.A.K.

Design By: K.J.D.
Drawn By: D.R.N.

Existing Resource Plan

Comfort Inn & Suites

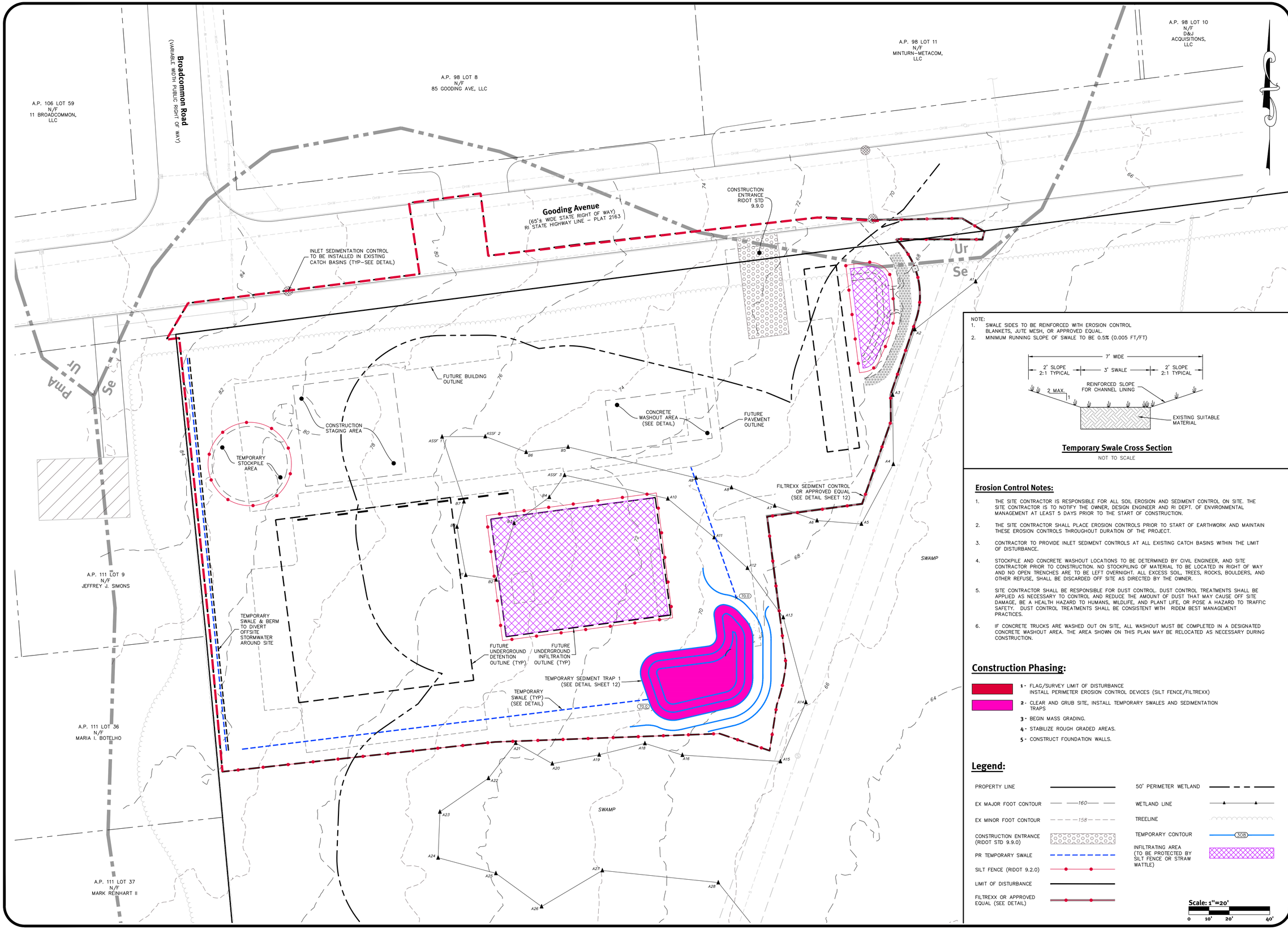
AP 111 LOT 1
Bristol, Rhode Island

Owner & Applicant
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

SHEET 4 OF 14

z:\dema\in\projects\2536-001 gooding avenue\autocad drawings\2536-001-plan.dwg Plotted: 7/14/2025



NOTE:
1. SWALE SIDES TO BE REINFORCED WITH EROSION CONTROL BLANKETS, JUTE MESH, OR APPROVED EQUAL.
2. MINIMUM RUNNING SLOPE OF SWALE TO BE 0.5% (0.005 FT/FT)

Temporary Swale Cross Section

NOT TO SCALE

Erosion Control Notes:

1. THE SITE CONTRACTOR IS RESPONSIBLE FOR ALL SOIL EROSION AND SEDIMENT CONTROL ON SITE. THE SITE CONTRACTOR IS TO NOTIFY THE OWNER, DESIGN ENGINEER AND RI DEPT. OF ENVIRONMENTAL MANAGEMENT AT LEAST 5 DAYS PRIOR TO THE START OF CONSTRUCTION.
2. THE SITE CONTRACTOR SHALL PLACE EROSION CONTROLS PRIOR TO START OF EARTHWORK AND MAINTAIN THESE EROSION CONTROLS THROUGHOUT DURATION OF THE PROJECT.
3. CONTRACTOR TO PROVIDE INLET SEDIMENT CONTROLS AT ALL EXISTING CATCH BASINS WITHIN THE LIMIT OF DISTURBANCE.
4. STOCKPILE AND CONCRETE WASHOUT LOCATIONS TO BE DETERMINED BY CIVIL ENGINEER, AND SITE CONTRACTOR PRIOR TO CONSTRUCTION. NO STOCKPILING OF MATERIAL TO BE LOCATED IN RIGHT OF WAY AND NO OPEN TRENCHES ARE TO BE LEFT OVERNIGHT. ALL EXCESS SOIL, TREES, ROCKS, BOULDERS, AND OTHER REFUSE, SHALL BE DISCARDED OFF SITE AS DIRECTED BY THE OWNER.
5. SITE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL. DUST CONTROL TREATMENTS SHALL BE APPLIED AS NECESSARY TO CONTROL AND REDUCE THE AMOUNT OF DUST THAT MAY CAUSE OFF SITE DAMAGE, BE A HEALTH HAZARD TO HUMANS, WILDLIFE, AND PLANT LIFE, OR POSE A HAZARD TO TRAFFIC SAFETY. DUST CONTROL TREATMENTS SHALL BE CONSISTENT WITH RIDEM BEST MANAGEMENT PRACTICES.
6. IF CONCRETE TRUCKS ARE WASHED OUT ON SITE, ALL WASHOUT MUST BE COMPLETED IN A DESIGNATED CONCRETE WASHOUT AREA. THE AREA SHOWN ON THIS PLAN MAY BE RELOCATED AS NECESSARY DURING CONSTRUCTION.

Construction Phasing:

1- FLAG/SURVEY LIMIT OF DISTURBANCE
INSTALL PERIMETER EROSION CONTROL DEVICES (SILT FENCE/FILTREXX)

2- CLEAR AND GRUB SITE, INSTALL TEMPORARY SWALES AND SEDIMENTATION TRAPS

3- BEGIN MASS GRADING.

4- STABILIZE ROUGH GRADED AREAS.

5- CONSTRUCT FOUNDATION WALLS.

Legend:

PROPERTY LINE
EX MAJOR FOOT CONTOUR (160)
EX MINOR FOOT CONTOUR (158)
CONSTRUCTION ENTRANCE (RIDOT STD 9.9.0)
PR TEMPORARY SWALE
SILT FENCE (RIDOT 9.2.0)
LIMIT OF DISTURBANCE
FILTREXX OR APPROVED EQUAL (SEE DETAIL)
50' PERIMETER WETLAND
WETLAND LINE
TREELINE
TEMPORARY CONTOUR (30ft)
INFILTRATING AREA (TO BE PROTECTED BY SILT FENCE OR STRAW WATTLE)

Scale: 1"=20'
0 10' 20' 40'

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401.619.5950 fax 401.464.6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 18557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE ORIGINAL SIGNATURE AND STAMP OF A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

DIPRETE ENGINEERING DOES NOT WARRANT PLANS ON A DIPRETE ENGINEERING TITLE BLOCK, STAMPED BY REGISTERED PROFESSIONAL ENGINEER, TO BE COMPLETE, CORRECT OR ACCURATE PLANS AS PREPARED BY ANY OTHER PARTY. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY, AND PROCEDURES REQUIRED BY OSHA OR OTHER AGENCIES TO PERFORM THE CONSTRUCTION AS SHOWN ON THIS PLAN AND AS NECESSARY FOR THE SAFETY OF ALL PERSONS ON THE JOB SITE. DIPRETE ENGINEERING SHALL NOT BE RESPONSIBLE FOR JOB SITE CONDITIONS DURING CONSTRUCTION, THIS INCLUDES, BUT IS NOT LIMITED TO, SAFETY OF ALL PERSONS ON THE JOB SITE AND SECURITY. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS DIPRETE ENGINEERING FROM ANY AND ALL LIABILITY REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DIPRETE ENGINEERING OR ITS AGENTS.

THIS PLAN AND DESIGN IS DESIGNED FOR USE ONLY FOR THE SPECIFIC PROJECT AND SPECIFIC SITE AS SHOWN ON THIS PLAN. ANY REUSE OF THIS PLAN AND DESIGN FOR ANY OTHER PROJECT OR SITE WITHOUT THE EXPRESS WRITTEN PERMISSION OF DIPRETE ENGINEERING SHALL BE AT THE SOLE RISK OF THE PARTY REUSING THE PLAN AND DESIGN AND THAT PARTY SHALL INDEMNIFY AND HOLD HARMLESS DIPRETE ENGINEERING FROM ALL CLAIMS, DAMAGES AND LIABILITIES ARISING OUT OF OR IN CONNECTION WITH SUCH REUSE.

THIS PLAN ARE APPROXIMATE LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION. DIPRETE ENGINEERING SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTES ON SHEET 3.

No.	Date	Description	By
5	07/09/2025	Sewer Revisions	T.A.R.
4	05/05/2025	Revisions	N.M.P.
3	03/25/2025	RIDOT Response To Comments	N.M.P.
2	12/12/2024	RIDOT Response To Comments	N.M.P.
1	09/27/2024	RIDOT Response To Comments	T.A.R.
0	02/28/2024	RIDOT Submission	T.A.R.

Drawn By: D.R.N. Design By: K.J.D.

Erosion & Sediment Control Plan

Comfort Inn & Suites

AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 5 OF 14

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

z:\domain\project\2536-001 gooding avenue\autocad drawing\2536-001-plan.dwg Plotted: 7/14/2025

Parking Regulations:

PARKING USE:	HOTEL
PARKING REQUIREMENT:	1 SPACE PER HOTEL ROOM
HOTEL ROOMS:	80 ROOMS
PARKING CALCULATION:	80 X 1/ROOM = 80 SPACES
REQUIRED PARKING SPACES:	80 SPACES
PROVIDED REGULAR (10' X 18') PARKING SPACES:	60
PROVIDED COMPACT* (9' X 16') PARKING SPACES:	20
TOTAL PROVIDED PARKING SPACES:	80 SPACES (REGULAR + COMPACT)
REQUIRED ADA PARKING SPACES:	4 SPACES
PROVIDED ADA PARKING:	4 SPACES
REQUIRED LOADING AREA:	14' x 60' LOADING SPACE
PROVIDED LOADING AREA:	14' x 60' LOADING SPACE

* FOR PARKING AREAS WITH MORE THAN 20 SPACES, UP TO 25 PERCENT OF THE SPACES MAY BE REDUCED IN SIZE FOR SMALL CARS, PROVIDED THAT SUCH SPACES SHALL BE PROMINENTLY SIGNED FOR SMALL CARS ONLY

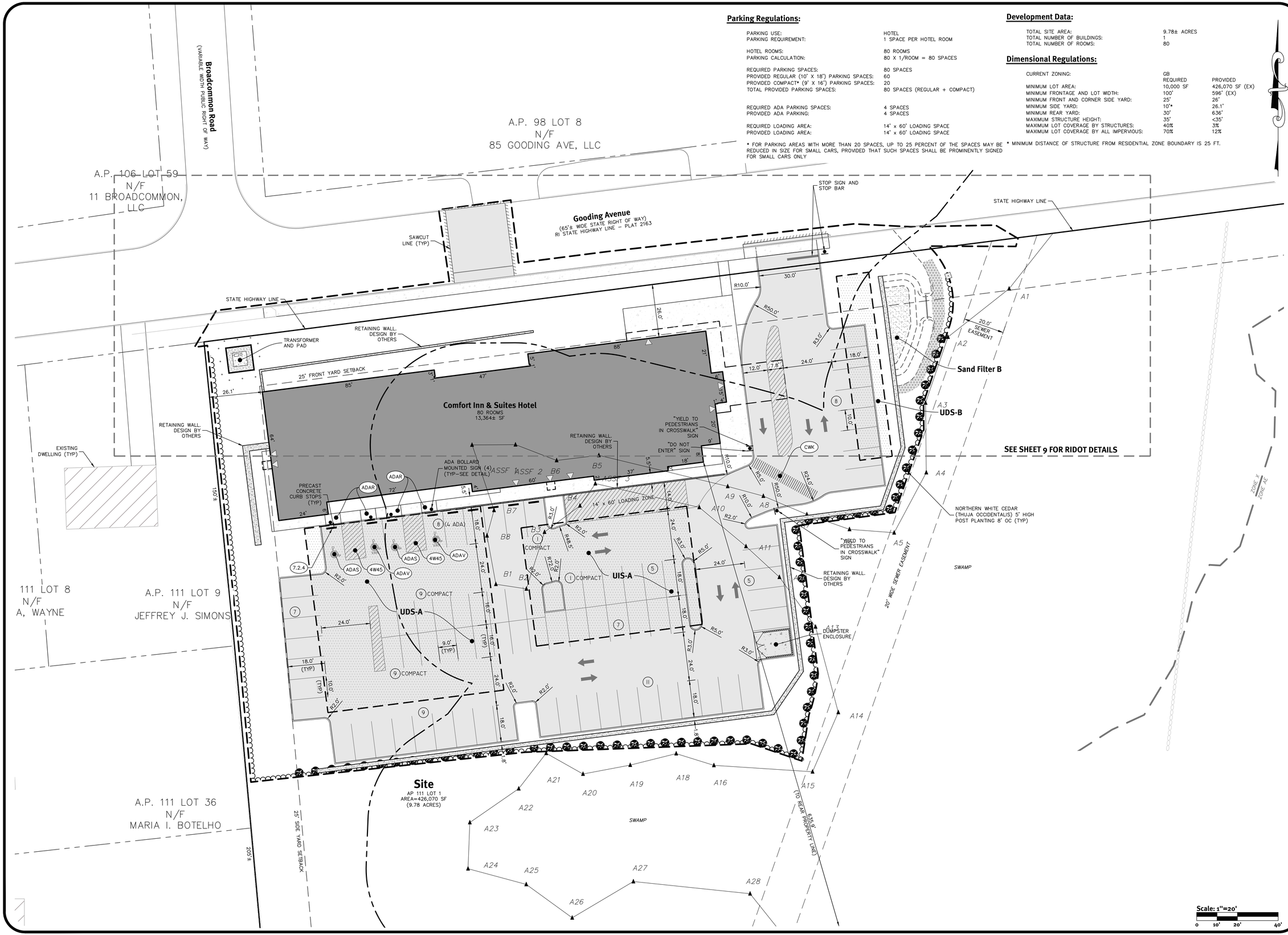
Development Data:

TOTAL SITE AREA:	9.78± ACRES
TOTAL NUMBER OF BUILDINGS:	1
TOTAL NUMBER OF ROOMS:	80

Dimensional Regulations:

CURRENT ZONING:	GB	
	REQUIRED	PROVIDED
MINIMUM LOT AREA:	10,000 SF	426,070 SF (EX)
MINIMUM FRONTAGE AND LOT WIDTH:	100'	596' (EX)
MINIMUM FRONT AND CORNER SIDE YARD:	25'	26'
MINIMUM SIDE YARD:	10'*	26.1'
MINIMUM REAR YARD:	30'	636'
MAXIMUM STRUCTURE HEIGHT:	35'	<35'
MAXIMUM LOT COVERAGE BY STRUCTURES:	40%	3%
MAXIMUM LOT COVERAGE BY ALL IMPERVIOUS:	70%	12%

* MINIMUM DISTANCE OF STRUCTURE FROM RESIDENTIAL ZONE BOUNDARY IS 25 FT.



Scale: 1"=20'

0 10' 20' 40'

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401.619.5950 fax 401.464.6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE ORIGINAL SIGNATURE AND SEAL OF A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SEQUENCES AND PROCEDURES REQUIRED TO PERFORM THE WORK AS INDICATED ON THE PLANS AND IN THE SPECIFICATIONS. THE CONTRACTOR SHALL ENTIRELY RESPONSIBLE FOR ALL JOB SITE SAFETY REQUIREMENTS AND PRECAUTIONS REQUIRED BY OSHA AND ANY OTHER AGENCY HAVING JURISDICTION OVER THE DESIGN.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITIES ON SHEET 2.

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.R.
4	06-06-2025	RIDOT Response To Comments	K.M.D.
3	04-04-2025	Response To Comments	K.M.D.
2	12/17/2024	RIDOT Response To Comments	N.M.P.
1	11/25/2024	RIDOT Response To Comments	N.M.P.
0	10/28/2024	RIDOT Submission	J.A.R.

Drawn By: D.R.N. Design By: K.J.D.

Site Layout Plan
Comfort Inn & Suites

AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 6 OF 14

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

z:\dlemain\projects\2536-001 gooding avenue\autocad drawings\2536-001-plan.dwg Plotted: 7/14/2025

Grading Plan

Comfort Inn & Suites

AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC

92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 7 OF 14

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.R.
4	06/05/2025	Revisions	S.E.H.
3	05/20/2025	RIDOT Response To Comments	N.M.P.
2	12/12/2024	RIDOT Response To Comments	N.M.P.
1	07/30/2024	RIDOT Response To Comments	N.M.P.
0	02/28/2024	RIDOT Submission	J.A.R.

Drawn By: D.R.N. | Design By: K.J.D.

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED "ISSUED FOR CONSTRUCTION" AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE 'UTILITY NOTE' ON SHEET 3.

KEVIN DEMERS
REGISTERED PROFESSIONAL ENGINEER
No. 15557

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5890 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

A.P. 106 LOT 59
N/F
11 BROADCOMMON, LLC

Broadcommon Road
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)

A.P. 98 LOT 8
N/F
85 GOODING AVE, LLC

A.P. 98 LOT 11
N/F
MINTURN-METACOM, LLC

A.P. 98 LOT 10
N/F
D&J ACQUISITIONS, LLC

Gooding Avenue
(65'± WIDE STATE RIGHT OF WAY)
RI STATE HIGHWAY LINE - PLAT 2163

SEE INSET A

SIZE AND MATERIAL FOR GAS LINE PER RI ENERGY REQUIREMENTS

SIZE AND MATERIAL FOR WATER LINE PER BUILDING MEP ENGINEER AND BRISTOL REQUIREMENTS

UTILITY POLE (CONNECTION DETAILS AND FINAL DESIGN TO BE PROVIDED BY UTILITY PROVIDER)

TRANSFORMER PAD WITH BOLLARDS PER RI ENERGY STANDARDS

Comfort Inn & Suites Hotel
80 ROOMS
13,364± SF

LOCATION, SIZE & MATERIAL FOR GAS LINE PER RI ENERGY AND BRISTOL REQUIREMENTS

BUILDING ROOFLEADERS. ALL ROOF RUNOFF TO BE DIRECTED TO ROOFLEADER VIA DOWNSPOUTS. EXACT LOCATION OF DOWNSPOUTS AND ROOFLEADER TO BE COORDINATED WITH ARCHITECT.

CO-1
RIM=76.71
INV OUT=75.49(1A)

10" HDPE
32 LF
S=0.50%

OSC-1A

10" HDPE
64 LF
S=0.50%

A.P. 111 LOT 9
N/F
JEFFREY J. SIMONS

CB FLAT TOP-2
RIM=78.66
INV IN=75.01(1A)
INV OUT=74.59(3)

15" HDPE
35 LF
S=0.49%

DMH-3
RIM=78.99
INV IN=74.42(2)
INV OUT=74.17(4)

A.P. 111 LOT 36
N/F
MARIA I. BOTELHO

18" HDPE
71 LF
S=0.50%

OCS-10
RIM=78.20
INV IN=70.00(OUT)
INV OUT=69.00(19)

A.P. 111 LOT 37
N/F
MARK REINHART II

CB-13
RIM=75.14
INV OUT=71.44(14)

CB-14
RIM=76.75
INV IN=71.13(13)
INV OUT=71.13(15)

BLDG
INV OUT
=69.70

CB-12
RIM=75.12
INV IN=71.62(11)
INV OUT=71.62(16)

CB-15
RIM=73.80
INV IN=69.37(14)
INV OUT=69.37(16)

12" HDPE
28 LF
S=0.54%

CB-16
RIM=72.53
INV IN=69.22(12)
INV IN=69.22(15)
INV OUT=69.22(CS-3)

12" HDPE
55 LF
S=0.53%

161 LF - 4" C-900
SEWER FORCE MAIN

22.5 DEGREE
C-900 BEND
FITTING

TIE INTO EXISTING SEWER SERVICE. CONFIRM ALL PROPOSED SEWER INVERT ELEVATIONS WITH DESIGN ENGINEER

CASCADE SEPARATOR-CS-3
RIM=71.46
INV IN=69.03(16)
INV OUT=69.03(22)

12" HDPE
6 LF
S=0.50%

FES-22
INV=69.00(CS-3)

12" HDPE
92 LF
S=1.91%

12" HDPE
31 LF
S=1.00%

12" HDPE
31 LF
S=7.73%

12" HDPE
72 LF
S=1.00%

Sand Filter B
(SEE SHEET 11)

UDS-B
(SEE SHEET 11)

8" HDPE
101 LF
S=0.50%

CO-21
INV IN=72.84(20)
INV OUT=72.84(11)

SLOT DRAIN-2C
INV OUT=73.34(21)

SLOT DRAIN

TP-6
GWT=36"

8" HDPE
34 LF
S=0.50%

TP-7
GWT=36"

TP-8
GWT=36"

CB-11
RIM=76.00
INV IN=72.67(21)
INV OUT=72.34(12)

INSPECTION MH-WQ
RIM=77.77
INV IN=73.00()

24" HDPE
6 LF
S=0.00%

UIS-A
(SEE SHEET 10)

UDS-A
(SEE SHEET 10)

TP-5
GWT=28"

CB-6
RIM=77.53
INV IN=74.28(5)
INV OUT=74.03(7)

12" HDPE
90 LF
S=0.50%

18" HDPE
31 LF
S=0.50%

15" HDPE
26 LF
S=0.51%

CB-4
RIM=78.13
INV IN=73.81(3)
INV OUT=73.81(7)

UDS-OUT
INV=70.00(10)

18" HDPE
32 LF
S=0.50%

12" HDPE
19 LF
S=0.00%

DMH-7
RIM=77.79
INV IN=73.66(4)
INV IN=73.90(6)
INV OUT=73.66(8)

DI-5
RIM=77.23
INV OUT=74.73(6)

12" HDPE
120 LF
S=0.83%

HW-19
INV=68.00(10)

EX SMH-12
RIM=66±
INV=59±

EX SMH-13
RIM=68±
INV=59±

20' WIDE SEWER EASEMENT

ZONE X
ZONE AE

SWAMP

SWAMP

SFM

SSF 1

SSF 2

SSF 3

VAN

INSET A

Scale: 1"=10'
0 5' 10' 20'

Scale: 1"=20'
0 10' 20' 40'

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5890 fax 401-464-6066 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MAY NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED "ISSUED FOR CONSTRUCTION" AND STAMPED BY ENGINEERING PROFESSIONAL ENGINEER OF DIPRETE

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED ENGINEERING PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION IN CONFORMANCE WITH OSHA

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE LOCATION OF EXISTING UTILITIES. SEE "UTILITY NOTE" ON SHEET 2

No.	Date	Description	By
4	07/09/2025	Sewer Revisions	K.A.R.
3	06/20/2025	RIDOT Response to Comments	K.M.P.
2	05/20/2025	RIDOT Response to Comments	K.M.P.
1	03/31/2025	RIDOT Response to Comments	K.M.P.
0	02/28/2025	RIDOT Submission	K.A.R.

Drawn By: D.R.N. Design By: K.J.D.

Drainage and Utilities Plan

Comfort Inn & Suites

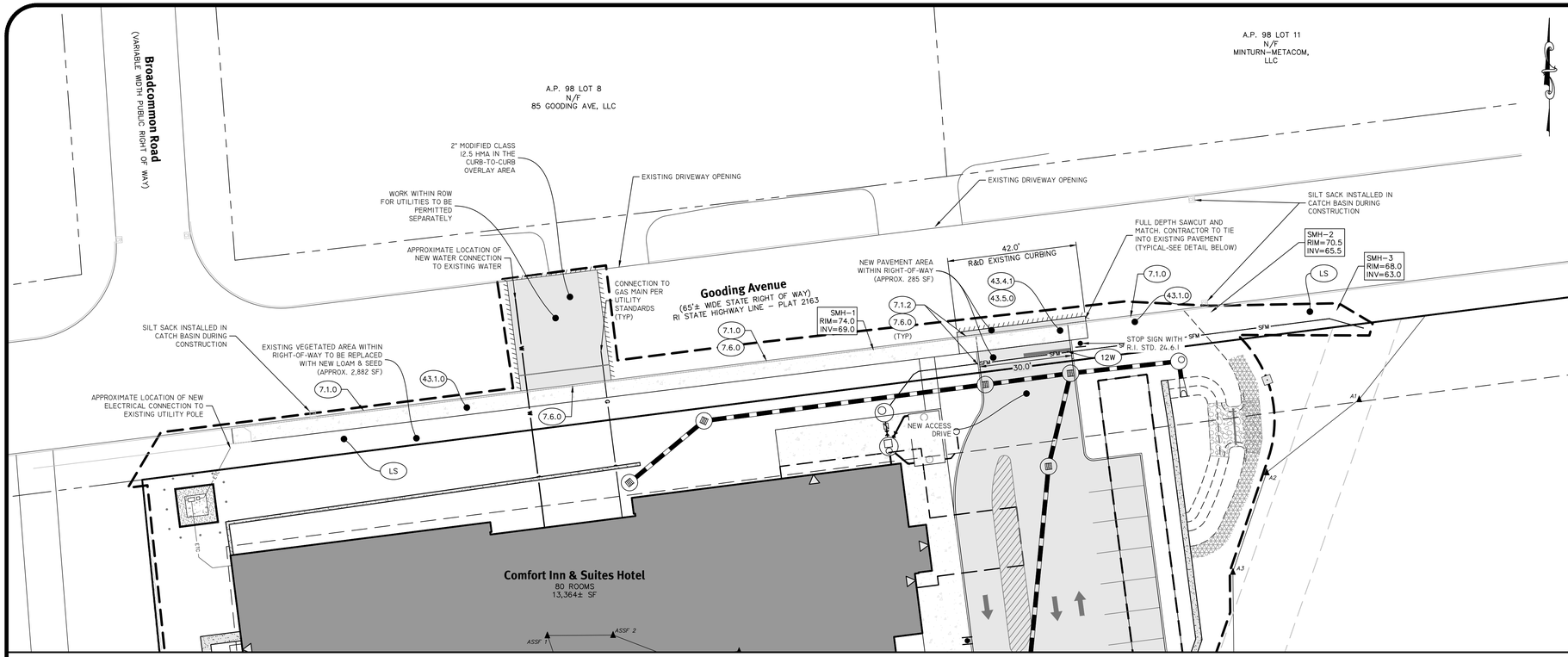
AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 8 OF 14

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

z:\deman\projects\2536-001 gooding avenue\autocad drawing\2536-001-plan.dwg Plotted: 7/14/2025



Gooding Avenue Entrance

Scale: 1"=20'
0 10' 20' 40'

RIDOT NOTES:

1. ALL WORK TO BE DONE WITHIN THE STATE HIGHWAY RIGHT-OF-WAY SHALL CONFORM TO THE RHODE ISLAND STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION, AUGUST 2023 EDITION WITH ALL REVISIONS. STANDARD DETAILS FOR THIS WORK ARE R.I. STANDARD DETAILS 1998 EDITION (AMENDED OCTOBER 2022) WITH ALL REVISIONS.
2. ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION, INCLUDING ALL REVISIONS.
3. ALL BITUMINOUS PAVEMENT WITHIN THE STATE ROW SHALL BE AN APPROVED MIX DESIGN PROVIDED BY A RIDOT APPROVED SUPPLIER IN ACCORDANCE WITH THE RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (BLUE BOOK).
4. GRAVEL BORROW SUBBASE PLACED ON STATE ROADS SHALL MATCH EXISTING PAVEMENT DEPTH (MINIMUM 12 INCHES) AND SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. SWEEPING AND TACK COAT OF MILLED SURFACE IS REQUIRED PRIOR TO OVERLAY.

UTILITY NOTES:

1. CONTRACTOR MUST COORDINATE WITH RIDOT, RI ENERGY, AND ALL OTHER UTILITY COMPANIES.
2. WITH RESPECT TO UTILITIES CONNECTIONS WITHIN THE STATE'S ROW, THE APPLICANT IS REMINDED THAT THIS APPLICATION IS NOT A SUBSTITUTE FOR THE UTILITY PERMIT AND FURTHER THAT APPROVAL OF THIS APPLICATION DOES NOT CONSTITUTE APPROVAL OF ANY UTILITY WORK, SHOWN OR UN-SHOWN, WITHIN THE STATE'S ROW.

SITE CALLOUTS LEGEND

- (12W) 12" WHITE STOP LINE (REFERENCE MUTCD SECTION 3B.16)
- (4W) 4" WHITE EPOXY RESIN PAVEMENT MARKINGS
- (7.1.0) RIDOT STD PRECAST CONCRETE CURB
- (LS) 4" LOAM AND SEED

DiPrete Engineering
50 Broadway Newport, RI 02840
tel 401-619-5950 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT IS STAMPED AND SIGNED BY DIPRETE ENGINEERING AND A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

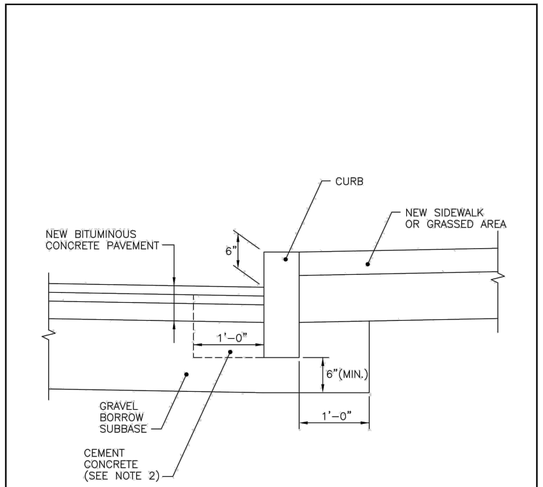
DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SEQUENCES AND PROCEDURES OF CONSTRUCTION AND FOR COMPLIANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND REQUIREMENTS AND OSHA STANDARDS AND REGULATIONS. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. DIPRETE ENGINEERING ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED DUE TO THE LOCATIONS OF EXISTING UTILITIES. SEE UTILITIES SHEET SHEET 2.

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.R.
4	06-06-2025	Revisions	K.J.D.
3	04-04-2025	RIDOT Response to Comments	N.M.P.
2	12-12-2024	RIDOT Response to Comments	N.M.P.
1	10-28-2024	RIDOT Submission	J.A.R.
0	02-28-2024	RIDOT Submission	J.A.R.

Design By: K.J.D.
Drawn By: D.R.N.



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
2. CEMENT CONCRETE SHALL BE USED ONLY WHEN THE CURB IS SET AFTER THE BASE AND/OR BINDER COURSES ARE IN PLACE, OTHERWISE THE CEMENT CONCRETE WILL BE ELIMINATED AND THE GRAVEL BROUGHT UP TO BOTTOM OF THE BASE COURSE.

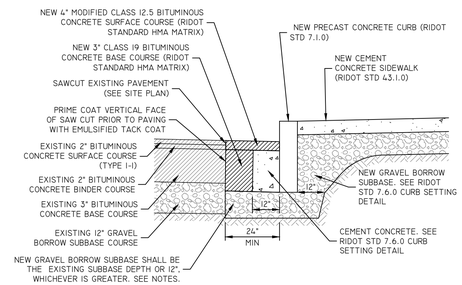
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MLP	Mar 05

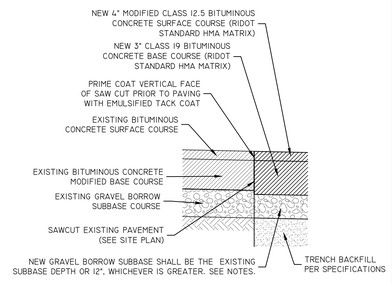
CURB SETTING DETAIL

JUNE 15, 1998
ISSUE DATE

R.I. STANDARD 7.6.0

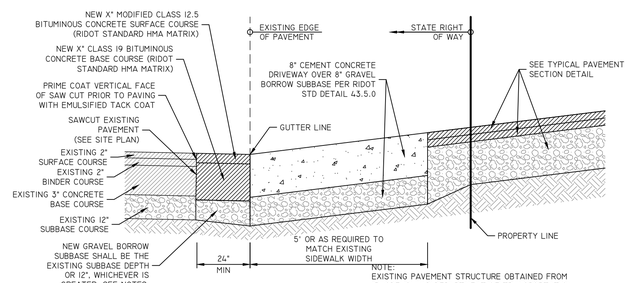


SECTION THROUGH NEW CURB & SIDEWALK
NOT TO SCALE



SECTION THROUGH TRENCH
NOT TO SCALE

NOTES:
1. PROPOSED THICKNESSES SHOWN WITHIN THE STATE RIGHT OF WAY ARE MINIMUMS. IF EXISTING THICKNESSES ARE FOUND TO BE GREATER, THE RESTORATION MUST FOLLOW AND MATCH THE EXISTING PAVEMENT STRUCTURE TO ENSURE SIMILAR STRUCTURAL CAPACITIES.
2. GRAVEL BORROW SUBBASE PLACED ON STATE ROADS SHALL MATCH EXISTING SUBBASE DEPTH (MINIMUM 12 INCHES) AND SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE RIDOT SPECIFICATIONS.
3. IF A CONCRETE BASE IS FOUND IN THE ROADWAY, ANY RESTORATION WORKS SHALL INCLUDE NEW CLASS XX CONCRETE, PINNED AND DOWELED TO THE EXISTING CONCRETE, AT A THICKNESS EQUAL TO THE EXISTING CONCRETE SLAB THICKNESS.
4. SWEEPING AND TACK COAT IS REQUIRED FOR ANY MILLED SURFACE PRIOR TO OVERLAY.
5. CLASS 19 HMA IS TO BE PLACED IN LIFTS OF 3" MINIMUM AND 5-3/4" MAXIMUM.
6. ALL ASPHALT WITHIN THE STATE RIGHT OF WAY SHALL BE AN APPROVED MIX DESIGN PROVIDED BY A RIDOT APPROVED SUPPLIER IN ACCORDANCE WITH THE RIDOT STANDARD SPECIFICATIONS.
7. ALL CONCRETE WITHIN THE STATE RIGHT OF WAY SHALL BE PROVIDED BY A RIDOT APPROVED SUPPLIER, SHALL BE CLASS XX AND CONFORM TO SECTION 601 OF THE RIDOT STANDARD SPECIFICATIONS. TRENCH WORK WILL REQUIRE PINNING AND DOWELING AND THE DEPTH SHALL MATCH EXISTING CONCRETE SLAB THICKNESS.
8. CONTRACTOR MUST HOLD/ SUPPORT/ RESTORE ALL IMPACTED UTILITY POLES AND ABOVEGROUND OBJECTS AS NECESSARY DURING INSTALLATION WORKS AND COORDINATE WITH ALL ASSOCIATED UTILITY OWNERS ACCORDINGLY.



PAVEMENT TIE IN DETAIL - RIDOT
NOT TO SCALE

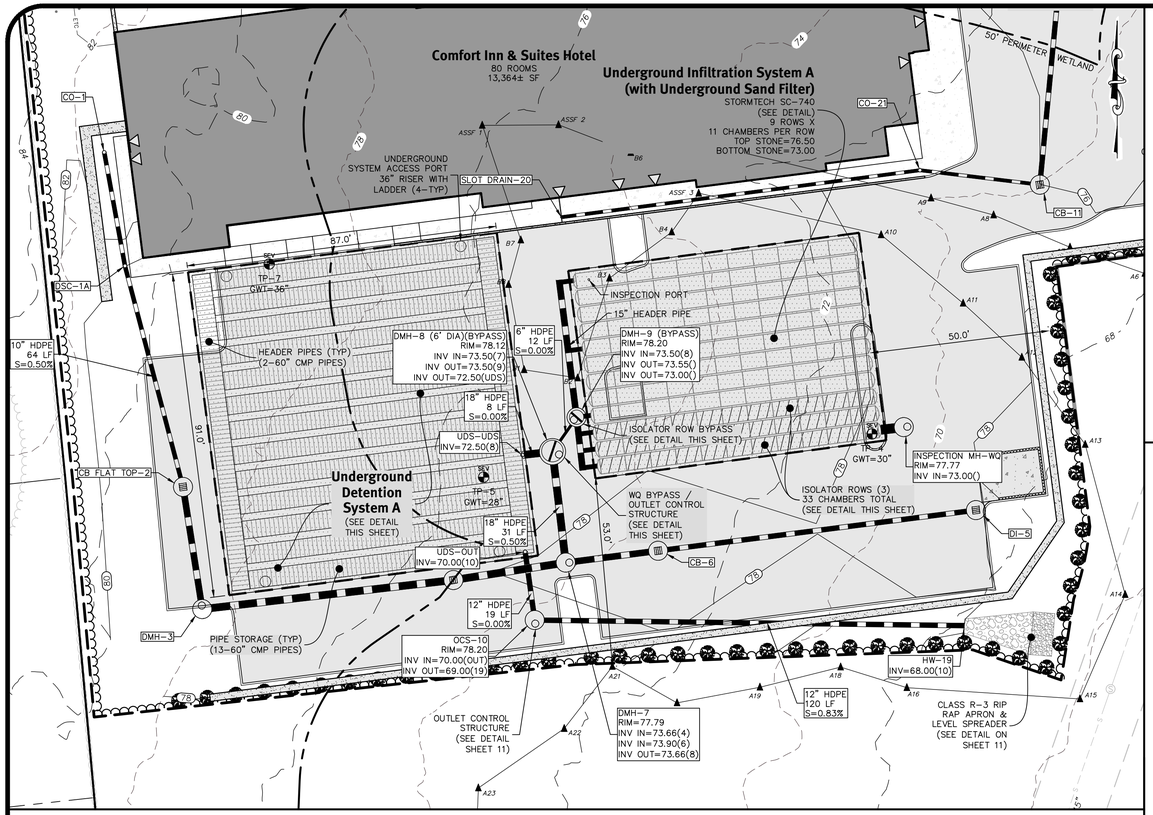
RIDOT ROW Improvements
Comfort Inn & Suites
AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

SHEET 9 OF 14

z:\dlemain\projects\2536-001 gooding avenue\autocad drawings\2536-001-plan.dwg Plotted: 7/14/2025



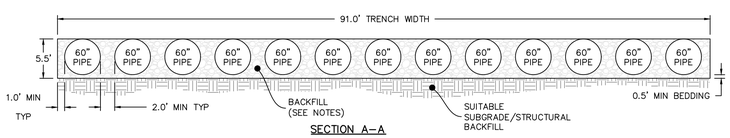
Underground Infiltration/Detention System A (UIS-A & UDS-A)

Scale: 1"=20'
0 10' 20' 40'

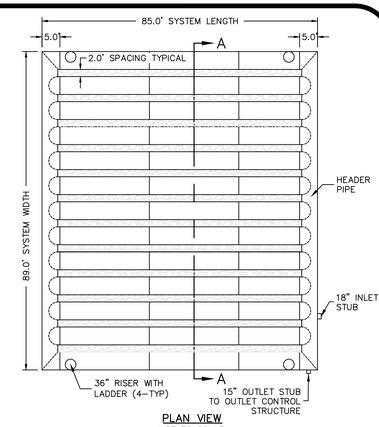
NOTES:

1. STRUCTURAL BACKFILL MATERIAL: SELECT MATERIALS SUCH AS BANK RUN GRAVEL OR OTHER PROCESSED GRANULAR MATERIALS LESS THAN 3 IN. MAXIMUM WITH EXCELLENT STRUCTURAL CHARACTERISTICS ARE PREFERRED. CONTRACTOR TO PROVIDE SIEVE ANALYSIS OF BACKFILL MATERIAL TO DESIGN ENGINEER PRIOR TO CONSTRUCTION.
2. STRUCTURAL BACKFILL PLACEMENT: STRUCTURAL BACKFILL SHALL BE PLACED IN LAYERS FROM 6 TO 12 IN. IN DEPTH DEPENDING ON THE TYPE OF MATERIAL AND COMPACTION EQUIPMENT OR METHOD. EACH LAYER OR "LIFT" SHALL BE COMPACTED TO 95% PROCTOR DENSITY BEFORE ADDING THE NEXT.
3. PIPE SHALL BE HDPE OR ALUMINIZED TYPE 2. ALL PIPE MUST BE WATERTIGHT. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO DESIGN ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
4. HEADER PIPE CAN BE CUSTOM MANUFACTURED OR CONSTRUCTED USING PIPE FITTINGS. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO DESIGN ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

DESCRIPTION	UDS-A	UDS-B
TOP OF UDS STONE ELEVATION	75.00	70.50
BOTTOM OF UDS STONE ELEVATION	69.50	68.50
100 YEAR STORM ELEVATION	72.84	70.83
10 YEAR STORM ELEVATION	71.20	70.72
1 YEAR STORM ELEVATION	70.43	70.57
SEASONAL HIGH GWT ELEVATION	73.50	66.00
SOIL EVALUATION	TP-5	TP-6



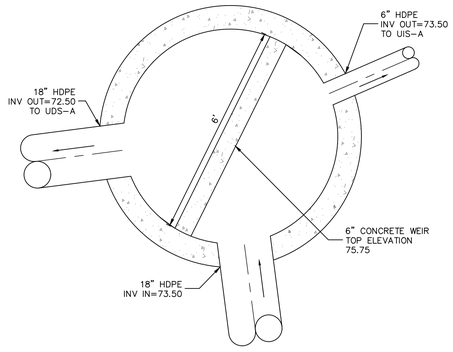
SECTION A-A



PLAN VIEW

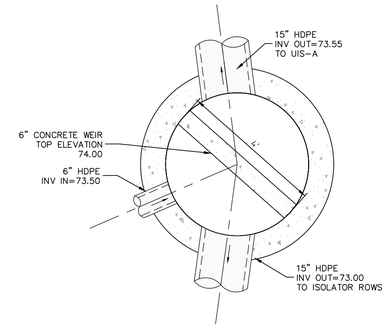
Underground Detention System A

NOT TO SCALE



WQ Bypass DMH-8 (6'Ø Manhole)

SCALE 1"=2'



Isolator Row Bypass DMH-9 (4'Ø Manhole)

SCALE 1"=2'

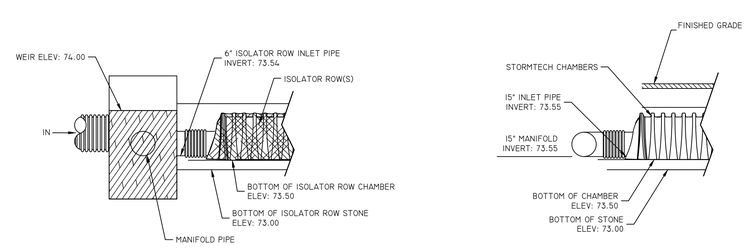
DiPrete Engineering
50 Broadway Newport, RI 02840
tel 401.619.5950 fax 401.464.6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT CONTAINS ORIGINAL WET STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.
DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER IN THE SAME STATE AS THIS PROJECT. ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, TECHNIQUES AND REQUIREMENTS AND OSHA REGULATIONS PERTAINING TO CONSTRUCTION SAFETY IN CONNECTION WITH THE CONSTRUCTION OF THIS DESIGN.
EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. CONTRACTOR IS RESPONSIBLE FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTE ON SHEET 2.

No.	Date	Description	By
5	07/09/2025	Sewer Revisions	J.A.P.
4	06/05/2025	Revisions	K.L.D.
3	05/02/2025	Revised Response To Comments	D.M.D.*
2	12/17/2024	Revised Response To Comments	D.M.D.*
1	11/20/2024	Revised Response To Comments	J.A.P.
0	02/28/2024	Revised Submission	J.A.P.

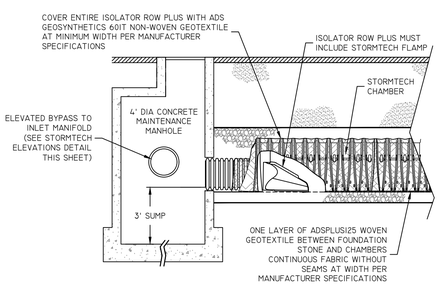
Drawn By: D.R.N. Design By: K.L.D.



SECTION A-A SECTION B-B

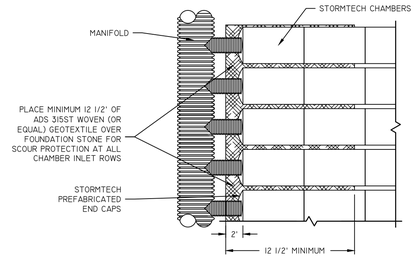
STORMTECH ELEVATIONS

NOT TO SCALE



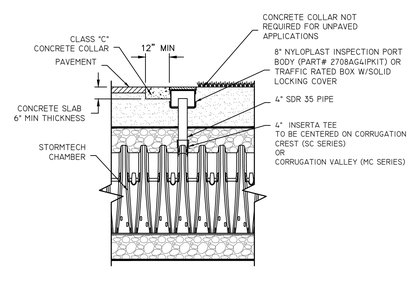
STORMTECH ISOLATOR ROW PLUS DETAIL

NOT TO SCALE



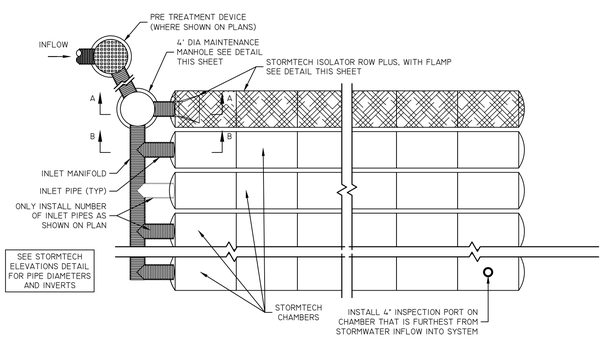
STORMTECH SCOUR PROTECTION DETAIL

NOT TO SCALE



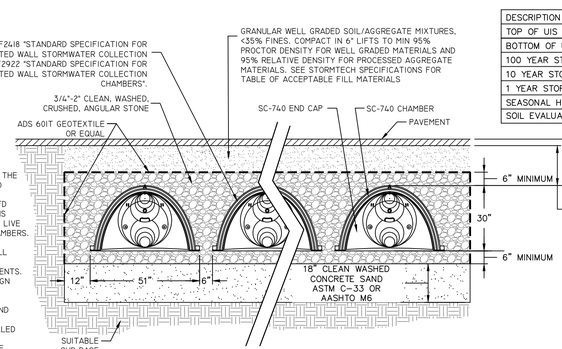
STORMTECH 4" INSPECTION PORT DETAIL

NOT TO SCALE



STORMTECH TYPICAL LAYOUT - INFILTRATION

NOT TO SCALE



NOTES:

1. THIS CROSS SECTION DETAILS THE REQUIREMENTS NECESSARY TO SATISFY THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS USING STORMTECH CHAMBERS. SEE APPLICABLE STORMTECH CONSTRUCTION GUIDES AND ALL APPLICABLE DOCUMENTS FOR SPECIFIC MATERIAL REQUIREMENTS.
2. SEE LATEST STORMTECH DESIGN MANUAL FOR CURRENT REQUIREMENTS.
3. ALL STORMTECH CHAMBERS AND ASSOCIATED/ ANCILLARY COMPONENTS MUST BE INSTALLED PER MANUFACTURER RECOMMENDATIONS AND THESE PLANS. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.

DESCRIPTION	UIS-A
TOP OF UIS STONE ELEVATION	76.50
BOTTOM OF UIS STONE ELEVATION	73.00
100 YEAR STORM ELEVATION	75.88
10 YEAR STORM ELEVATION	75.14
1 YEAR STORM ELEVATION	73.28
SEASONAL HIGH GWT ELEVATION	70.00
SOIL EVALUATION	TP-4

STORMTECH SC-740 TYPICAL CROSS SECTION (SAND FILTER)

NOT TO SCALE

CONTRACTOR NOTE: SHOULD CONTRACTOR WISH TO PROPOSE ALTERNATE STORMWATER SYSTEM IN LIEU OF ADS STORMTECH, CONTRACTOR MUST SUBMIT THE FOLLOWING FOR REVIEW AND APPROVAL BY OWNER/ DESIGN ENGINEER PRIOR TO CONSTRUCTION:

- COMPLETED "SUBSTITUTION REQUEST" CSI FORM 13.1A (APRIL 2022 VERSION MODIFIED BY DIPRETE ENGINEERING 2023) - FORM AVAILABLE FROM DIPRETE ENGINEERING;
- ALTERNATE PRODUCT DESIGN PLANS SPECIFIC TO THIS PROJECT, STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE SAME STATE AS THIS PROJECT;
- POINT BY POINT COMPARATIVE DATA THAT DEMONSTRATES HOW THE ALTERNATE DESIGN MEETS OR IMPROVES THE DESIGN SHOWN ON THE APPROVED PLANS AND REPORTS, INCLUDING (BUT MAY NOT BE NOT LIMITED TO):
  - STAGE STORAGE
  - PEAK FLOOD ELEVATION
  - PEAK DISCHARGE FOR ALL APPLICABLE DESIGN STORMS
  - ANY OTHER APPLICABLE REQUIREMENTS OR CONSTRAINTS AS SET FORTH IN THE APPROVED PLANS, REPORTS AND CONTRACT DOCUMENTS
- PLANS, CALCULATIONS OR OTHERWISE THAT DEMONSTRATE HOW THE ALTERNATE DESIGN ADDRESSES SITE LAYOUT/ CONNECTIVITY TO THE ADJOINING STORMWATER NETWORK COMPONENTS, INCLUDING (BUT MAY NOT BE LIMITED TO):
  - PROVISION FOR ACCESS AND MAINTENANCE
  - ADEQUATE CONSTRUCTABILITY
  - ACCOMMODATION OF SURROUNDING OBJECTS/ STRUCTURES/ UTILITIES IN ACCORDANCE WITH ALL APPLICABLE OFFSETS, CLEARANCES AND STIPULATIONS AS REQUIRED BY THE APPLICABLE AUTHORITIES HAVING JURISDICTION

APPLICATION FOR SUBSTITUTION

NOT TO SCALE

Underground System A & Details

Comfort Inn & Suites

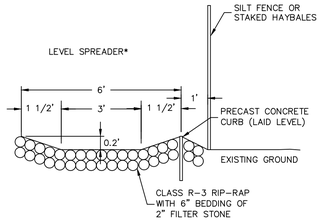
AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

DE Job No: 2536.001 Copyright 2025 by DiPrete Engineering Associates, Inc.

SHEET 10 OF 14

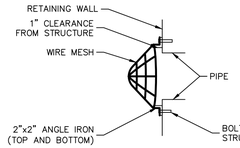
z:\domain\project\2536-001 gooding avenue\autocad drawing\2536-001-plan.dwg Plotted: 7/14/2025



NOTE:
* LENGTHS AS SPECIFIED ON SITE PLANS

Level Spreader

NOT TO SCALE



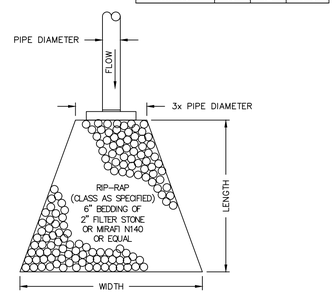
NOTES:
1. ALL 2" WEEP HOLES USED TO PLACE STRUCTURE MUST BE FILLED WITH CONCRETE.

2. SECTION SHOWN FOR THE UDS-B OPENING. MESH FOR THE SAND FILTER TO FOREBAY CONNECTION TO HAVE A STRAIGHT BRACKET ATTACHED TO TOP OF PIPE.

Trash Rack Detail

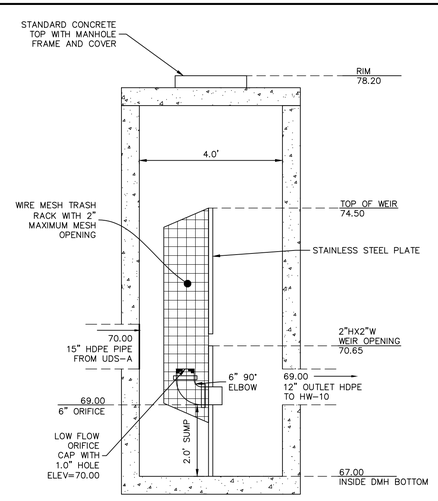
NOT TO SCALE

FLARED END	LENGTH	WIDTH	RIP RAP CLASS
HW-10	19'	12'	R-3



RIP RAP APRON/HW DETAIL

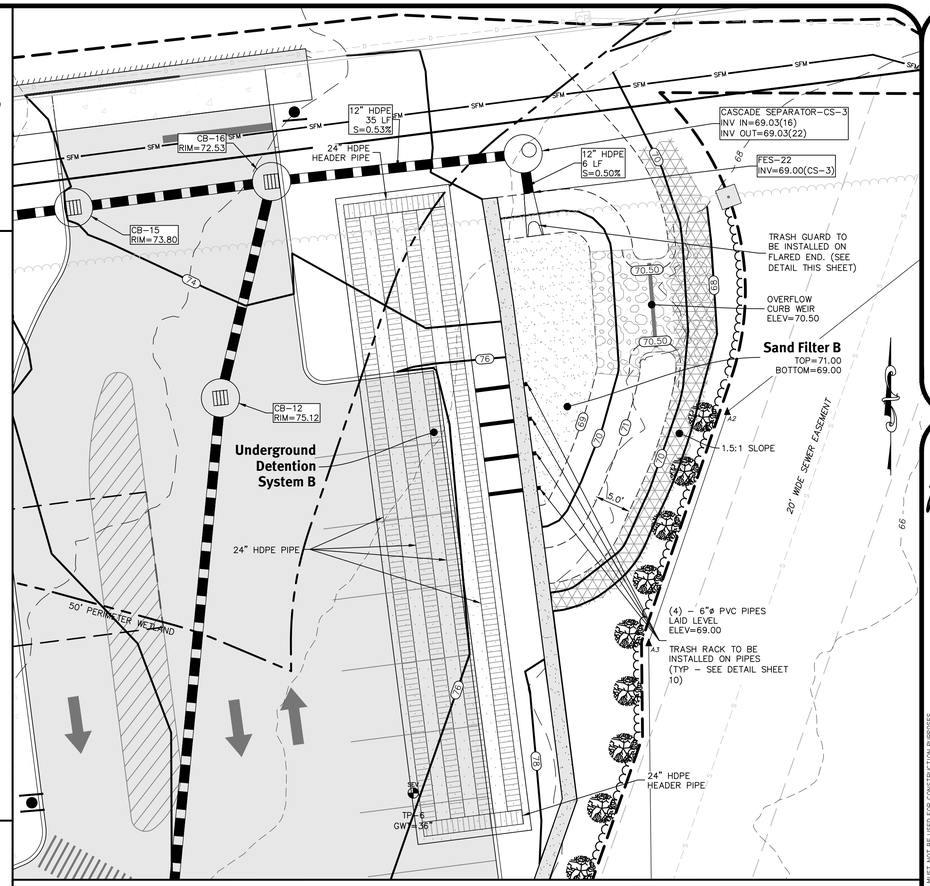
NOT TO SCALE



SECTION VIEW

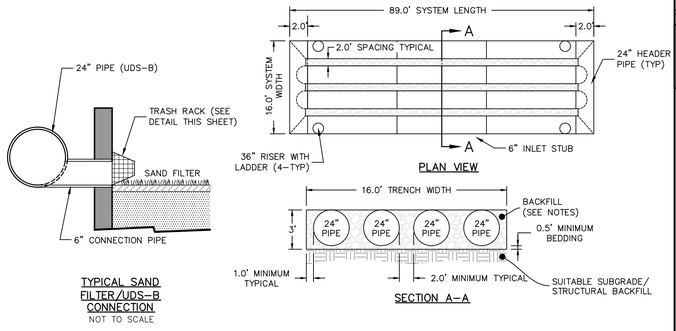
UDS-A Outlet Control Structure (OCS-10)

SCALE: 1"=2'



Underground Detention System - B (UDS-B) and Sand Filter B

Scale: 1"=10'
0 5' 10' 20'

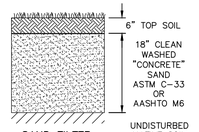


TYPICAL SAND
FILTER/UDS-B
CONNECTION
NOT TO SCALE

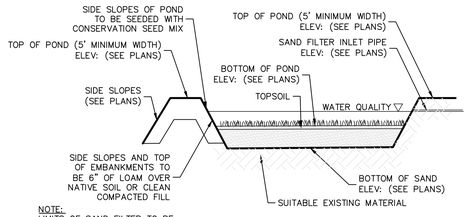
Underground Detention System B (UDS-B)

NOT TO SCALE

DESCRIPTION	SF-B
TOP OF POND ELEVATION	71.00
100 YEAR STORM ELEVATION	70.82
10 YEAR STORM ELEVATION	70.71
1 YEAR STORM ELEVATION	70.55
WQ STORM ELEVATION	69.80
BOTTOM OF POND ELEVATION	69.00
TOP SOIL DEPTH	6"
SAND DEPTH	18"
BOTTOM OF SAND ELEVATION	67.00
SEASONAL HIGH GWT ELEVATION	66.00
SOIL EVALUATION	TH-6



SAND FILTER
TYPICAL SECTION



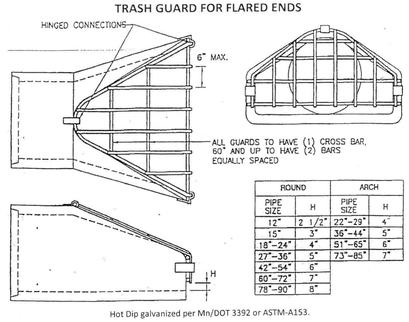
NOTE:
LIMITS OF SAND FILTER TO BE STAKED OUT AND NOT USED AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION (NO CONSTRUCTION TRAFFIC ALLOWED WITHIN FILTER LIMITS)

SAND FILTER
NOT TO SCALE

Sand Filter BMP System

NOT TO SCALE

TRASH GUARD FOR FLARED ENDS



ROUND		ARCH	
PIPE SIZE	H	PIPE SIZE	H
12"	2 1/2"	22"-29"	4"
15"	3"	36"-44"	5"
18"-24"	4"	51"-65"	6"
27"-36"	5"	73"-85"	7"
42"-54"	6"		
60"-72"	7"		
78"-90"	8"		

Hot Dip galvanized per Mn/DOT 3392 or ASTM-A153.

BAR SIZES								
STANDARD DESIGN					HEAVY DESIGN				
	PIPE SIZE	HOLE DIA. REQ'D.	BOLT DIA.	BAR SIZE		PIPE SIZE	HOLE DIA. REQ'D.	BOLT DIA.	BAR SIZE
ROUND	12"-24"	3/4"	5/8"	5/8"	ROUND	12"-24"	3/4"	5/8"	3/4"
	27"-48"	7/8"	3/4"	3/4"		27"-48"	7/8"	3/4"	1"
	54"-90"	1 1/8"	1"	1"		54"-90"	1 1/8"	1"	1 1/4"
ARCH	22"-29"	3/4"	5/8"	5/8"	ARCH	22"-29"	3/4"	5/8"	3/4"
	36"-59"	7/8"	3/4"	3/4"		36"-59"	7/8"	3/4"	1"
	65"-88"	1 1/8"	1"	1"		65"-88"	1 1/8"	1"	1 1/4"
BOLT LG. = PIPEWALL THK. + 2 1/2"									
					ELLIPTICAL	14x23"	3/4"	5/8"	3/4"
						19x30"	3/4"	5/8"	3/4"
						24x38"	7/8"	3/4"	3/4"
						29x45"	7/8"	3/4"	3/4"
						34x53"	7/8"	3/4"	3/4"
						38x60"	7/8"	3/4"	3/4"
						43x68"	1 1/8"	1"	1"
						48x76"	1 1/8"	1"	1"
						53x83"	1 1/8"	1"	1"

HAALA INDUSTRIES INC
1201 Hwy. 4 South
P.O. Box 389
Sleepy Eye, MN 56085
Fax: 507-794-5823
SCOTT HAALA
Cell: 507-920-9182
507-794-5821 ext. 115
scott@haala.com
www.haala.com
Metal Fabricated Products • Rebar Accessories • Grates & Guards
Rebar Mats • Wire Cone Cages • Lift Devices • Pipe Ties

Trash Guard Specifications

NOT TO SCALE

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401.619.5950 fax 401.464.6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 18557
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED BY A REGISTERED PROFESSIONAL ENGINEER.
ENGINEERING TITLE BLOCK STAMPED BY DIPRETE ENGINEERING, A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.
DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. DIPRETE ENGINEERING SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. DIPRETE ENGINEERING SHALL NOT BE RESPONSIBLE FOR ANY ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTOR, ANY ENTITY PERFORMING PORTIONS OF THE WORK FOR THE CONTRACTOR OR ANY AGENT OR EMPLOYEE OF ANY OF THEM. DIPRETE ENGINEERING DOES NOT GUARANTEE THE PERFORMANCE OF THE CONTRACTOR AND HAS NO CONTROL OVER THE CONSTRUCTION COST OR THE METHODS OF CONSTRUCTION. DIPRETE ENGINEERING SHALL BE INDEMNIFIED AND HELD HARMLESS BY THE CONTRACTOR AND SUBCONTRACTORS FROM ANY AND ALL CLAIMS ARISING FROM THE PERFORMANCE OF THE WORK.
EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND HAVE BEEN COMPILED FROM AVAILABLE RECORDS. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR ANY UTILITIES NOT SHOWN OR INCORRECTLY SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO CONTACT ALL UTILITY COMPANIES PRIOR TO ANY EXCAVATION FOR THE EXACT LOCATION OF UTILITIES. DIPRETE ENGINEERING SHALL NOT BE RESPONSIBLE FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THESE PLANS.

No.	Date	Description	By:
1	05/09/2025	Sewer Revisions	J.A.R.
2	09/09/2025	Revisions	S.L.M.
3	10/29/2025	RIDOT Response To Comments	N.M.P.
4	11/21/2025	RIDOT Response To Comments	N.M.P.
5	12/17/2025	RIDOT Response To Comments	N.M.P.
6	01/28/2026	RIDOT Submission & Comments	J.A.R.
7	02/26/2026	RIDOT Submission	J.A.R.

Drawn By: D.R.N. | Design By: K.J.D.

Underground System B, Sand Filter B & Details

Comfort Inn & Suites

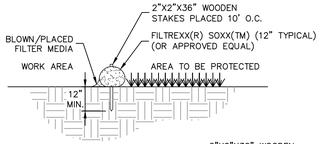
AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
90 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 11 OF 14

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

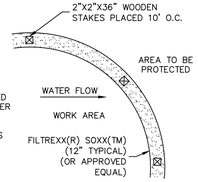
z:\domain\projects\2536-001 gooding avenue\autocad drawings\2536-001 plan.dwg Plotted: 7/14/2025



SECTION

NOTES:

1. ALL MATERIAL TO MEET FILTREXX(R) SPECIFICATIONS
2. FILTER MEDIA(TM) FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER
4. STAKES ARE NOT TO BE USED IN PAVEMENT AREAS.
5. SELF WEIGHT OF FILTREXX SYSTEM IS ADEQUATE TO PREVENT SYSTEM MOVEMENT ONCE POSITIONED ALONG AREA SHOWN ON THE PLANS.
6. CONTRACTOR TO PLACE FILTREXX SEDIMENT CONTROL OR APPROVED EQUAL AROUND ALL CURB INLET LOCATIONS AS SPECIFIED ON PLANS.



PLAN

Filtrexx Sediment Control (or Approved Equal)

NOT TO SCALE

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401-619-5950 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

GENERAL NOTES:

1. THE TEMPORARY SEDIMENT TRAP SHALL MEET ALL REQUIREMENTS FOR TEMPORARY SEDIMENT TRAPS OUTLINED IN THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK (LATEST REVISION) SECTION SIX: SEDIMENT CONTROL MEASURES
2. THE TEMPORARY SEDIMENT TRAP SHALL HAVE AN INITIAL STORAGE VOLUME OF 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER EXCEPT FOR THE EXCAVATED WET STORAGE AREA WHERE SLOPES SHALL NOT EXCEED 1.5:1.
4. THE OUTLET SHALL BE LOCATED AT THE MOST DISTANT HYDRAULIC POINT FROM THE INLET.
5. THE OUTLET CONSISTS OF A PERVIOUS STONE DIKE WITH A CORE OF MODIFIED RIPRAP AND FACED ON THE UPSTREAM SIDE WITH STONE.
6. TEMPORARY SEDIMENT TRAPS MUST OUTLET ONTO STABILIZED GROUND.
7. MAXIMUM HEIGHT OF A TEMPORARY SEDIMENT TRAP EMBANKMENT IS LIMITED TO 5 FEET.
8. SIDE SLOPES OF THE EMBANKMENT SHALL BE 2:1 OR FLATTER.
9. MODIFIED RIPRAP: SHALL MEET THE REQUIREMENTS OF RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUBSECTION M.10.03.2.
10. FILTER STONE: SHALL MEET THE REQUIREMENTS OF RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUBSECTION M.01.03 TABLE I, COLUMN V FILTER STONE.

INSPECTION, MAINTENANCE, AND REMOVAL REQUIREMENTS:

1. INSTALL "SEDIMENT STORAGE" STAKE WITH A MARKER AT ONE HALF OF THE WET STORAGE VOLUME.
2. INSPECT THE TEMPORARY SEDIMENT TRAP AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCH OR GREATER.
3. CHECK THE OUTLET TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT.
4. CHECK FOR SEDIMENT ACCUMULATION AND FILTRATION PERFORMANCE.
5. WHEN SEDIMENTS HAVE ACCUMULATED TO ONE HALF THE MINIMUM REQUIRED VOLUME OF THE WET STORAGE, DEWATER THE TRAP AS NEEDED, REMOVE SEDIMENTS AND RESTORE THE TRAP TO ITS ORIGINAL DIMENSIONS.
6. DISPOSE OF THE SEDIMENT REMOVED FROM THE BASIN IN A SUITABLE AREA.
7. THE TEMPORARY SEDIMENT TRAP MAY BE REMOVED AFTER THE CONTRIBUTING DRAINAGE AREA IS STABILIZED.

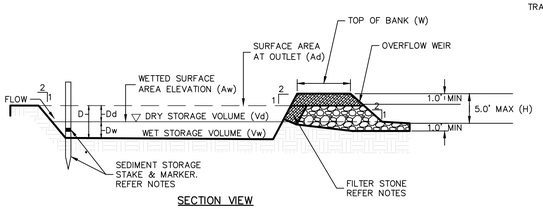
INSTALLATION NOTES:

1. CLEAR, GRUB AND STRIP ANY VEGETATION AND ROOT MAT FROM ANY PROPOSED EMBANKMENT AND OUTLET AREA.
2. REMOVE STONES AND ROCKS WHOSE DIAMETER IS GREATER THAN THREE (3) INCHES AND OTHER DEBRIS.
3. EXCAVATE WET STORAGE AND CONSTRUCT THE EMBANKMENT AND/OR OUTLET AS NEEDED TO ATTAIN THE NECESSARY STORAGE REQUIREMENTS.
4. USE ONLY FILL MATERIAL FOR THE EMBANKMENT THAT IS FREE FROM EXCESSIVE ORGANICS, DEBRIS, LARGE ROCKS (OVER SIX (6) INCHES) OR OTHER UNSUITABLE MATERIALS. COMPACT THE EMBANKMENT IN 9-INCH LAYERS BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED
5. STABILIZE THE EARTHEN EMBANKMENT USING ANY OF THE FOLLOWING MEASURES, SEEDING FOR TEMPORARY VEGETATION COVER; SEEDING FOR PERMANENT VEGETATIVE COVER; OR SLOPE PROTECTION, IMMEDIATELY AFTER INSTALLATION

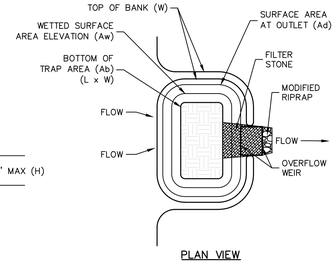
SEDIMENT TRAP DIMENSIONS	TRAP 1	
TRIBUTARY DRAINAGE AREA	1.15	ac
WET STORAGE DEPTH (Dw)	2.00	ft
DRY STORAGE DEPTH (Dd)	2.00	ft
TOTAL DEPTH (D)	4.00	ft
BOTTOM OF TRAP AREA (Ab)	850	sq.ft
WETTED SURFACE AREA (Aw)	1,400	sq.ft
SURFACE AREA AT OUTLET (Ad)	2,030	sq.ft

TOP WIDTH VS HEIGHT
H=HEIGHT OF EMBANKMENT
W=TOP WIDTH OF EMBANKMENT

H (ft)	W (ft)
1.5	2.0
2.0	2.0
2.5	3.0
3.0	2.5
3.5	3.0
4.0	3.0
4.5	4.0
5.0	4.5



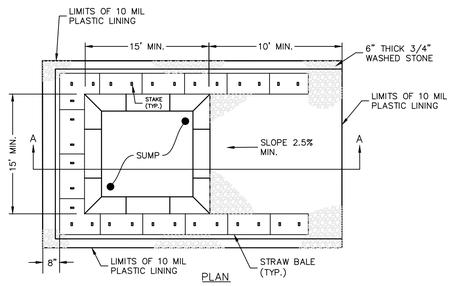
SECTION VIEW



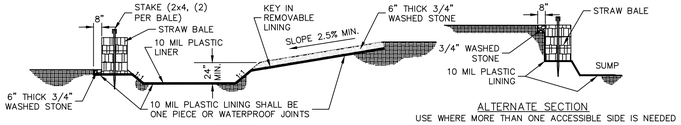
PLAN VIEW

Temporary Sediment Trap Details

NOT TO SCALE



PLAN



SECTION A–A

ALTERNATE SECTION
USE WHERE MORE THAN ONE ACCESSIBLE SIDE IS NEEDED

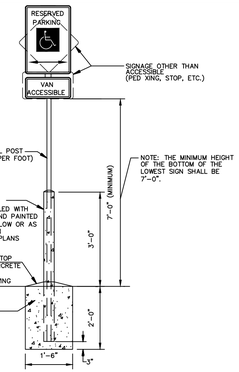
WASHOUT SIGN

NOTES:

1. PIT IS SPECIFICALLY DESIGNATED, DIKED AND IMPERVIOUS CONTAINMENT TO PREVENT CONTACT BETWEEN CONCRETE WASH AND STORMWATER.
2. WASH WATER SHALL NOT BE ALLOWED TO FLOW TO SURFACE WATER.
3. FACILITY MUST HOLD SUFFICIENT VOLUME TO CONTAIN CONCRETE WASTE WITH A MINIMUM FREEBOARD OF 12."
4. FACILITY SHALL NOT BE FILLED BEYOND 95% CAPACITY UNLESS A NEW FACILITY IS CONSTRUCTED.
5. SAW CUT PORTLAND CEMENT CONCRETE, RESIDUE FROM SAWCUT & GRINDING TO BE DISPOSED OF IN THE PIT.
6. CONCRETE WASHOUTS SHALL BE LOCATED A MINIMUM OF 100' FROM DRAINAGE WAYS, INLETS, & SURFACE WATERS.
7. MANUFACTURED CONCRETE WASHOUT DEVICES MAY BE USED IF REMOVED FROM THE SITE WHEN 95% FULL CAPACITY.

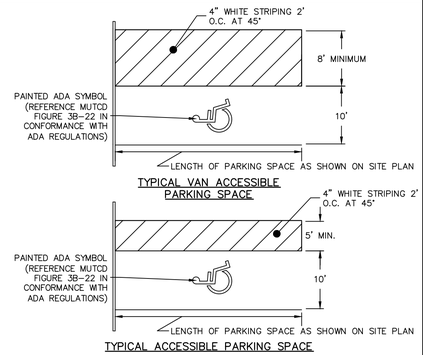
CONCRETE WASHOUT AREA

(NOT TO SCALE)



Bollard Mounted Sign Detail

NOT TO SCALE



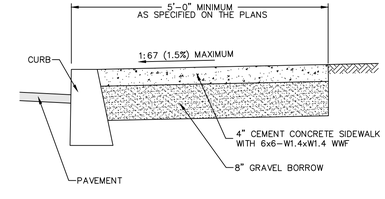
TYPICAL VAN ACCESSIBLE PARKING SPACE

TYPICAL ACCESSIBLE PARKING SPACE

Typical Accessible Parking Spaces

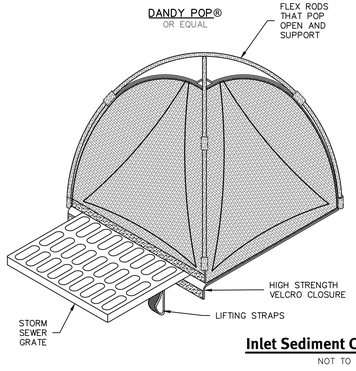
NOT TO SCALE

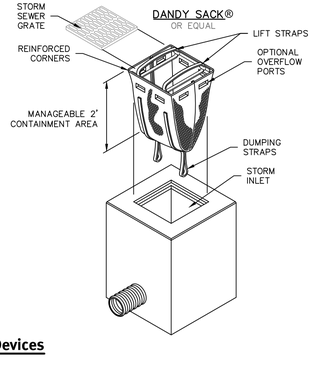
NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.
3. MEETS OR EXCEEDS GUIDELINES OF RIDOT STANDARD DETAIL 43.1.0.



Cement Concrete Sidewalk

NOT TO SCALE



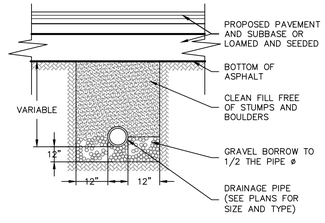


Inlet Sediment Control Devices

NOT TO SCALE

INSTALLATION NOTES:

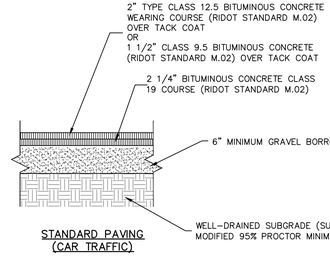
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS, LATEST ADDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100MM) FOR 4"–24" (100MM–600MM); 6" (150MM) FOR 30"–60" (750MM–900MM).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" ø PIPE AND 24" OF COVER FOR 54"–60" ø PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.



HDPE Trench Detail

NOT TO SCALE

NOTE:
THIS PAVEMENT SECTION DETAIL REFLECTS MINIMUM REQUIREMENTS. ENGINEER TO DETERMINE DESIGN BASED ON GEOTECHNICAL DATA OF SPECIFIC PROJECT AND DAILY TRAFFIC DESIGN REQUIREMENT.



STANDARD PAVING (CAR TRAFFIC)

Typical Pavement Section

NOT TO SCALE

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE ORIGINAL SIGNATURE AND SEAL OF A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE ENGINEERING.

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED ENGINEER AND SIGNED IN THE ORIGINAL. DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SEQUENCES AND PROCEDURES OF CONSTRUCTION AND FOR COMPLIANCE WITH ALL APPLICABLE LAWS, RULES, REGULATIONS AND OSHA STANDARDS AND DESIGN.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITIES OWNER'S.

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.R.
4	06-05-2025	Revisions	K.L.D.
3	12/12/2024	RIDOT Response to Comments	N.M.P.
2	12/12/2024	RIDOT Response to Comments	N.M.P.
1	07-29-2024	RIDOT Submission Comments	J.A.R.
0	07-29-2024	RIDOT Submission	J.A.R.

Drawn By: D.R.N. | Design By: K.L.D.

Detail Sheet - 1
Comfort Inn & Suites

AP 111 Lot 1
Bristol, Rhode Island

Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

SHEET 12 OF 14

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

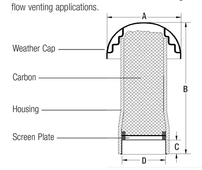
z:\demain\projects\2536-001 gooding avenue\autocad drawing\2536-001-plan.dwg Plotted: 7/14/2025

Orenco SYSTEMS® *Technical Data Sheet*

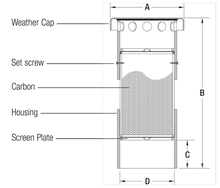
Carbon Filters

Applications

Orenco Carbon Filters reduce the odor of sewer gases in passive airflow venting applications.



CF3, CF4 Cutaway View (side)



CF6 Cutaway View (side)

CF3, CF4 Actual View (side)

CF6 Actual View (side)

General

The Orenco Carbon Filter attaches to vent pipes with a slip fit. The weather cap is removable to allow replacement of the carbon package. Carbon replacement frequency will be based on the volume and strength of gases being scrubbed by the filter. Carbon recharge packages, adapter bushings, and custom sizes are available.

Standard Models

CF3, CF4, CF6

Product Code Diagram

CF ☐

- Filter diameter:
  - 3 = 3"
  - 4 = 4"
  - 6 = 6"
- Carbon filter

Materials of Construction

Weather Cap:	ABS (CF3, CF4), Fiberglass (CF6)
Carbon:	Granular activated impregnated carbon
Housing:	UV-resistant PVC
Screen Plate:	Polyethylene

Specifications

Dimensions	CF3	CF4	CF6
A, in. (mm)	5 ⅛ (139)	5 ⅛ (139)	9 (229)
B,in. (mm)	10 (254)	12 ½ (318)	18 ⅜ (465)
C, in. (mm)	1 ¼ (31.8)	1 ½ (38.1)	3 7/16 (87.3)
D, in. (mm)	3 ½ (88.9)*	4 ½ (114)*	6 ⅜ (168)*
Carbon weight, lbs (kg):	0.9 (0.41)	1.6 (0.73)	6.0 (2.73)
H_2S capacity, grams/oc:	0.14	0.14	0.14

**Fits nominal 3", 4", and 6" vent pipe. Fittings are available to adapt to other vent pipe sizes.*

DiPrete Engineering
90 Broadway Newport, RI 02840
tel 401.619.5950 fax 401.464.6006 www.diprete-eng.com
Boston • Providence • Newport

KEVIN DEMERS
No. 8557
REGISTERED PROFESSIONAL ENGINEER
CIVIL

THIS PLAN SET MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS A COPY OF THE CONSTRUCTION PERMIT HAS BEEN STAMPED BY A REGISTERED PROFESSIONAL ENGINEER OF DIPRETE.

DIPRETE ENGINEERING ONLY WARRANTS PLANS ON A DIPRETE ENGINEERING TITLE BLOCK STAMPED BY REGISTERED ENGINEER. ANY PLANS NOT STAMPED BY DIPRETE ENGINEERING DOES NOT WARRANT PLANS BY ANY OTHER PARTY.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS AND OSHA REGULATIONS ASSOCIATED WITH THE CONSTRUCTION OF THIS DESIGN.

EXISTING UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE SHOWN FOR CONTRACTOR'S CONVENIENCE ONLY. FOR DAMAGES INCURRED DUE TO LOCATIONS OF EXISTING UTILITIES. SEE UTILITY NOTES ON SHEET 14.

No.	Date	Description	By:
5	07-09-2025	Sewer Revisions	J.A.R.
4	06-05-2025	Revisions	K.T.H.
3	04-02-2025	RIDOT Response to Comments	N.M.P.
2	12-17-2024	RIDOT Response to Comments	N.M.P.
1	02-28-2024	RIDOT Submission	J.A.R.

Design By: K.J.D.
Drawn By: D.R.N.

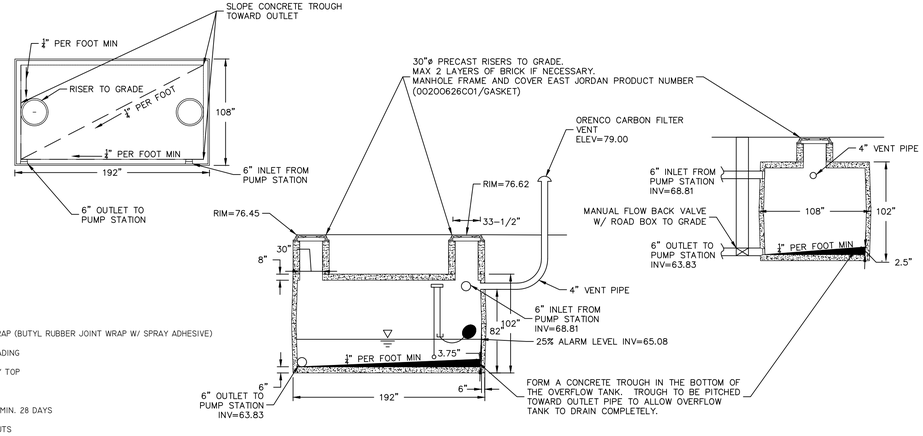
Detail Sheet - 2

Comfort Inn & Suites

AP 111 Lot 1
Bristol, Rhode Island

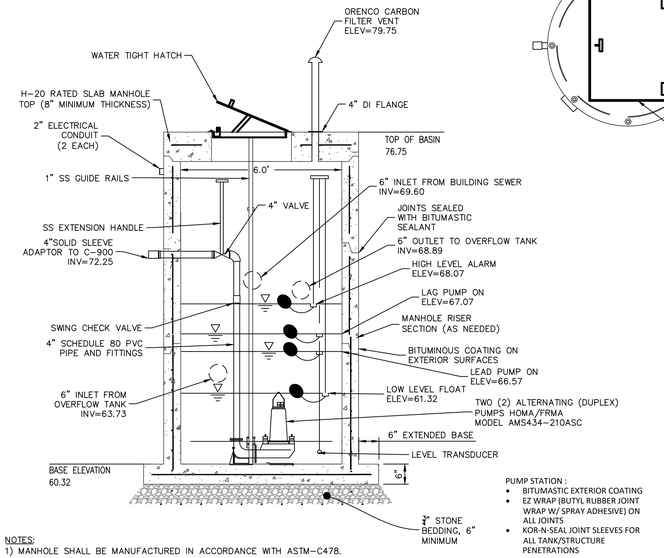
Owner & Applicant:
D&M BOCA DEVELOPMENT, LLC
92 Faunce Corner Road, Suite 160,
North Dartmouth, MA 02747

DE Job No: 2536-001 Copyright 2025 by DiPrete Engineering Associates, Inc.

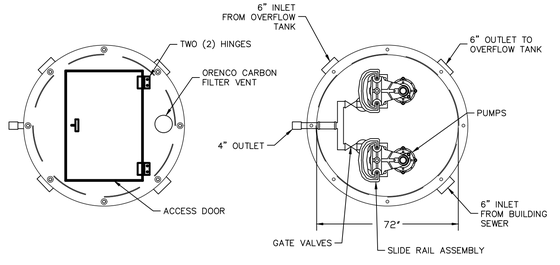


DESIGN NOTES:
1. ALL JOINTS SEALED WITH EZ WRAP (BUTYL RUBBER JOINT WRAP W/ SPRAY ADHESIVE)
2. TANK TO BE RATED FOR H20 LOADING
3. AVAILABLE WITH 8" HEAVY DUTY TOP
4. MEETS ASTM C-1227-97A
5. CONCRETE STRENGTH 5000 PSI MIN. 28 DAYS
6. TANK MUST NOT HAVE KNOCKOUTS
7. TANK TO HAVE EXTERIOR BITUMASTIC COATING
8. KOR-N-SEAL JOINT SLEEVES FOR ALL TANK/STRUCTURE PENETRATIONS

OVERFLOW TANK DETAIL
8,000 GAL JOLLEY PRECAST OR APPROVED EQUAL
NOT TO SCALE



NOTES:
1) MANHOLE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM-C478.
2) TAPPING OF MANHOLES MUST BE AUTHORIZED AND INSPECTED BY THE DESIGN ENGINEER. THE ONLY APPROVED METHOD FOR TAPPING MANHOLES SHALL BE BY CORE-DRILLING THE MANHOLE AND INSTALLING A "KOR-N-SEAL" BOOT.
3) MANHOLE AND COVER SHALL MEET HS-20 LOADING REQUIREMENTS.
4) REFERENCE MANUFACTURER DETAILS AND SPECIFICATIONS FOR ADDITIONAL DETAIL REGARDING PUMPS, LEVEL CONTROL FLOAT ASSEMBLY AND FREEFLO BASE ELBOW RAIL SYSTEM
5) BITUMASTIC EXTERIOR COATING
6) EZ WRAP (BUTYL RUBBER JOINT WRAP W/ SPRAY ADHESIVE) ON ALL JOINTS
7) KOR-N-SEAL JOINT SLEEVES FOR ALL TANK/STRUCTURE PENETRATIONS



PUMP STATION :
- BITUMASTIC EXTERIOR COATING
- EZ WRAP (BUTYL RUBBER JOINT WRAP W/ SPRAY ADHESIVE) ON ALL JOINTS
- KOR-N-SEAL JOINT SLEEVES FOR ALL TANK/STRUCTURE PENETRATIONS

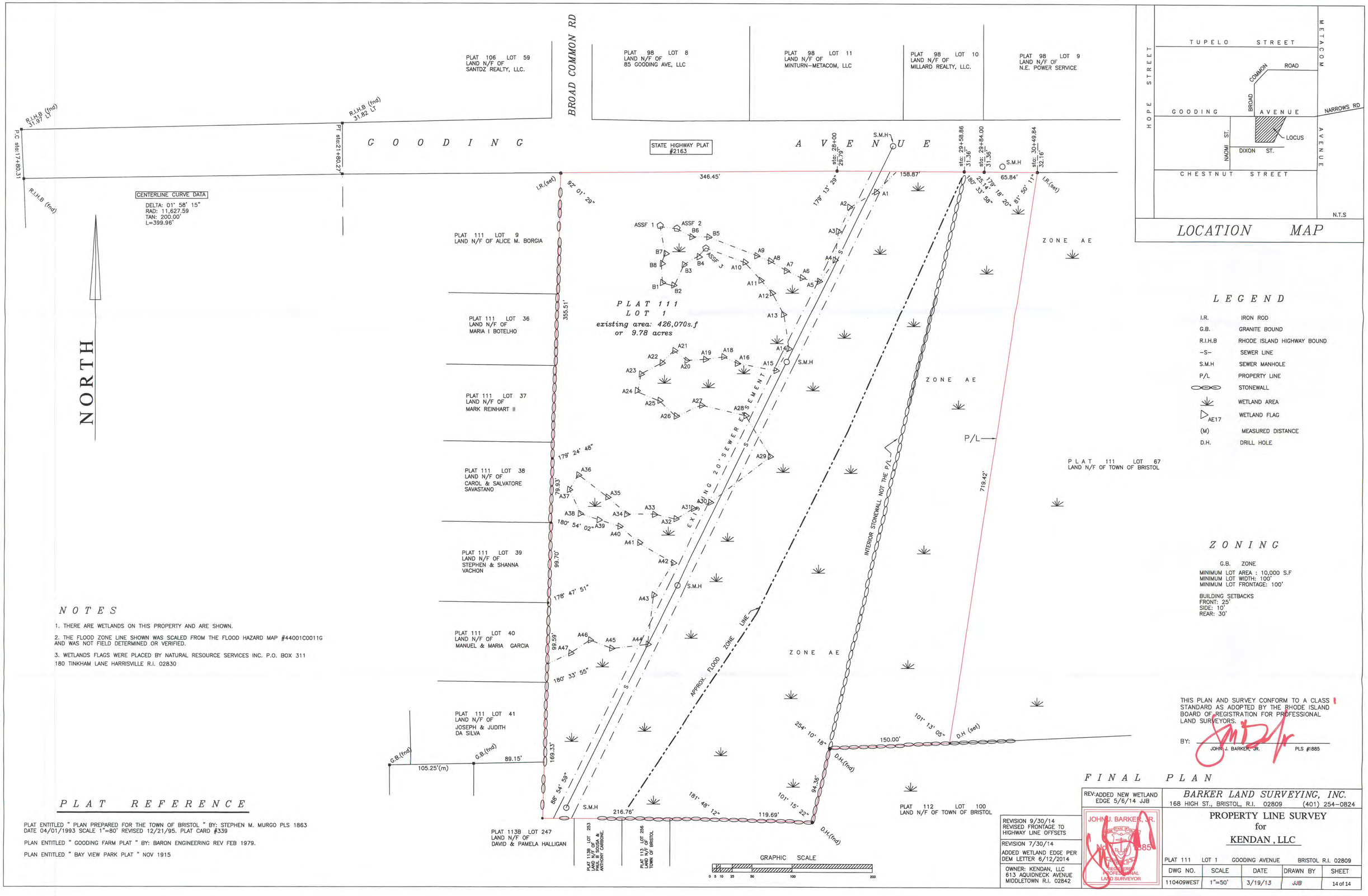
60x192 Precast Concrete Pump Station 4" Discharge

Scale: NTS	Drawn By: MTS	Job No.
Date: 9/21/2021	App'd By:	Plan No.

AHONY & Associates, Inc.
Water Supply & Pollution Control Equipment
273 Weymouth Street, Rockland, Massachusetts 02370

SHEET 13 OF 14

z:\demain\projects\2536-001 gooding avenue\autocad drawings\2536-001 plan.dwg Plotted: 7/14/2025



LEGEND

I.R.	IRON ROD
G.B.	GRANITE BOUND
R.I.H.B	RHODE ISLAND HIGHWAY BOUND
-S-	SEWER LINE
S.M.H	SEWER MANHOLE
P/L	PROPERTY LINE
	STONEWALL
	WETLAND AREA
AE17	WETLAND FLAG
(M)	MEASURED DISTANCE
D.H.	DRILL HOLE

ZONING

G.B. ZONE

MINIMUM LOT AREA : 10,000 S.F
MINIMUM LOT WIDTH: 100'
MINIMUM LOT FRONTAGE: 100'

BUILDING SETBACKS
FRONT: 25'
SIDE: 10'
REAR: 30'

NOTES

1. THERE ARE WETLANDS ON THIS PROPERTY AND ARE SHOWN.
2. THE FLOOD ZONE LINE SHOWN WAS SCALED FROM THE FLOOD HAZARD MAP #44001C0011G AND WAS NOT FIELD DETERMINED OR VERIFIED.
3. WETLANDS FLAGS WERE PLACED BY NATURAL RESOURCE SERVICES INC. P.O. BOX 311 180 TINKHAM LANE HARRISVILLE R.I. 02830

PLAT REFERENCE

PLAT ENTITLED " PLAN PREPARED FOR THE TOWN OF BRISTOL " BY: STEPHEN M. MURGO PLS 1863 DATE 04/01/1993 SCALE 1"=80' REVISED 12/21/95. PLAT CARD #339

PLAN ENTITLED " GOODING FARM PLAT " BY: BARON ENGINEERING REV FEB 1979.

PLAN ENTITLED " BAY VIEW PARK PLAT " NOV 1915

THIS PLAN AND SURVEY CONFORM TO A CLASS I STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS.

BY: _____
JOHN J. BARKER, JR. PLS #1885

FINAL PLAN

REV: ADDED NEW WETLAND EDGE 5/6/14 JJB

REVISION 9/30/14
REVISED FRONTAGE TO HIGHWAY LINE OFFSETS

REVISION 7/30/14
ADDED WETLAND EDGE PER DEM LETTER 6/12/2014

OWNER: KENDAN, LLC
613 AQUIDNECK AVENUE
MIDDLETOWN R.I. 02842

JOHN J. BARKER, JR. NO. 1885 REGISTERED PROFESSIONAL LAND SURVEYOR

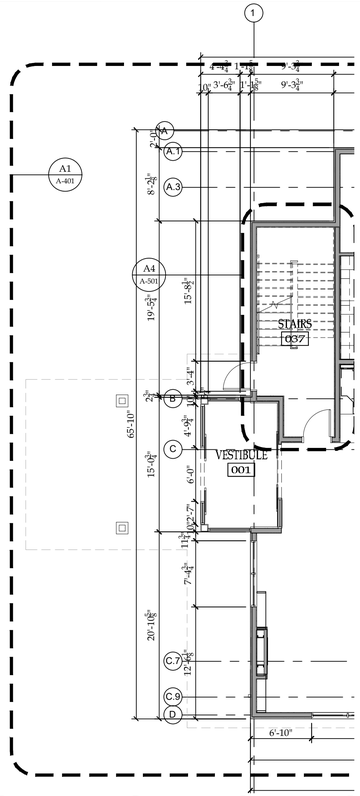
BARKER LAND SURVEYING, INC.
168 HIGH ST., BRISTOL, R.I. 02809 (401) 254-0824

PROPERTY LINE SURVEY
for
KENDAN , LLC

PLAT 111 LOT 1 GOODING AVENUE BRISTOL R.I. 02809

DWG NO.	SCALE	DATE	DRAWN BY	SHEET
110409WEST	1"=50'	3/19/13	JJB	14 of 14

SUMMARY OF GUEST ROOMS				
ROOM TYPE	LEVEL			TOTAL (BY TYPE)
	1st	2nd	3rd	
DOUBLE QUEEN	4	7	7	18
ACCESSIBLE DOUBLE QUEEN	0	1	1	2
KING	11	13	13	37
ACCESSIBLE KING	0	1	1	2
KING SUITE	0	4	4	8
KING SUITE 2	0	5	5	10
KING SUITE WIDE	0	1	1	2
ACCESSIBLE KING SUITE	1	0	0	1
TOTAL (BY FLOOR)	16	32	32	80



A1 FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTICE

This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing. These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort™ INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. W. Manhardt INTERIORS _____

SEAL:

TITLE:

FIRST FLOOR PLAN

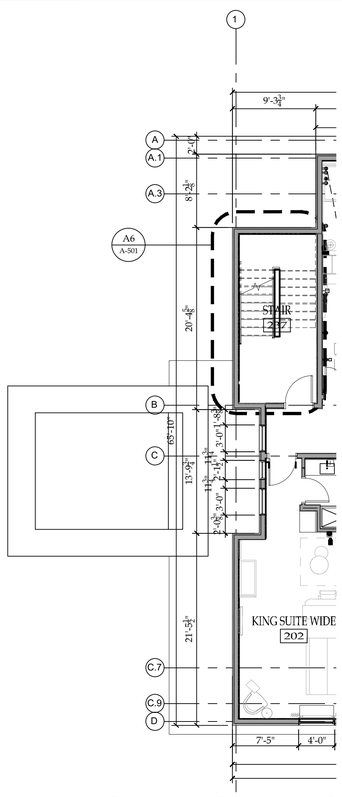
SILVESTRI
ARCHITECTS · PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

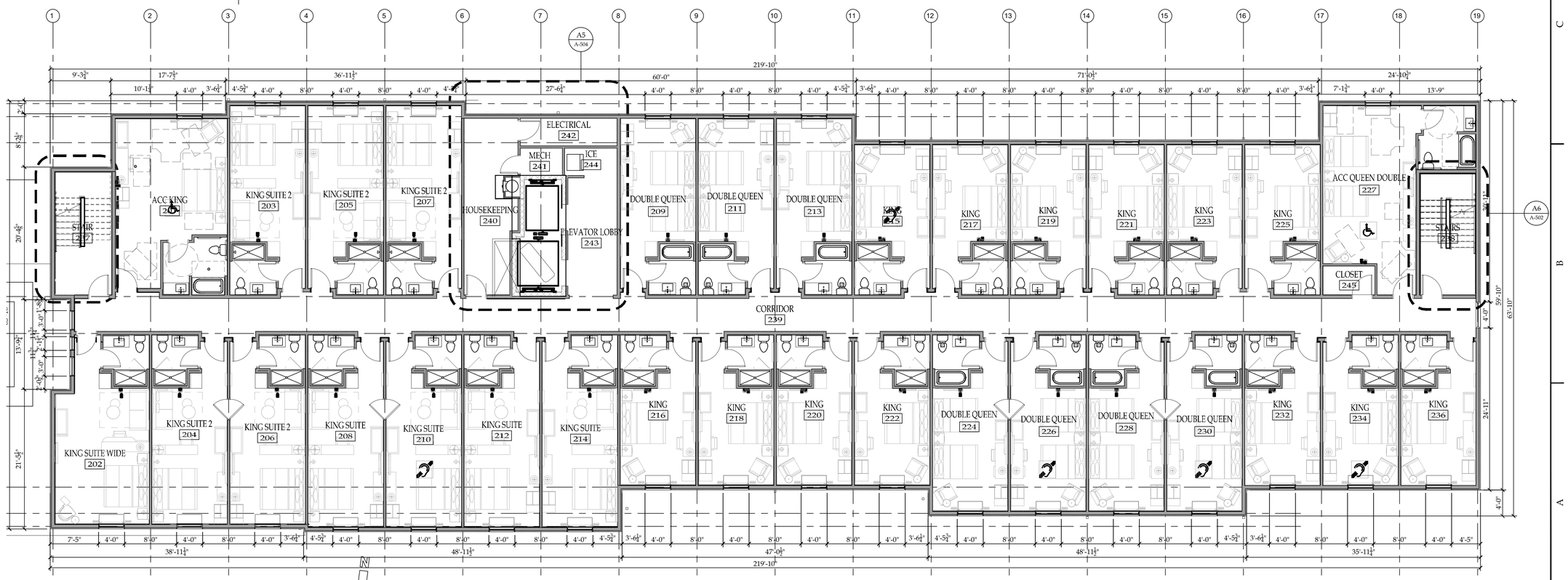
SA JOB #: 20038.01

DATE: 5/6/24

DRAWING #: A-101

SUMMARY OF GUEST ROOMS				
ROOM TYPE	LEVEL			TOTAL (BY TYPE)
	1st	2nd	3rd	
DOUBLE QUEEN	4	7	7	18
ACCESSIBLE DOUBLE QUEEN	0	1	1	2
KING	11	13	13	37
ACCESSIBLE KING	0	1	1	2
KING SUITE	0	4	4	8
KING SUITE 2	0	5	5	10
KING SUITE WIDE	0	1	1	2
ACCESSIBLE KING SUITE	1	0	0	1
TOTAL (BY FLOOR)	16	32	32	80





A1 SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTICE

This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing.These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort™ INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. W. Manhardt INTERIORS _____

SEAL:

TITLE:

SECOND FLOOR PLAN

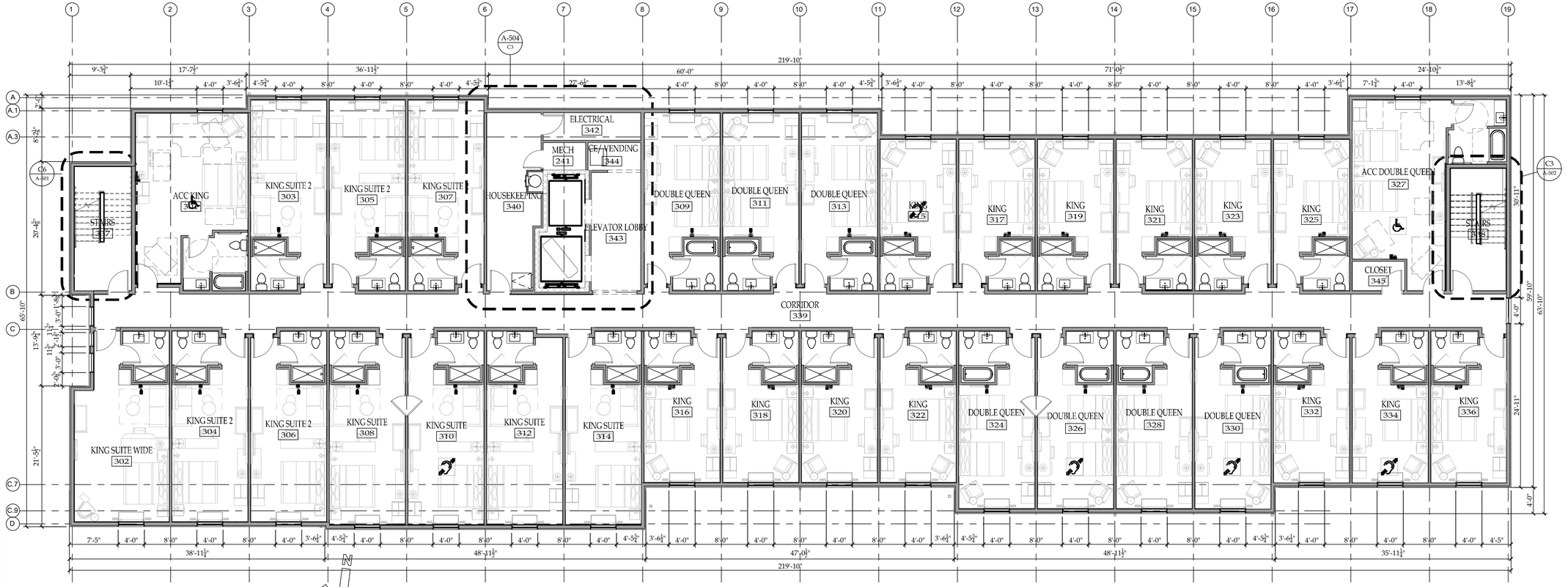
SILVESTRI
ARCHITECTS • PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

DATE: 5/6/24

DRAWING #: A-102

SUMMARY OF GUEST ROOMS				
ROOM TYPE	LEVEL			TOTAL (BY TYPE)
	1st	2nd	3rd	
DOUBLE QUEEN	4	7	7	18
ACCESSIBLE DOUBLE QUEEN	0	1	1	2
KING	11	13	13	37
ACCESSIBLE KING	0	1	1	2
KING SUITE	0	4	4	8
KING SUITE 2	0	5	5	10
KING SUITE WIDE	0	1	1	2
ACCESSIBLE KING SUITE	1	0	0	1
TOTAL (BY FLOOR)	16	32	32	80



A1 THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTICE

This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing.These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort™ INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. W. Manhardt INTERIORS _____

SEAL:

TITLE:

THIRD FLOOR PLAN

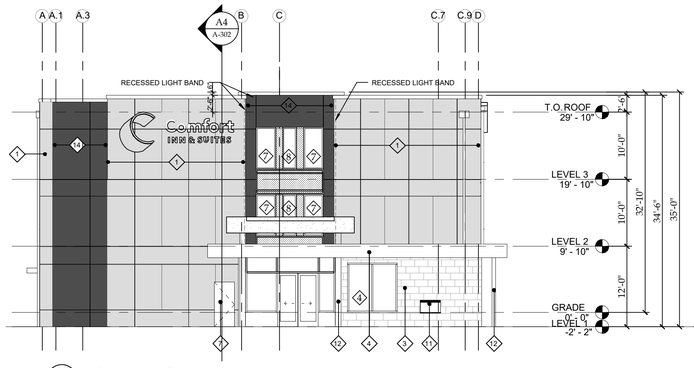
SILVESTRI
ARCHITECTS • PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

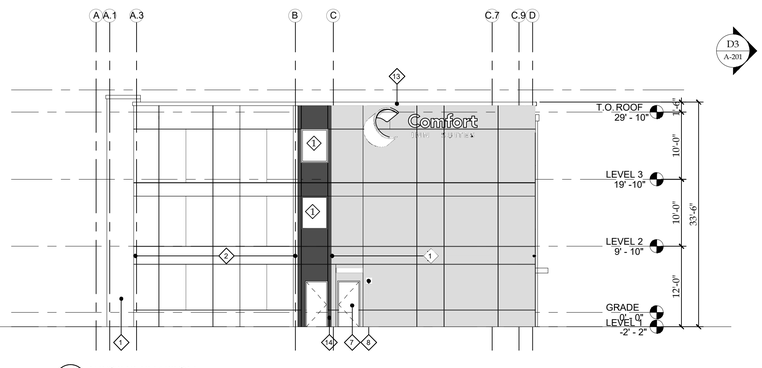
DATE: 5/6/24

DRAWING #: A-103

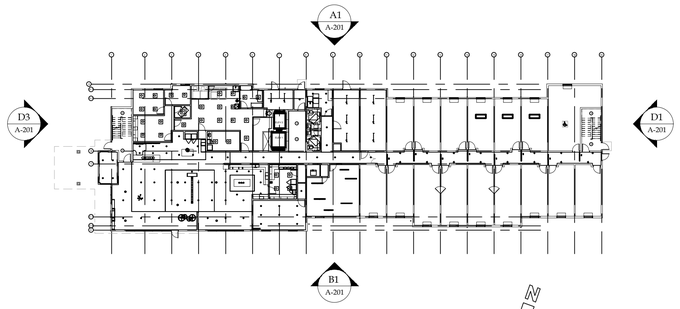
KEYNOTE LEGEND - EXTERIOR ELEVATIONS			
NUMBER	MATERIAL	NOTE	TEXT
1	EIFS	SMOKIE AZURITE (SW-9148)	PTD
2	EIFS	ICICLE (SW-6238)	PTD
3	CORONADO STONE	FRENCH LIMESTONE - COUNTRY BEIGE	PREFINISHED
4	SIGNATURE LIGHTED AWNING	PREFABRICATED LIGHT BOX, SEE ARCHITECTURAL SPECIFICATIONS	PREFINISHED
5	WINDOW FRAME	INTEGRATED PTAC GRILLE WHERE SHOWN - CLEAR ANODIZED ALUMINUM	PREFINISHED
6	EIFS	QUEST GRAY (SW-7080)	PTD
7	DOOR & DOOR FRAME	MATCH ADJACENT WALL COLOR	PTD
8	LIGHTING WALL PACK	EXT-404	-
11	FIREPLACE	DOUBLE-SIDED SEE-THRU	-
12	STEEL COLUMN WRAP	BRUSHED STAINLESS STEEL	PREFINISHED
13	PARAPET COPING	MATCH ADJACENT WALL COLOR	PTD
14	EIFS	COMFORT BLUE PER ARCHITECTURAL SPECIFICATIONS AND OWNER SELECTED BASE PAINTS	PTD



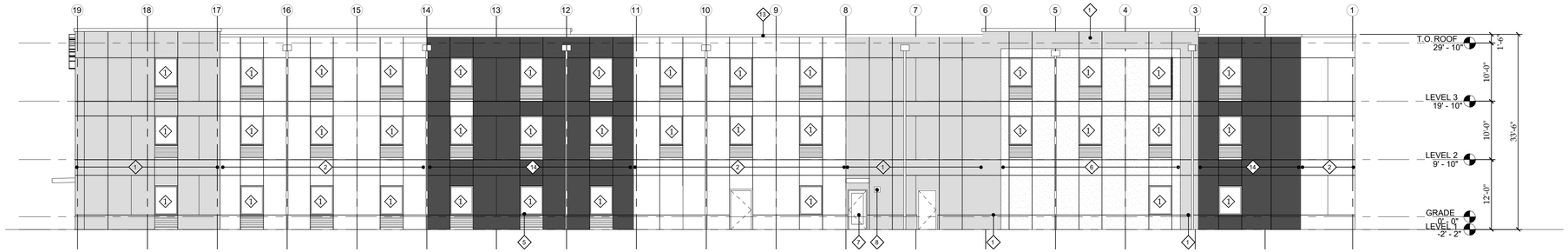
D1 EAST ELEVATION
SCALE: 3/32" = 1'-0"



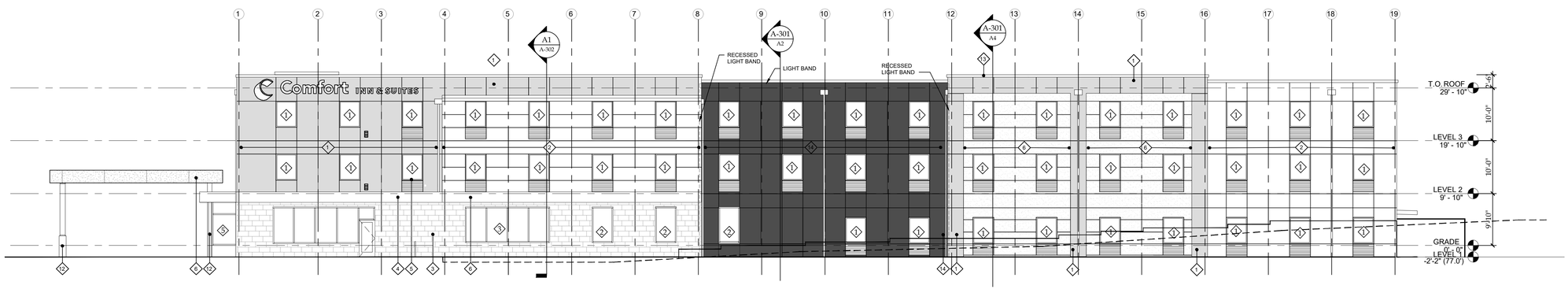
D3 WEST ELEVATION
SCALE: 3/32" = 1'-0"



E5 KEY PLAN
SCALE: NTS



B1 SOUTH ELEVATION
SCALE: 3/32" = 1'-0"



A1 NORTH ELEVATION
SCALE: 3/32" = 1'-0"

NOTICE
This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing.These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort™ INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM: PRINCIPAL P.Silvestri
PROJ. ARCH. _____ DRAFTER _____
JOB CAPT. W. Manhardt INTERIORS _____

SEAL:

TITLE:

EXTERIOR ELEVATIONS

SILVESTRI
ARCHITECTS · PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

DATE: 5/6/24

DRAWING #: A-201

COMFORT INN & SUITES

GOODING AVENUE, BRISTOL, RHODE ISLAND

8/4/25

SILVESTRI
ARCHITECTS·PC

Item C1.
2 Pages
PERMIT
Bk: 2287 Pg: 330
Instr: 2025-1521

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street
Providence, Rhode Island 02908

July 10, 2025

D & M Boca Development, LLC
c/o Dennis DeGrazia
92 Faunce Corner Road, Suite 160
Dartmouth, MA 02747

REVISED PERMIT

Re: Wetlands Application No. 22-0264, RIPDES No. RIR101247, and UIC No. 001650 in reference to the property and proposed project located:

Approximately 150 feet south of Gooding Avenue, and approximately 300 feet southeast of its intersection with Broadcommon Road, near Utility Pole No. 218, Assessor's Plat 111, Lot 1, Bristol, RI.

Dear Mr. DeGrazia:

The Department of Environmental Management's ("DEM") Freshwater Wetlands Program ("Program") has completed its review of your **Application for Permit Modification** to the permitted 80-room hotel and associated parking area, screen plantings, retaining wall, stormwater mitigation systems, and utilities (electrical utility connection and connections to town water line, gas line, and sewer line) and has evaluated your proposed modifications, which include changing the layout of the hotel and parking lot and changes to the stormwater mitigation systems as illustrated and detailed on revised site plans submitted with your application. The revised site plans were received on April 9, 2025.

Based upon the Program's evaluation of the revised project and pursuant to 250-RICR-150-15-3.14.3 of the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act, 250-RICR-150-15-3, it is the Program's determination that a revised permit for the modified project may be issued under the following terms and conditions:

1. This letter is the DEM's revised permit for this project under the R.I. Fresh Water Wetlands Act, R.I. Gen. Laws § 2-1-18 et seq.

2. This revised permit is specifically limited to the project, site alterations and limits of disturbance as detailed on the site plans submitted with your application and received by the DEM on April 9, 2025. A copy of the site plans stamped approved by the DEM is enclosed. Changes or revisions to the project, which would alter freshwater wetlands are not authorized without a permit from the DEM.

3. Where the terms and conditions of the revised permit conflict with the approved site plans, these terms and conditions shall be deemed to supersede the site plans.

4. A copy of the stamped approved site plans and a copy of this revised permit must be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this revised permit and the stamped approved plans must be made available for review by any DEM or town representative upon request.

5. Within ten (10) days of the receipt of this revised permit, you must record this permit in the land evidence records of the Town of Bristol and supply this Program with written documentation obtained from the Town showing this revised permit was recorded.

6. The long-term operation and maintenance plan shall be strictly followed. The long-term operation and maintenance plan shall be that entitled "Operation & Maintenance Plan, Mainstay / Sleep Inn Hotel, Located in Bristol, Rhode Island; Applicant: D & M Boca Development", dated 1-23-2018, Revised 2-28-2024, dated received 1/16/2025, prepared by DiPrete Engineering.

7. Where the site plans depict a retaining wall over the proposed Northern white cedar (*Thuja occidentalis*) plantings, those plantings must be installed at the base of the retaining wall. You must notify this Program in writing upon completion of the required plantings for a compliance inspection by a Program representative. This must be fulfilled prior to on-site operations.

8. This revised permit expires on December 6, 2025, unless renewed pursuant to the Rules.

Except as authorized in this revised permit pursuant to revised and approved site plans (enclosed), all terms and conditions previously specified in the Program's permit dated December 6, 2024 (copy enclosed) remain in effect.

You are required to comply with the terms and conditions of this revised permit and to carry out this project in compliance with 250-RICR-150-15-3 at all times. Failure to do so may result in an enforcement action by the Program.

In permitting the proposed alterations, the DEM assumes no responsibility for damages resulting from faulty design or construction.

This revised permit does not remove your obligation to obtain any local, state, or federal approvals or permits required by ordinance or law and does not relieve you from any duties owed to adjacent landowners with specific reference to any changes in drainage.

Please contact me at this office at (telephone: 401-537-4194) should you have any questions regarding this letter.

Sincerely,

Martin D. Wencek — mdw 7/17/2025

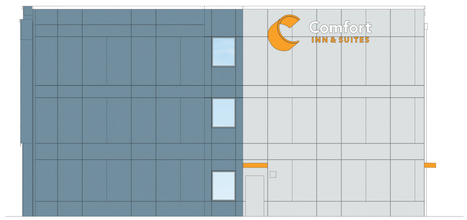
Martin D. Wencek, Program Supervisor
Freshwater Wetlands Program
Office of Water Resources
MDW/JAL/jal

Enclosure: Original permit dated December 6, 2024

ec: Nicholas Pisani, DEM Stormwater Program
Kevin DeMers, PE, DiPrete Engineering

Received for record at Bristol, RI
7/18/2025 03:51:05 PM

D1 EAST ELEVATION
SCALE: 3/32" = 1'-0"



D3 WEST ELEVATION
SCALE: 3/32" = 1'-0"

B1 SOUTH ELEVATION
SCALE: 3/32" = 1'-0"

A1 NORTH ELEVATION
SCALE: 3/32" = 1'-0"

NOTICE
This document, the property of, prepared and issued by the architect, is submitted for the specific project namely _____ and the recipient by accepting this document assumes custody and agrees that this document will not be copied or reproduced in part or in whole, and any special features peculiar to this design shall not be incorporated in any other project, unless prior agreement has been obtained in writing.These documents will be returned immediately upon completion of the project or upon the request of the architect.
This document is the exclusive property of the architect, no rights to ownership are transferable, or shall be lost by the filing of this document with any and all public authorities for the purpose of compliance with Codes and or Ordinances, i.e. Building Permit, etc.

Comfort™ INN & SUITES

Comfort Inn & Suites

PROPERTY ID: RI043

Gooding Avenue
Bristol, RI 02809

ISSUE:

SA PROJECT TEAM:
PRINCIPAL P.Silvestri
PROJ. ARCH. _____
DRAFTER _____
JOB CAPT. W. Manhardt
INTERIORS _____

SEAL:

TITLE:

COLORED ELEVATIONS

SILVESTRI
ARCHITECTS • PC
1321 MILLERSPORT HWY PH. 716.691.0900
AMHERST, NY 14221 FAX 716.691.4773

SA JOB #: 20038.01

DATE: 3/12/24

DRAWING #: A-202

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street
Providence, Rhode Island 02908

July 10, 2025

D & M Boca Development, LLC
c/o Dennis DeGrazia
92 Faunce Corner Road, Suite 160
Dartmouth, MA 02747

REVISED PERMIT

Re: Wetlands Application No. 22-0264, RIPDES No. RIR101247, and UIC No. 001650 in reference to the property and proposed project located:

Approximately 150 feet south of Gooding Avenue, and approximately 300 feet southeast of its intersection with Broadcommon Road, near Utility Pole No. 218, Assessor's Plat 111, Lot 1, Bristol, RI.

Dear Mr. DeGrazia:

The Department of Environmental Management's ("DEM") Freshwater Wetlands Program ("Program") has completed its review of your **Application for Permit Modification** to the permitted 80-room hotel and associated parking area, screen plantings, retaining wall, stormwater mitigation systems, and utilities (electrical utility connection and connections to town water line, gas line, and sewer line) and has evaluated your proposed modifications, which include changing the layout of the hotel and parking lot and changes to the stormwater mitigation systems as illustrated and detailed on revised site plans submitted with your application. The revised site plans were received on April 9, 2025.

Based upon the Program's evaluation of the revised project and pursuant to 250-RICR-150-15-3.14.3 of the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act, 250-RICR-150-15-3, it is the Program's determination that a revised permit for the modified project may be issued under the following terms and conditions:

1. This letter is the DEM's revised permit for this project under the R.I. Fresh Water Wetlands Act, R.I. Gen. Laws § 2-1-18 et seq.

2. This revised permit is specifically limited to the project, site alterations and limits of disturbance as detailed on the site plans submitted with your application and received by the DEM on April 9, 2025. A copy of the site plans stamped approved by the DEM is enclosed. Changes or revisions to the project, which would alter freshwater wetlands are not authorized without a permit from the DEM.

3. Where the terms and conditions of the revised permit conflict with the approved site plans, these terms and conditions shall be deemed to supersede the site plans.

4. A copy of the stamped approved site plans and a copy of this revised permit must be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this revised permit and the stamped approved plans must be made available for review by any DEM or town representative upon request.

5. Within ten (10) days of the receipt of this revised permit, you must record this permit in the land evidence records of the Town of Bristol and supply this Program with written documentation obtained from the Town showing this revised permit was recorded.

6. The long-term operation and maintenance plan shall be strictly followed. The long-term operation and maintenance plan shall be that entitled "Operation & Maintenance Plan, Mainstay / Sleep Inn Hotel, Located in Bristol, Rhode Island; Applicant: D & M Boca Development", dated 1-23-2018, Revised 2-28-2024, dated received 1/16/2025, prepared by DiPrete Engineering.

7. Where the site plans depict a retaining wall over the proposed Northern white cedar (*Thuja occidentalis*) plantings, those plantings must be installed at the base of the retaining wall. You must notify this Program in writing upon completion of the required plantings for a compliance inspection by a Program representative. This must be fulfilled prior to on-site operations.

8. This revised permit expires on December 6, 2025, unless renewed pursuant to the Rules.

Except as authorized in this revised permit pursuant to revised and approved site plans (enclosed), all terms and conditions previously specified in the Program's permit dated December 6, 2024 (copy enclosed) remain in effect.

You are required to comply with the terms and conditions of this revised permit and to carry out this project in compliance with 250-RICR-150-15-3 at all times. Failure to do so may result in an enforcement action by the Program.

In permitting the proposed alterations, the DEM assumes no responsibility for damages resulting from faulty design or construction.

This revised permit does not remove your obligation to obtain any local, state, or federal approvals or permits required by ordinance or law and does not relieve you from any duties owed to adjacent landowners with specific reference to any changes in drainage.

Please contact me at this office at (telephone: 401-537-4194) should you have any questions regarding this letter.

Sincerely,

Martin D. Wencek

Martin D. Wencek, Program Supervisor
Freshwater Wetlands Program
Office of Water Resources
MDW/JAL/jal

Enclosure: Original permit dated December 6, 2024

ec: Nicholas Pisani, DEM Stormwater Program
Kevin DeMers, PE, DiPrete Engineering

FISCAL IMPACT STUDY

PROPOSED HOTEL DEVELOPMENT

TOWN OF BRISTOL RI

FOR:

D & M DEVELOPMENT

PREPARED BY: JDL ENTERPRISES -
JOSEPH D. LOMBARDO, AICP

MAY 2025

INTRODUCTION ~

This Fiscal Impact Study (FIS) has been prepared to supplement an application for a planned 80 room Hotel Development. The Project is located at Gooding Avenue in Bristol RI. The property is currently zoned GB and is an allowable use. The FIS will estimate anticipated public revenues and expenses associated with the proposed development. The FIS will attempt to estimate both future revenues and expenses utilizing past and present statistics and financial data from a variety of sources, to be noted.

SUMMARY ~

The Town of Bristol will realize total estimated Revenues of $258,274 from Property, Hotel and Tangible Taxes on an annual basis with the development of the proposed 80 room Hotel. By subtracting the total expense estimate of $63,019 from the total anticipated revenue of $258,274, the Town of Bristol will actually realize a Net Revenue Gain of $195,255, with regard to expenses and revenues on an annual basis with the development. That would provide approximately $195,000 in available revenue to offset other townwide municipal expenses.

Additionally:

- *The hotel use in Bristol will generate an additional 50 full-time equivalent jobs at the hotel location.*
- *There is additional revenue from food and beverage sales in local restaurants, bars and taverns. This report highlighted the tax revenue that will be collected from several local taxes. There are local benefits to businesses in Bristol where the hotel will purchase goods and services as needed on a daily basis to operate the hotel.*
- *Further secondary impacts include the boost to local tourism. With the 80-room hotel in place, Bristol will stand to attract many more tourists, who will spend money in local establishments, museums, etc.*
- *As tourism increases, additional infrastructure and other economic development will occur. A hotel is truly a catalyst in the local economy. This new infrastructure adds temporary construction jobs to the area, a further boost to local businesses.*
- *The importance of the proposed hotel in Bristol cannot be overstated. There is a strong relationship between the hotel availability so close to the campus as a recruitment tool*
- *Both the hotel marketing and the university recruitment efforts will highlight the presence of each other. The presence of Roger Williams University is a main contributor to the hotel chain company choosing Bristol for this major investment.*

TABLE # 1:

TOTAL PROJECT REVENUE PROJECTIONS - 80 ROOM HOTEL DEVELOPMENT – BASE YEAR OF 2025 TOWN OF BRISTOL

	MARKET VALUE +	ASSESSED VALUE *	TAX RATE *		TOTAL REVENUE
LAND	**$500,000**	**$400,000**	**$13.82/1000**		**$5,528**
SITE DEVELOPMENT	**$1.500,000**	**$1,200,000**	**$13.82/1000**		**$16,584**
HOTEL - 80 rooms	**$17,000,000**	**$13,600,000**	**$13.82/1000**		**$187,952**
TOTALS	**$19,000,000**	**$15,200,000**	**$13.82/1000**		**$210,064**

+ Per D & M Development, LLC –

* Assessment estimated at 80% of Market Value. Tax Rate: Town of Bristol Tax Assessor's Office –Commercial rate @100%

Total gross Property Tax Revenue from the proposed 80 room Hotel and Conference Center development is: $210,064

ADDITIONAL REVENUE ~

Also, one-time fee revenue for Building Permits, Water and Sewer connections, and Site Plan Review will accrue to the community for the building and construction of hotel project.

F, F, & E TAX REVENUE ~\

There will also be annual tax revenue for Personal Property (F, F & E) assessed once the Hotel complex is complete.

The project estimate for F, F, & E is: $1,350,000. Based on a tax assessment at 70% of that amount after depreciation, and a Tax Rate of $13.00/$1,000, the Town of Bristol could be expected to collect: $17,550 annually.

HOTEL TAX

The State of Rhode Island will reimburse the Town of Bristol 1.0% of the 6% hotel tax collected at the proposed hotel, which is estimated at 1.0% of a projected annual hotel income of $3,066,000*.

This equals an additional $30,660 in annual tax revenue to the Town of Bristol generated by this project.

*** Calculated by: 80 room hotel at average occupancy of 70%. Thus, 56 rooms at an average room rate of $150 per night equals = $8,400 per night. At $8,400 per night times 365 days per year, the annual income subject to the RI State Hotel Tax is $3,066,000. The portion returned to the host community is 1% of that total or $30,660 per year.**

Source: Occupancy and Average yearlong Room Rate projected by Spurrier Consulting for D & M Development, LLC in 2022. Also, projections from Choice Hotels.

TOTAL PROJECT EXPENSES PROJECTIONS:
HOTEL DEVELOPMENT

Additional expenses for the hotel project are offset by the revenue projected. From a cost of services perspective for a Commercial project, it can be anticipated that for every dollar of tax revenue collected by the Town of Bristol 30% would be spent on providing municipal services. The 30% expenditure is a conservative estimate. Some of the projected expenses will not occur as this site development is to be maintained by a private developer/owner. Also, for example, the existing road network serving the complex is State and Town owned and maintained.

The anticipated Property Tax Revenue from the Hotel is **$210,064** as calculated in Table 1. Taking into account that 30% of this revenue will be utilized by the Town of Bristol for town services this totals **$63,019.** That would provide approximately **$147,000** in available revenue to offset other townwide municipal expenses.

HOTEL ANTICIPATED REVENUE AND EXPENSE COMPARISON~

Based on information and statistics presented above in Table 1, etc., Table 2 presents a comparison of the projected total municipal revenue with total projected expenses for the hotel proposed, as anticipated:

TABLE # 2:

HOTEL REVENUE AND EXPENSE COMPARISON –

BASE YEAR OF 2025 - TOWN OF BRISTOL

	TOTAL MUNICIPAL COSTS	TOTAL ESTIMATED REVENUE	NET RESULTS
TOTAL PROJECT	**$63,019**	**$258,274 (Includes: Property, Hotel Tax Reimbursement & Tangible Tax)**	**$195,255**

SUMMARY ~

The Town of Bristol will realize total estimated Revenues of $258,274 from Property, Hotel and Tangible Taxes on an annual basis with the development of the proposed 80 room Hotel. By subtracting the total expense estimate of $63,019 from the total anticipated revenue of $258,274, the Town of Bristol will actually realize a Net Revenue Gain of $195,255, with regard to expenses and revenues on an annual basis with the development.

EMPLOYMENT ~

Based on information provided by Choice Hotels, the hotel use in Bristol will generate an additional 50 full-time equivalent jobs at the hotel location. This includes: Front Desk, Housekeeping, Food & Beverage, Guest Services and others. This number can increase if Occupancy Rate increases, Average Stay duration increases, and/or more staff needed on other shifts.

SECONDARY IMPACTS ~

A new 80-room hotel located in Bristol will have direct impact on several portions of the local economy, including job generation which has been estimated at approximately 50 full-time equivalent jobs associated with the hotel. Also, there is additional revenue from food and beverage sales in local restaurants, bars and taverns. This report highlighted the tax revenue that will be collected from several local taxes. There are local benefits to businesses in Bristol where the hotel will purchase goods and services as needed on a daily basis to operate the hotel.

Further secondary impacts include the boost to local tourism. With the 80-room hotel in place, Bristol will stand to attract many more tourists, who will spend money in local establishments, museums, etc. Length of a visit by tourists when including an overnight (s) greatly increase the amount they spend in the community. As tourism increases, additional infrastructure and other economic development will occur. A hotel is truly a catalyst in the local economy. This new infrastructure adds temporary construction jobs to the area, a further boost to local businesses.

ROGER WILLIAMS UNIVERSITY ~

Roger Williams University (RWU) is a private liberal arts university in Bristol. Founded in 1956, RWU was named for theologian and Rhode Island cofounder Roger Williams. The university enrolls about 3,578 students, 489 academic staff, and 165 administration staff. A total of 80% of the enrollment are out-of-state students. The university is located on a 140-acre waterfront campus, has $79.2 million in endowments, and tuition of $36,978. RWU offers more than 50 liberal arts majors and professional degrees, such as law, architecture, construction management, and historic preservation. Roger Williams University School of Law on the campus of Roger Williams University is the only law school in Rhode Island, with about 370 students and endowments of $114 million.

The importance of the proposed hotel in Bristol cannot be overstated. There is a strong relationship between the hotel availability so close to the campus, as a recruitment tool for university administration, and, the number of out of state students, parents, family that will visit the university throughout the year and require lodging is substantial. Both the hotel marketing and the university recruitment efforts will highlight the presence of each other. The presence of Roger Williams University is a main contributor to the hotel chain company choosing Bristol for this major investment. Likely the University strongly supports the addition of this hotel in such close proximity to their campus. A true Win-Win situation.

APPLICATION FORM AND SUBMISSION CHECKLIST FOR MAJOR LAND DEVELOPMENTS AND MAJOR SUBDIVISIONS

The completed application form together with the appropriate materials as indicated on the checklist shall be submitted to the Administrative Officer.

APPLICATION FORM

Type of Application: Please check one:

✓ **Master Plan**
_____ **Preliminary**
_____ **Final**

1. Name of proposed subdivision/development: Comfort Inn & Suites

2. Name, address and telephone number of property owner (if the owner of record is a corporation, the name and address of the president and secretary):
D&M Boca Development, LLC, 92 Faunce Corner Road, Suite 160, North Dartmouth, MA 02747

3. Name and address and telephone number of applicant, if different from owner: (A written, notarized confirmation from property owner authorizing the applicant to make the submission shall also be submitted):

4. Plat and lot number(s) of the parcel being subdivided/developed: AP 111, Lot 1

5. Area of the subdivision/development parcel(s): 9.78+/- Acres

6. Zoning District: GB - General Business

Signed by Owner/Applicant: _____ Date 5/15/25

Notarized:

Subscribed and sworn to before me this 15 day of May, 2025.
Bristol, MA

ANTHONY JACOB PAULINE
Notary Public
Commonwealth of Massachusetts
My Commission Expires
June 8, 2029

NOTARY PUBLIC

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street
Providence, Rhode Island 02908

CERTIFIED MAIL

December 6, 2024

KenDan, LLC
c/o Daniel D. Donovan, III
613 Aquidneck Avenue
Middletown, RI 02842

PERMIT TO ALTER FRESHWATER WETLANDS

RE: Wetlands Application No. 22-0264, RIPDES File No. RIR101247; and Groundwater Discharge/UIC No. 001650 in reference to the location below:

Approximately 150 feet south of Gooding Avenue near Utility Pole No. 218, and approximately 300 feet southeast of its intersection with Broadcommon Road, Assessor's Plat 111, Lot 1, Bristol, RI.

Dear Mr. Donovan:

The Department of Environmental Management's ("DEM") Freshwater Wetlands Program ("Program") has completed its review of your **Application to Alter a Freshwater Wetland** regarding the proposed construction of a 76-room hotel and associated parking area, screen plantings, stormwater mitigation systems, utilities (electrical utility connection and connections to town water line, gas line, and sewer line), with clearing, grading, and soil disturbance as described and detailed in the material and information submitted in support of your application and on site plans received by the DEM on November 8, 2023. These site plans describing the project were made available for public comment as part of the forty-five (45) day public notice period required in accordance with the Freshwater Wetlands Act (R.I. Gen. Laws § 2-1-18 et seq.) and the procedures set forth in the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act, 250-RICR-150-15-1, specifically in 250-RICR-150-15-1.10.

This Program received thirty-five (35) letters relating to your application which were submitted during the public notice period. These letters expressed concern regarding your project's impacts to freshwater wetland values. This Program reviewed these letters together with any supporting documents and evaluated the potential impacts from the project upon the values mentioned in the letters. The Program has determined that the comments contained within these letters do not constitute an objection of a substantive nature as defined in 250-RICR-150-15-1.10(D)(3)(c). Therefore, a public hearing pursuant to R.I. Gen. Laws § 2-1-22 is not required.

Pursuant to the Program's review and evaluation of your application including all supporting information and material, as well as the record to date, the Program has determined that this project does not represent a random, unnecessary, or undesirable alteration of freshwater wetlands. Therefore, this Program hereby issues this permit to alter freshwater wetlands **subject to all controlling Rules and the Terms and Conditions set forth herein.**

Terms and Conditions for Wetlands Application No. 22-0264; RIPDES No. RIR101247; Groundwater Discharge/UIC No. 001650:

1. This letter is the DEM's permit for this project under the R.I. Fresh Water Wetlands Act, R.I. Gen. Laws § 2-1-18 et seq. This application review has also included review of any stormwater infiltration system subject to the DEM Groundwater Discharge Rules, 250-RICR-150-05-4 (Rules for the Discharge of Non-Sanitary Wastewater and Other Fluid to or Below the Ground Surface).

2. This determination also includes your final authorization to discharge storm water associated with construction activity under the **2020 RIDPES General Permit for Stormwater Discharge During Construction Activity ("CGP").** For future references and inquiry, your permit authorization number is **RIPDES No. RIR101247.** This RIPDES CGP permit is not transferable to any person except after written notice to the Director, in the form of a Permit Transfer Form available on the RIDEM Stormwater Construction Permitting website.

3. This permit is specifically limited to the project, site alterations and limits of disturbance as detailed on the site plans submitted with your application and received by the DEM on November 8, 2023. A copy of the site plans stamped approved by the DEM is enclosed. Changes or revisions to the project that would alter freshwater wetlands are not authorized without a permit from the DEM.

4. Where the terms and conditions of the permit conflict with the approved site plans, these terms and conditions shall be deemed to supersede the site plans.

5. You must notify this Program in writing of the anticipated start date, and of your contractor's contact information, by submitting the Notice of Start of Construction Form prior to commencement of any permitted site alterations or construction activity. You must also notify this Program in writing upon completion of the project, including submittal of the Notice of Termination Form. The Start of Construction Form and the Notice of Termination can be found on the webpage: dem.ri.gov/stormwaterconstruction

6. A copy of the stamped approved site plans and a copy of this permit must be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this permit and the stamped approved plans must be made available for review by any DEM or town representative upon request.

7. Within ten (10) days of the receipt of this permit, you must record this permit in the land evidence records of the Town of Bristol and supply this Program with written documentation obtained from the Town showing this permit was recorded.

8. The effective date of this permit is the date this letter was issued. This permit expires one (1) year from the date of this letter unless renewed pursuant to 250-RICR-150-15-1.10(G)(6).

9. Any material utilized in this project must be clean and free of matter that could pollute any freshwater wetland.

10. Prior to commencement of site alterations, you shall erect or post a sign resistant to the weather and at least twelve (12) inches wide and eighteen (18) inches long, which boldly identifies the initials "DEM" and the application number of this permit. This sign must be maintained at the site in a conspicuous location until such time that the project is complete, and the Program issues a Notice of Completion of Work.

11. Both the owner and the contractor retained to undertake the construction activity are required to comply with all terms and conditions of the CGP. This includes maintaining the Soil Erosion and Sediment Control (SESC) Plan, performing the required inspections and maintenance of the selected Best Management Practices (BMPs), and retaining inspection records. Further information on the requirements of the CGP is available at: http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/pdfs/cgp092620.pdf.

12. Temporary erosion and sediment controls detailed or described on the approved site plans shall be properly installed at the site prior to or commensurate with site alterations. Such controls shall be properly maintained, replaced, supplemented, or modified as necessary throughout the life of this project to minimize soil erosion and to prevent sediment from being deposited in any wetlands not subject to disturbance under this permit.

13. Upon permanent stabilization of all disturbed soils, temporary erosion and/or sediment controls must be removed.

14. You are responsible for the proper installation, operation, maintenance, and stability of any mitigative features, stormwater treatment facilities, and systems of treatment and control that are installed or used in compliance with this permit to prevent harm to adjacent wetlands until documentation is provided that this responsibility has been assigned to another entity. The long-term operation and maintenance plan shall be strictly followed. The long-term operation and maintenance plan shall be as described in the plan entitled "Operation & Maintenance Plan, Gooding Avenue Development, Located in Bristol, Rhode Island; Applicant: Kendan, LLC", dated 1-23-2018, Revised 4-06-2021, dated received 6/27/2022, as prepared by DiPrete Engineering.

15. You are obligated to install, utilize, maintain, and follow all best management practices detailed or described on the approved site plans in the construction of the project to minimize or prevent adverse impacts to any adjacent freshwater wetlands and the functions and values provided by such wetlands.

16. All plantings of shrubs, trees or other forms of vegetation as shown or detailed on the approved plans, or detailed in this permit, must be installed as soon as possible after completion of final grading; weather and season permitting. You must notify this Program in writing upon completion of the required plantings for a compliance inspection by a Program representative.

17. Buffer zone plantings of trees and/or shrubs proposed between the project and any adjacent freshwater wetland areas, except for necessary replacement, must be allowed to develop naturally without being subjected to mowing or manicuring.

18. Any plantings which fail to survive one full growing season shall be replaced. Replacement plantings shall be similarly guaranteed for one full growing season.

19. Artificial lighting authorized by this permit must be directed away from all vegetated wetland areas. Where this is not possible, the use of deflectors to concentrate lighting away from vegetated wetlands must be employed.

20. An environmental consultant, experienced in site assessments and measures necessary to protect sensitive aquatic environments or sensitive ecosystems, must be employed prior to the commencement of site alterations to monitor this project and to ensure compliance with the terms and conditions of this permit. This Program must be notified in writing of the consultant chosen to comply with this condition and must receive monthly written progress reports from the consultant regarding compliance with this permit until such time that the project is complete, or this Program issues a Notice of Completion of Work.

21. You must provide written certification from a registered land surveyor or registered professional engineer that the stormwater drainage system including any and all basins, piping systems, catch basins, culverts, swales and any other stormwater management control features have been constructed/installed in accordance with the site plans approved by this permit. This written certification must be submitted to this Program within twenty (20) days of its request or upon completion of the project.

22. Also prior to commencement of any site alterations, permanent buffer zone markers must be installed along the limit of disturbance at the locations indicated in red ink on the approved site plans, in order to provide permanent reference points on site that are clear to present and future property owners. Acceptable permanent type markers include 4" x 4" pressure treated timber posts, galvanized fence posts with cap, or granite or concrete bounds. Markers must extend a minimum 24" above grade. A permanent-type tag or sign labeled "RIDEM Buffer Zone" must be placed on each marker. A permanent-type fence at least 24" tall placed along the limits of disturbance and similarly labeled may be substituted where desired. No alterations of any kind are permitted beyond these markers without first obtaining the necessary permit from this Program.

23. Immediately upon installation of the buffer zone markers, this Program must be contacted to arrange an on-site inspection. Once proper installation has been confirmed by this Program, work may be initiated on the project as herein approved.

Pursuant to the provisions in 250-RICR-150-15-1.7(A)(9) and 250-RICR-150-15-1.11(D), as applicable, any properly recorded and valid permit is automatically transferred to the new owner upon sale of the property. Pursuant to the provisions in 250-RICR-150-15-1.7(A)(9)(c), within ten (10) days of any property transfer, the subsequent transferee must notify the Department by forwarding a certified copy of the deed of transfer.

Please be aware that the RIDEM's Rules and Regulations Governing the Establishment of Various Fees (250-RICR-30-00-1) require that RIPDES CGP permit holders to pay an Annual Fee of $100.00. An invoice will be sent to the owner on record in May/June of each year if the construction was still active as of December 31st of the previous year. The owner will be responsible for the Annual Fee until the construction activity has been completed, the site has been properly stabilized, and a completed Notice of Termination (NOT) has been received by the RIPDES Program.

You are required to comply with the terms and conditions of this permit and to carry out this project in compliance with the Rules at all times. Failure to do so may result in an enforcement action against you by the DEM.

If you have not already done so, or in order to check on the status of their review, please contact the U.S. Army Corps of Engineers to determine federal permit requirements on your project. Write the Corps' New England District, Regulatory Branch, 696 Virginia Road, Concord, MA 01742-2751; website: https://www.nae.usace.army.mil/Missions/Regulatory/or email at cenaer@usace.army.mil . Please note that the Department of the Army authorization must be obtained before any work is initiated in areas subject to Corps jurisdiction.

In permitting the proposed alterations, the Department assumes no responsibility for damages resulting from faulty design or construction. This permit does not remove your obligation to obtain any local, state, or federal approvals or permits required by ordinance or law and does not relieve you from any duties owed to adjacent landowners with specific reference to any changes in drainage.

If you are aggrieved by this decision, you may, within thirty (30) days of the receipt of this letter, request an adjudicatory hearing in writing. This request must be sent directly to the DEM Administrative Adjudication Division ("AAD"), 235 Promenade Street, Suite 350, Providence, RI 02908. A copy of the request should also be forwarded to this Program and to the Office of Legal Services, at the same address. Your written request for an adjudicatory hearing must be timely filed and should conform to the requirements of 250-RICR-10-00-1.7(B) of the DEM Rules and Regulations for the Administrative Adjudication Division, 250-RICR-10-00-1. Section 250-RICR-10-00-1.7(B) provides:

"The request for a hearing shall state clearly and concisely the specific issues which are in dispute, and the facts in support thereof, the relief sought, if any, the license or permit sought or involved, and any additional information required by applicable statues and regulations."

The written request must be accompanied by an adjudicatory hearing fee of two thousand dollars ($2,000.00); in the form of a certified bank check or money order made payable to the Rhode Island General Treasurer; however, in the event that the cost of the hearing exceeds the fee paid, the Program through the AAD will require an additional fee which the applicant must submit prior to the DEM's issuance of any final decision regarding this application. The adjudicatory hearing will be held before a Hearing Officer from the AAD. Such hearing will be held in compliance with 250-RICR-10-00-1, R.I. Gen. Laws Chapter 42-35-1 et seq., and other governing laws, rules, and regulations adopted by the DEM. Please note that you have the right to be represented by legal counsel in any proceeding which may be held in this matter.

If you have any questions regarding this matter, you may contact me or Jessica Lord of my staff at this office (telephone: 401-537-4249).

Sincerely,

Martin D. Wencek

Martin D. Wencek, Environmental Scientist IV
Office of Water Resources
Freshwater Wetlands Program
MDW/JAL/jal

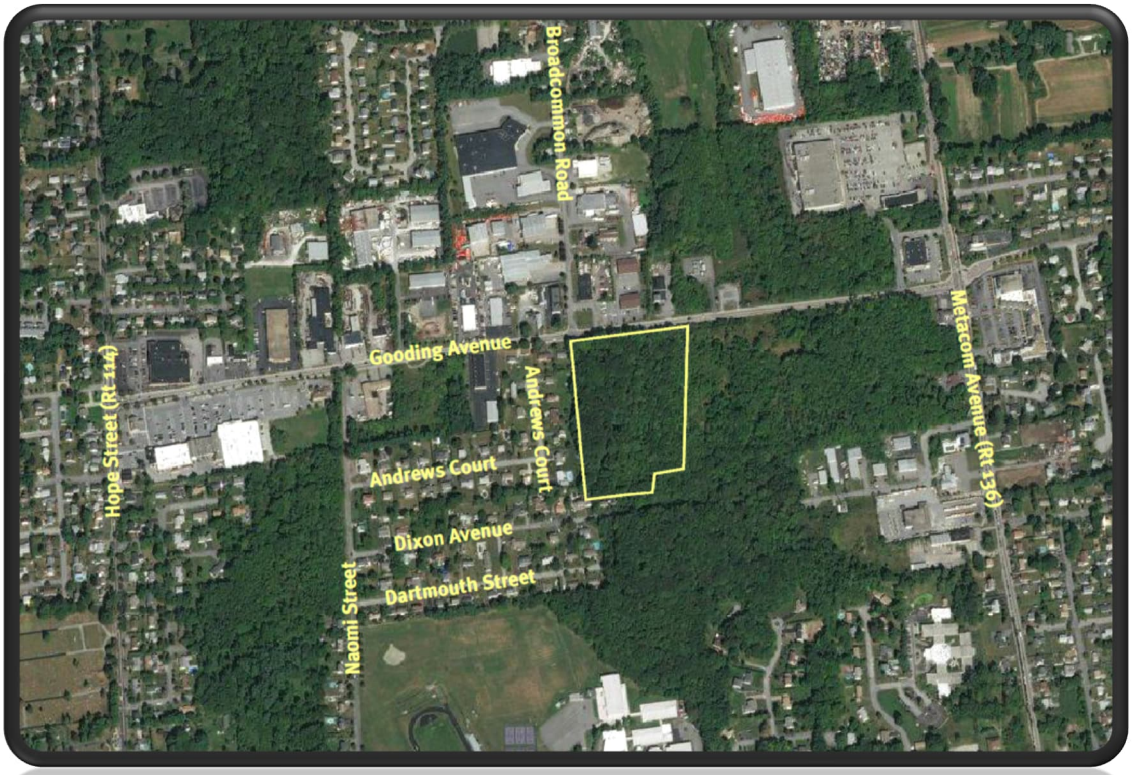
Enclosure: Approved Site Plans

ec: Mary Dalton, Administrative Adjudication Division
Mary Kay, Executive Counsel, DEM Office of Legal Services
Neal Personeus, DEM Stormwater Program
Elizabeth Waterhouse, U.S. Army Corps of Engineers, New England District
Kevin DeMers, P.E., DiPrete Engineering
Dianne M. Williamson, Director of Community Development, Town of Bristol
Stephen Greenleaf, Town of Bristol Building Official
Alex Van Buren
Denise Duarte
Raymond Payson, Bristol Land Conservation Trust President
Linda M. Jackson
Patrick Barosh, Ph.D., Geologist
Susan Pasqual
Veronica A. Tucker, Board Member, Bristol Conservation Land Trust
Margaret M. Godwin
Patricia J. Pinskey
Melissa Cordeiro, Town Clerk/Council Clerk, Town of Bristol

Edward Spinard
Emily Spinard
Timothy and Melissa Velleca
Tony Morettini, Chair, The Bristol Conservation Commission
Nicole Carvalho-Ahmed
Patricia E. Chalmers
Paul Sousa
Abigail Demopulos
Loren Byrne and Kim Seymour
George Voutes
Lisa Voutes
Mike Proto
James and Carol O'Neill
Patti and Arthur Cirillo
Maria Franzen
Jane and Clifford Teixeira
Maureen McManus
Kayla Barrett
Deborah Schmeller
Kate McPherson, Professional Wetland Scientist, Narragansett Bay Riverkeeper
Deirdre Robinson
Sarah J. Weedon
Nancy E. Dobie
Noelle and Thomas Mello
Aaron J. Ley, Ph.D.

DiPrete Engineering

Stormwater Management Report



KEVIN DEMERS
No. 8557
REGISTERED
PROFESSIONAL ENGINEER
CIVIL
4/7/2025

Gooding Avenue Development

Located in Bristol, Rhode Island

Applicant: Kendan, LLC.

1-19-2018

Revised: 3-27-2025

Table of Contents

Executive Summary
RIDEM Appendix A Checklist
1.0 Project Description 1
2.0 Site Conditions 1
2.1 Soils 1
2.2 Existing Site Conditions 1
2.3 Post Site Conditions 2
3.0 Minimum Standards 3
3.1 Standard 1: LID Site Planning and Design Strategies 3
3.2 Standard 2: Groundwater Recharge 3
3.3 Standard 3: Water Quality 4
3.3.1 Sand Filter Calculations 5
3.3.2 Water Quality Underground Infiltration System 7
3.4 Standard 4: Conveyance and Natural Channel Protection 8
3.4.1 Drainage Network Design Parameters 8
3.4.2 Channel Protection Volume 8
3.5 Standard 5: Overbank Flood Protection & Downstream Analysis 9
3.5.1 Method of Analysis 9
3.5.2 Design Storm 9
3.5.3 Design Point Breakdown 9
3.5.4 Q_p BMP Calculations 11
3.5.5 Downstream Analysis 11
3.5.6 Overbank Flood Protection Conclusion 11
3.6 Standard 6: Redevelopment and Infill Projects 12
3.7 Standard 7: Pollution Prevention 12
3.8 Standard 8: Land Uses with Higher Potential Pollutant Loads (LUHPPLs) 12
3.9 Standard 9: Illicit Discharges 12
3.10 Standard 10: Construction Activity Soil Erosion, Runoff and Sedimentation and Pollution Prevention Control Measure Requirements 12
3.11 Standard 11: Stormwater Management System Operation and Maintenance 12
Appendix A 13
A2.1 Soil Evaluations 14
A3.2 Water Quality HydroCAD 1.2” Storm Analysis 17
A3.4.2 Drainage Network Hydraulic Analysis 19
A3.5.4.1 HydroCAD Node Diagram 24
A3.5.4.2 HydroCAD 1-Year Storm Analysis 27
A3.5.4.3 HydroCAD 10-Year Storm Analysis 29
A3.5.4.4 HydroCAD 25-Year Storm Analysis 31
A3.5.4.5 HydroCAD 100-Year Storm Analysis 33
A3.5.4.6 HydroCAD Tailwater Analysis 42
A3.5.4.7 Downstream Analysis 44

Appendix B Mounding Calculations 51

Watershed Maps 53

Executive Summary

On behalf of the Client, we are submitting drainage calculations for the proposed development on Gooding Avenue in Bristol, Rhode Island. The site is located on Assessors' Plat 111 Lot 1. The site is currently undeveloped and exists today as almost entirely wooded. The client proposes to construct a new 80 room hotel building with associated parking and access driveways.

The post development stormwater will be treated for water quality using Best Management Practices (BMPs). The Site has been designed to meet the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM). The site is largely made up of wetland and perimeter wetland areas and almost entirely Hydrologic Group D soils. Groundwater tables in the development area range from 24" to 36" below existing grade. Based on this information, low infiltration rates have been used in modeling the proposed BMPs to treat the water quality storm event. Also, the eastern end of the underground infiltration system A (UIS-A) will be located entirely above grade to maintain groundwater separation. Wherever this occurs, sand material will be installed between the bottom of stone and native soil below loam layer.

To mitigate post development flows on site, a sand filter and an underground infiltration/detention system will be utilized. The detention system has been designed to control runoff for the 1 through 100 year storm events. The sand filter and underground infiltration system have been designed as water quality BMPs. These will remove 85% or more of TSS (total suspended solids) generated by the proposed parking areas and access roads.

This report details how the site will show no net increase in stormwater runoff from pre development to post development conditions, and how the proposed BMPs will provide water quality treatment for stormwater runoff. The proposed improvements will not increase the rate of stormwater runoff onto the State Highway.

Pre development Conditions versus Post Development Conditions for each watershed are summarized below:

Subwatershed (design point)	1-yr Peak Flow		10-yr Peak Flow		25-yr Peak Flow		100-yr Peak Flow	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	2.34	0.99	6.50	4.99	9.08	6.75	14.58	10.39

All flows in cubic feet per second (cfs)

Sub-watershed (design point)	1-yr Volume		10-yr Volume		25-yr Volume		100-yr Volume	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	0.228	0.131	0.605	0.421	0.845	0.639	1.371	1.182

All flows in acre feet per second (af)

APPENDIX A: STORMWATER MANAGEMENT PLAN CHECKLIST AND LID PLANNING REPORT – STORMWATER DESIGN SUMMARY

PROJECT NAME **Gooding Avenue Development**	**(RIDEM USE ONLY)** **STW/WQC File #:** **Date Received:**
TOWN **Bristol, RI**	
BRIEF PROJECT DESCRIPTION: 80-room hotel, parking and infrastructure	

Stormwater Management Plan (SMP) Elements – Minimum Standards

Submit four separately bound documents: Appendix A Checklist; Stormwater Site Planning, Analysis and Design Report with Plan Set/Drawings; Soil Erosion and Sediment Control (SESC) Plan, and Post Construction Operations and Maintenance (O&M) Plan. Please refer to Suggestions to Promote Brevity**.**

Note**: All stormwater construction projects must submit a Stormwater Management Plan (SMP). However, not every element listed below is required per the** RIDEM Stormwater Rules **and the** RIPDES Construction General Permit (CGP)**. This checklist will help identify the required elements to be submitted with an Application for Stormwater Construction Permit & Water Quality Certification.**

PART 1. PROJECT AND SITE INFORMATION

PROJECT TYPE (Check all that apply)

☐ Residential	☒ Commercial	☐ Federal	☐ Retrofit	☐ Restoration
☐ Road	☐ Utility	☐ Fill	☐ Dredge	☐ Mine
☐ Other (specify):				

SITE INFORMATION

☒ Vicinity Map

INITIAL DISCHARGE LOCATION(S): The WQv discharges to: (You may choose more than one answer if several discharge points are associated with the project.) See Guidance to identify receiving waters.

☒ **Groundwater**	☐ **Surface Water**	☐ **MS4**
☐ GAA	☐ Isolated Wetland	☐ RIDOT
☒ GA	☐ Named Waterbody	☐ RIDOT Alteration Permit is Approved
☐ GB	☐ Unnamed Waterbody Connected to Named Waterbody	☐ Town
		☐ Other (specify):

ULTIMATE RECEIVING WATERBODY LOCATION(S): Include pertinent information that applies to both WQ_v and flow from larger storm events including overflows. Choose all that apply, and repeat table for each waterbody.

☒ Groundwater or Disconnected Wetland	☐ SRWP		
☒ Waterbody Name: Silver Creek	☐ Coldwater	☒ Warmwater	☐ Unassessed
☒ Waterbody ID: RI0007026R-01	☐ 4th order stream of pond 50 acres or more		
☐ TMDL for:	☐ Watershed of flood prone river (e.g., Pocasset River)		
☐ Contributes to a priority outfall listed in the TMDL	☐ Contributes stormwater to a public beach		
☐ 303(d) list – Impairment(s) for:	☐ Contributes to shellfishing grounds		

PROJECT HISTORY		
☒ RIDEM Pre- Application Meeting	Meeting Date:	☐ Minutes Attached
☐ Municipal Master Plan Approval	Approval Date:	☐ Minutes Attached
☐ Subdivision Suitability Required	Approval #:	
☐ Previous Enforcement Action has been taken on the property	Enforcement #:	

FLOODPLAIN & FLOODWAY See Guidance Pertaining to Floodplain and Floodways	
☐ Riverine 100-year floodplain: **FEMA FLOODPLAIN FIRMETTE** has been reviewed and the 100-year floodplain is on site	
☐ Delineated from FEMA Maps	
NOTE: Per Rule 250-RICR-150-10-8-1.1(B)(5)(d)(3), provide volumetric floodplain compensation calculations for cut and fill/displacement calculated by qualified professional	
☐ Calculated by Professional Engineer	
☐ Calculations are provided for cut vs. fill/displacement volumes proposed within the 100-year floodplain	Amount of Fill (CY):
	Amount of Cut (CY):
☐ Restrictions or modifications are proposed to the flow path or velocities in a floodway	
☐ Floodplain storage capacity is impacted	
☒ Project area is not within 100-year floodplain as defined by RIDEM	

CRMC JURISDICTION
☐ CRMC Assent required
☐ Property subject to a Special Area Management Plan (SAMP). If so, specify which SAMP:
☐ Sea level rise mitigation has been designed into this project

LUHPPL IDENTIFICATION - MINIMUM STANDARD 8:			
1. OFFICE OF WASTE MANAGEMENT (OWM)			
	☐ Known or suspected releases of HAZARDOUS MATERIAL are present at the site (Hazardous Material is defined in Rule 1.4(A)(33) of 250-140-30-1 of the RIDEM Rules and Regulations for Investigation and Remediation of Hazardous Materials (the Remediation Regulations))		**RIDEM CONTACT:**
	☐ Known or suspected releases of PETROLEUM PRODUCT are present at the site (Petroleum Product as defined in Rule 1.5(A)(84) of 250-140-25-1 of the RIDEM Rules and Regulations for Underground Storage Facilities Used for Regulated Substances and Hazardous Materials)		
	☐ This site is identified on the RIDEM Environmental Resources Map as one of the following regulated facilities		**SITE ID#**:
		☐ CERCLIS/Superfund (NPL)	
		☐ State Hazardous Waste Site (SHWS)	
		☐ Environmental Land Usage Restriction (ELUR)	
		☐ Leaking Underground Storage Tank (LUST)	
		☐ Closed Landfill	
Note: If any boxes in 1 above are checked, the applicant must contact the RIDEM OWM Project Manager associated with the Site to determine if subsurface infiltration of stormwater is allowable for the project. Indicate if the infiltration corresponds to "Red," "Yellow" or "Green" as described in Section 3.2.8 of the RISDISM Guidance (Subsurface Contamination Guidance). Also, note and reference approval in PART 3, Minimum Standard 2: Groundwater Recharge/Infiltration**.**			
2. PER MINIMUM STANDARD 8 of RICR 8.14.C.1-6 "LUHPPLS," THE SITE IS/HAS:			
	☐ Industrial Site with RIPDES MSGP, except where No Exposure Certification exists. http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php		
	☐ Auto Fueling Facility (e.g., gas station)		
	☐ Exterior Vehicles Service, Maintenance, or Equipment Cleaning Area		

	☐ Road Salt Storage and Loading Areas (exposed to rainwater)	
	☐ Outdoor Storage and Loading/Unloading of Hazardous Substances	
3.	**STORMWATER INDUSTRIAL PERMITTING**	
	☐ The site is associated with existing or proposed activities that are considered Land Uses with Higher Potential Pollutant Loads (LUHPPLS) (see RICR 8.14.C)	Activities: Sector:
	☐ Construction is proposed on a site that is subject to THE MULTI-SECTOR GENERAL PERMIT (MSGP) UNDER RULE 31(B)15 OF THE RIPDES REGULATIONS.	MSGP permit #
	☐ Additional stormwater treatment is required by the MSGP Explain:	

REDEVELOPMENT STANDARD – MINIMUM STANDARD 6		
☒ Pre Construction Impervious Area		
	☒ Total Pre-Construction Impervious Area (**TIA**) 0 acres	
	☒ Total Site Area (**TSA**) 9.78 acres	
	☒ Jurisdictional Wetlands (**JW**) 8.80 acres	
	☒ Conservation Land (**CL**) 0 acres	
☒ Calculate the Site Size (defined as contiguous properties under same ownership)		
	☒ Site Size (**SS**) = (**TSA**) – (**JW**) – (**CL**) 0.98 acres	
	☒ (**TIA**) / (**SS**) = 0	☒ (**TIA**) / (**SS**) >**0.4**? NO
☐ YES, Redevelopment		

PART 2. LOW IMPACT DEVELOPMENT ASSESSMENT – MINIMUM STANDARD 1

(NOT REQUIRED FOR REDEVELOPMENT OR RETROFITS)

This section may be deleted if not required.

Note: A written description must be provided specifying why each method is not being used or is not applicable at the Site. Appropriate answers may include:

- Town requires … (state the specific local requirement)
- Meets Town's dimensional requirement of …
- Not practical for site because …
- Applying for waiver/variance to achieve this (pending/approved/denied)
- Applying for wavier/variance to seek relief from this (pending/approved/denied)

A) PRESERVATION OF UNDISTURBED AREAS, BUFFERS, AND FLOODPLAINS	**IF NOT IMPLEMENTED, EXPLAIN HERE**
☒ Sensitive resource areas and site constraints are identified (required) ☒ Local development regulations have been reviewed (required) ☐ All vegetated buffers and coastal and freshwater wetlands will be protected during and after construction ☐ Conservation Development or another site design technique has been incorporated to protect open space and pre-development hydrology. **Note:** If Conservation Development has been used, check box and skip to Subpart C ☐ As much natural vegetation and pre-development hydrology as possible has been maintained	Building and parking areas have been designed to minimize disturbances to the maximum extent practicable. Approximately 4,720 sf of wetland area is proposed to be disturbed during this project. The wetland has previously been determined to hold little to no environmental value.

B) LOCATE DEVELOPMENT IN LESS SENSITIVE AREAS AND WORK WITH THE NATURAL LANDSCAPE CONDITIONS, HYDROLOGY, AND SOILS ☐ Development sites and building envelopes have been appropriately distanced from wetlands and waterbodies ☐ Development and stormwater systems have been located in areas with greatest infiltration capacity (e.g., soil groups A and B) ☐ Plans show measures to prevent soil compaction in areas designated as Qualified Pervious Areas (QPA's) ☒ Development sites and building envelopes have been positioned outside of floodplains ☒ Site design positions buildings, roadways and parking areas in a manner that avoids impacts to surface water features ☒ Development sites and building envelopes have been located to minimize impacts to steep slopes (≥15%) ☐ Other (describe):	Building and parking areas have been designed to minimize disturbances to the maximum extent practicable.
C) MINIMIZE CLEARING AND GRADING ☒ Site clearing has been restricted to <u>minimum area needed</u> for building footprints, development activities, construction access, and safety. ☒ Site has been designed to position buildings, roadways, and parking areas in a manner that minimizes grading (cut and fill quantities) ☐ Protection for stands of trees and individual trees and their root zones to be preserved has been specified, and such protection extends at least to the tree canopy drip line(s) ☐ Plan notes specify that public trees removed or damaged during construction shall be replaced with equivalent	
D) REDUCE IMPERVIOUS COVER ☐ Reduced roadway widths (≤22 feet for ADT ≤ 400; ≤ 26 feet for ADT 400 - 2,000) ☐ Reduced driveway areas (length minimized via reduced ROW width (≤ 45 ft.) and/or reduced (or absolute minimum) front yard setback; width minimized to ≤ 9 ft. wide one lane; ≤ 18 ft. wide two lanes; shared driveways; pervious surface) ☐ Reduced building footprint: Explain approach: ☐ Reduced sidewalk area (≤ 4 ft. wide; one side of the street; unpaved path; pervious surface) ☐ Reduced cul-de-sacs (radius < 45 ft; vegetated island; alternative turn-around) ☐ Reduced parking lot area: Explain approach ☐ Use of pervious surfaces for driveways, sidewalks, parking areas/overflow parking areas, etc. ☒ Minimized impervious surfaces (project meets or is less than maximum specified by Zoning Ordinance) ☐ Other (describe):	
E) DISCONNECT IMPERVIOUS AREA ☐ Impervious surfaces have been disconnected, and runoff has been diverted to QPAs to the maximum extent possible ☐ Residential street edges allow side-of-the-road drainage into vegetated open swales ☐ Parking lot landscaping breaks up impervious expanse AND accepts runoff ☒ Other (describe):	Multiple BMPs are proposed for this site. Impervious areas are divided between the separate BMPs.
F) MITIGATE RUNOFF AT THE POINT OF GENERATION ☒ Small-scale BMPs have been designated to treat runoff as close as possible to the source	

G) PROVIDE LOW-MAINTENANCE NATIVE VEGETATION ☒ Low-maintenance landscaping has been proposed using native species and cultivars ☐ Plantings of native trees and shrubs in areas previously cleared of native vegetation are shown on site plan ☐ Lawn areas have been limited/minimized, and yards have been kept undisturbed to the maximum extent practicable on residential lots	
H) RESTORE STREAMS/WETLANDS ☐ Historic drainage patterns have been restored by removing closed drainage systems, daylighting buried streams, and/or restoring degraded stream channels and/or wetlands ☐ Removal of invasive species ☐ Other	Approximately 4,720 sf of wetland area is proposed to be disturbed during this project. The wetland has been previously determined to hold little to no environmental value. Disturbances have been minimized to the maximum extent practicable.

PART 3. SUMMARY OF REMAINING STANDARDS

GROUNDWATER RECHARGE – MINIMUM STANDARD 2		
YES	**NO**	
☒	☐	The project has been designed to meet the groundwater recharge standard.
☐	☐	If "No," the justification for groundwater recharge criterion waiver has been explained in the Narrative (e.g., threat of groundwater contamination or physical limitation), if applicable (see RICR 8.8.D);
☐	☐	Your waiver request has been explained in the Narrative, if applicable.
☐	☒	Is this site identified as a Regulated Facility in Part 1, Minimum Standard 8: LUHPPL Identification?
☐	☐	If "Yes," has approval for infiltration by the Office of Waste Management Site Project Manager, per Part 1, Minimum Standard 8, been requested?

TABLE 2-1: Summary of Recharge (see RISDISM Section 3.3.2)
(Add or Subtract Rows as Necessary)

Design Point	**Impervious Area Treated (sq ft)**	**Total Re_v Required (cu ft)**	**LID Stormwater Credits (see RISDISM Section 4.6.1)**	**Recharge Required by Remaining BMPs (cu ft)**	**Recharge Provided by BMPs (cu ft)**
			Portion of Re_v directed to a QPA (cu ft)		
DP-1:	50,181	418		418	4,748
TOTALS:					

Notes:
1. Only BMPs listed in RISDISM Table 3-5 "List of BMPs Acceptable for Recharge" may be used to meet the recharge requirement.
2. Recharge requirement must be satisfied for each waterbody ID.

☒ Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.):

Stormwater Report

WATER QUALITY – MINIMUM STANDARD 3		
YES	**NO**	
☒	☐	Does this project meet or exceed the required water quality volume WQv (see RICR 8.9.E-I)?
☒	☐	Is the proposed final impervious cover greater than 20% of the disturbed area (see RICR 8.9.E-I)?
☒	☐	If "Yes," either the Modified Curve Number Method or the Split Pervious/Impervious method in Hydro-CAD was used to calculate WQv; or,
☐	☐	If "Yes," either TR-55 or TR-20 was used to calculate WQv; and,
☐	☐	If "No," the project meets the minimum WQv of 0.2 watershed inches over the entire disturbed area.
☐	☐	Not Applicable
☒	☐	Does this project meet or exceed the ability to treat required water quality flow WQf (see RICR 8.9.I.1-3)?
☐	☒	Does this project propose an increase of impervious cover to a receiving water body with impairments? If "Yes," please indicate below the method that was used to address the water quality requirements of no further degradation to a low-quality water.
☐	☒	RICR 8.36. A Pollutant Loading Analysis is needed and has been completed.
☒	☐	The Water Quality Guidance Document (Water Quality Goals and Pollutant Loading Analysis Guidance for Discharges to Impaired Waters) has been followed as applicable.
☐	☒	BMPs are proposed that are on the approved technology list . If "Yes," please provide all required worksheets from the manufacturer.
☐	☒	Additional pollutant-specific requirements and/or pollutant removal efficiencies are applicable to the site as the result of a TMDL, SAMP, or other watershed-specific requirements. If "Yes," please describe:

TABLE 3-1: Summary of Water Quality (see RICR 8.9)

Design Point and WB ID	Impervious area treated (sq ft)	Total WQ_v Required (cu ft)	LID Stormwater Credits (see RICR 8.18) WQv directed to a QPA (cu ft)	Water Quality Treatment Remaining (cu ft)	Water Quality Provided by BMPs (cu ft)
DP-1:	50,181	4,182		4,182	4,748
DP-2:					
DP-3:					
DP-4:					
TOTALS:					

Notes:
1. Only BMPs listed in RICR 8.20 and 8.25 or the Approved Technologies List of BMPs is Acceptable for Water Quality treatment.
2. For each Design Point, the Water Quality Volume Standard must be met for each Waterbody ID.

☒ YES ☐ NO	This project has met the setback requirements for each BMP. If "No," please explain:

☒ Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.):
Stormwater Report

CONVEYANCE AND NATURAL CHANNEL PROTECTION (RICR 8.10) – MINIMUM STANDARD 4		
YES	**NO**	
☐	☒	Is this standard waived? If "Yes," please indicate one or more of the reasons below:
		☐ The project directs discharge to a large river (i.e., 4th-order stream or larger. See RISDISM Appendix I for State-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters. ☐ The project directs is a small facility with impervious cover of less than or equal to 1 acre. ☐ The project has a post-development peak discharge rate from the facility that is less than 2 cfs for the 1-year, 24-hour Type III design storm event (prior to any attenuation). (Note: LID design strategies can greatly reduce the peak discharge rate).
☒	☐	Conveyance and natural channel protection for the site have been met. If "No,' explain why:

TABLE 4-1: Summary of Channel Protection Volumes (see RICR 8.10)					
Design Point	**Receiving Water Body Name**	**Coldwater Fishery? (Y/N)**	**Total CPv Required (cu ft)**	**Total CPv Provided (cu ft)**	**Average Release Rate Modeled in the 1-yr storm (cfs)**
DP-1:	Silver Creek	N	8,268	8,268	0.27
DP-2:					
DP-3:					
DP-4:					
TOTALS:					
Note: The Channel Protection Volume Standard must be met in each waterbody ID.					
☒ YES ☐ NO	The CPv is released at roughly a uniform rate over a 24-hour duration (see examples of sizing calculations in Appendix D of the RISDISM).				
☐ YES ☒ NO	Do additional design restrictions apply resulting from any discharge to cold-water fisheries; If "Yes," please indicate restrictions and solutions below.				
☒ Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.). Stormwater Report					

OVERBANK FLOOD PROTECTION (RICR 8.11) AND OTHER POTENTIAL HIGH FLOWS – MINIMUM STANDARD 5			
YES	**NO**		
☐	☒	Is this standard waived? If yes, please indicate one or more of the reasons below:	
		☐	The project directs discharge to a large river (i.e., 4th-order stream or larger. See Appendix I for state-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters.
		☐	A Downstream Analysis (see RICR 8.11.D and E) indicates that peak discharge control would not be beneficial or would exacerbate peak flows in a downstream tributary of a particular site (e.g., through coincident peaks).
☐	☒	Does the project flow to an MS4 system or subject to other stormwater requirements? If "Yes," indicate as follows:	
		☐	RIDOT
		☐	Other (specify):
Note: The project could be approved by RIDEM but not meet RIDOT or Town standards. RIDOT's regulations indicate that post-volumes must be **less** than pre-volumes for the 10-yr storm at the design point entering the RIDOT system. If you have not already received approval for the discharge to an MS4, please explain below your strategy to comply with RIDEM and the MS4.			
		Indicate below which model was used for your analysis. ☐ TR-55 ☐ TR-20 ☒ HydroCAD ☐ Bentley/Haestad ☐ Intellisolve ☐ Other (Specify):	
YES	**NO**		
☒	☐	Does the drainage design demonstrate that flows from the 100-year storm event through a BMP will safely manage and convey the 100-year storm? If "No," please explain briefly below and reference where in the application further documentation can be found (i.e., name of report/document, page numbers, appendices, etc.):	
☒	☐	Do off-site areas contribute to the sub-watersheds and design points? If "Yes,"	
☒	☐	Are the areas modeled as "present condition" for both pre- and post-development analysis?	
☒	☐	Are the off-site areas shown on the subwatershed maps?	
☒	☐	Does the drainage design confirm safe passage of the 100-year flow through the site for off-site runoff?	
☐	☒	Is a Downstream Analysis required (see RICR 8.11.E.1)?	
☒	☐	Calculate the following:	
		☒	Area of disturbance within the sub-watershed (areas) 1.74
		☒	Impervious cover (%) 12%
☐	☒	Is a dam breach analysis required (earthen embankments over six (6) feet in height, or a capacity of 15 acre-feet or more, and contributes to a significant or high hazard dam)?	
☒	☐	Does this project meet the overbank flood protection standard?	

Table 5-1 Hydraulic Analysis Summary								
Subwatershed (Design Point)	**1.2" Peak Flow** (cfs) **		**1-yr Peak Flow** (cfs)		**10-yr Peak Flow** (cfs)		**100-yr Peak Flow** (cfs)	
	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)
DP-1:	0.18	0.10	2.34	0.99	6.50	4.99	14.58	10.39
DP-2:								
DP-3:								
DP-4:								
TOTALS:								

** Utilize modified curve number method or split pervious /impervious method in HydroCAD.

Note: The hydraulic analysis must demonstrate no impact to each individual subwatershed DP unless each DP discharges to the same wetland or water resource.

Indicate as follows where the pertinent calculations and/or information for the items above are provided	**Name of report/document, page numbers, appendices, etc.**
Existing conditions analysis for each subwatershed, including curve numbers, times of concentration, runoff rates, volumes, and water surface elevations showing methodologies used and supporting calculations.	Stormwater Report
Proposed conditions analysis for each subwatershed, including curve numbers, times of concentration, runoff rates, volumes, water surface elevations, and routing showing the methodologies used and supporting calculations.	Stormwater Report
Final sizing calculations for structural stormwater BMPs, including contributing drainage area, storage, and outlet configuration.	Stormwater Report
Stage-storage, inflow and outflow hydrographs for storage facilities (e.g., detention, retention, or infiltration facilities).	Stormwater Report

Table 5-2 Summary of Best Management Practices											
BMP ID	**DP #**	**BMP Type** (e.g., bioretention, tree filter)	**BMP Functions**					**Bypass Type**	**Horizontal Setback Criteria are met per RICR 8.21.B.10, 8.22.D.11, and 8.35.B.4**		
			Pre-Treatment (Y/N/ NA)	Re_v	WQ_v	CP_v (Y/N/ NA)	Overbank Flood Reduction (Y/N/NA)	External (E) Internal (I) or NA	Yes/ No	Technical Justification (Design Report page number)	Distance Provided
UIS-A	1	Underground Infiltration	Y	Y	Y	NA	N	I	Y	Section 3.3	12.6 ft
SF-B	1	Sand Filter	Y	Y	Y	NA	N	I	Y	Section 3.3	24.0 ft
UDS-A	1	Underground Detention	N	N	N	Y	Y	NA	Y	Section 3.3	15.0 ft
		TOTALS:									

Table 5.3 Summary of Soils to Evaluate Each BMP									
DP #	**BMP ID**	**BMP Type** (e.g., bioretention, tree filter)	**Soils Analysis for Each BMP**						
			Test Pit ID# and Ground Elevation		SHWT Elevation (ft)	Bottom of Practice Elevation* (ft)	Separation Distance Provided (ft)	Hydrologic Soil Group (A, B, C, D)	Exfiltration Rate Applied (in/hr)
			Primary	Secondary					
1	UIS-A	Underground Infiltration	TP-4	-	73.00	70.00	3.0	D	0.52
1	SF-B	Sand Filter	TP-6	-	69.00	66.00	3.0	D	0.52
		TOTALS:							

* For underground infiltration systems (UICs) bottom equals bottom of stone, for surface infiltration basins bottom equals bottom of basin, for filters bottom equals interface of storage and top of filter layer

LAND USES WITH HIGHER POTENTIAL POLLUTANTS LOADS (LUHPPLs) – MINIMUM STANDARD 8			
YES	**NO**	**N/A**	
☐	☐	☒	Describe any LUHPPLs identified in Part 1, Minimum Standard 8, Section 2. If not applicable, continue to Minimum Standard 9.
☐	☐	☒	Are these activities already covered under an MSGP? If "No," please explain if you have applied for an MSGP or intend to do so?
☐	☐	☒	List the specific BMPs that are proposed for this project that receive stormwater from LUHPPL drainage areas. These BMP types must be listed in RISDISM Table 3-3, "Acceptable BMPs for Use at LUHPPLs." Please list BMPs:
☐	☐	☒	Additional BMPs, or additional pretreatment BMP's if any, that meet RIPDES MSGP requirements; Please list BMPs:
			Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.).

ILLICIT DISCHARGES – MINIMUM STANDARD 9			
Illicit discharges are defined as unpermitted discharges to Waters of the State that do not consist entirely of stormwater or uncontaminated groundwater, except for certain discharges identified in the RIPDES Phase II Stormwater General Permit.			
YES	**NO**	**N/A**	
☒	☐	☐	Have you checked for illicit discharges?
☐	☒	☐	Have any been found and/or corrected? If "Yes," please identify.
☒	☐	☐	Does your report explain preventative measures that keep non-stormwater discharges out of the Waters of the State (during and after construction)?

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

SOIL EROSION AND SEDIMENT CONTROL (SESC) – MINIMUM STANDARD 10				
YES	**NO**	**N/A**		
☒	☐	☐	Have you included a Soil Erosion and Sediment Control Plan Set and/or Complete Construction Plan Set?	
☒	☐	☐	Have you provided a **separately-bound** document based upon the SESC Template? If yes, proceed to Minimum Standard 11 (the following items can be assumed to be addressed).	
			If "No," include a document with your submittal that addresses the following elements of an SESC Plan:	
			☐	Soil Erosion and Sediment Control Plan Project Narrative, including a description of how the fifteen (15) Performance Criteria have been met:
			☐	Provide Natural Buffers and Maintain Existing Vegetation
			☐	Minimize Area of Disturbance
			☐	Minimize the Disturbance of Steep Slopes
			☐	Preserve Topsoil
			☐	Stabilize Soils
			☐	Protect Storm Drain Inlets
			☐	Protect Storm Drain Outlets
			☐	Establish Temporary Controls for the Protection of Post-Construction Stormwater Control Measures
			☐	Establish Perimeter Controls and Sediment Barriers
			☐	Divert or Manage Run-On from Up-Gradient Areas
			☐	Properly Design Constructed Stormwater Conveyance Channels
			☐	Retain Sediment On-Site
			☐	Control Temporary Increases in Stormwater Velocity, Volume, and Peak Flows
			☐	Apply Construction Activity Pollution Prevention Control Measures
			☐	Install, Inspect, and Maintain Control Measures and Take Corrective Actions
			☐	Qualified SESC Plan Preparer's Information and Certification
			☐	Operator's Information and Certification; if not known at the time of application, the Operator must certify the SESC Plan upon selection and prior to initiating site activities
			☐	Description of Control Measures, such as Temporary Sediment Trapping and Conveyance Practices, including design calculations and supporting documentation, as required

STORMWATER MANAGEMENT SYSTEM OPERATION, MAINTENANCE, AND POLLUTION PREVENTION PLAN – MINIMUM STANDARDS 7 AND 9		
Operation and Maintenance Section		
YES	**NO**	
☒	☐	Have you minimized all sources of pollutant contact with stormwater runoff, to the maximum extent practicable?
☒	☐	Have you provided a **separately-bound** Operation and Maintenance Plan for the site and for all of the BMPs, and does it address each element of RICR 8.17 and RISDISM Appendix C and E?
☒	☐	Lawn, Garden, and Landscape Management meet the requirements of RISDISM Section G.7? If "No," why not?
☒	☐	Is the property owner or homeowner's association responsible for the stormwater maintenance of all BMP's? If "No," you must provide a legally binding and enforceable maintenance agreement (see RISDISM Appendix E, page 26) that identifies the entity that will be responsible for maintenance of the stormwater. Indicate where this agreement can be found in your report (i.e., name of report/document, page numbers, appendices, etc.).
☐	☒	Do you anticipate that you will need legal agreements related to the stormwater structures? (e.g. off-site easements, deed restrictions, covenants, or ELUR per the Remediation Regulations). If "Yes," have you obtained them? Or please explain your plan to obtain them:

☐	☒	Is stormwater being directed from public areas to private property? If "Yes," note the following: Note: This is not allowed unless a funding mechanism is in place to provide the finances for the long-term maintenance of the BMP and drainage, or a funding mechanism is demonstrated that can guarantee the long-term maintenance of a stormwater BMP by an individual homeowner.
Pollution Prevention Section		
☒	☐	Designated snow stockpile locations?
☒	☐	Trash racks to prevent floatables, trash, and debris from discharging to Waters of the State?
☒	☐	Asphalt-only based sealants?
☐	☒	Pet waste stations? (Note: If a receiving water has a bacterial impairment, and the project involves housing units, then this could be an important part of your pollution prevention plan).
☒	☐	Regular sweeping? Please describe:
☒	☐	De-icing specifications, in accordance with RISDISM Appendix G. (NOTE: If the groundwater is GAA, or this area contributes to a drinking water supply, then this could be an important part of your pollution prevention plan).
☒	☐	A prohibition of phosphate-based fertilizers? (Note: If the site discharges to a phosphorus impaired waterbody, then this could be an important part of your pollution prevention plan).

PART 4. SUBWATERSHED MAPPING AND SITE-PLAN DETAILS

Existing and Proposed Subwatershed Mapping (REQUIRED)			
YES	**NO**		
☒	☐		Existing and proposed drainage area delineations
☒	☐		Locations of all streams and drainage swales
☒	☐		Drainage flow paths, mapped according to the DEM *Guidance for Preparation of Drainage Area Maps* (included in RISDISM Appendix K)
☒	☐		Complete drainage area boundaries; include off-site areas in both mapping and analyses, as applicable
☒	☐		Logs of borings and/or test pit investigations along with supporting soils/geotechnical report
☒	☐		Mapped seasonal high-water-table test pit locations
☒	☐		Mapped locations of the site-specific borings and/or test pits and soils information from the test pits at the locations of the BMPs
☒	☐		Mapped locations of the BMPs, with the BMPs consistently identified on the Site Construction Plans
☒	☐		Mapped bedrock outcrops adjacent to any infiltration BMP
☒	☐		Soils were logged by a:
		☒	DEM-licensed Class IV soil evaluator Name: John Keegan, RI Soil Evaluator D-4008
		☐	RI-registered P.E. Name:

Subwatershed and Impervious Area Summary				
Subwatershed (area to each design point)	**First Receiving Water ID or MS4**	**Area Disturbed (acres)**	**Existing Impervious (acres)**	**Proposed Impervious (acres)**
DP-1: Silver Creek	RI0007026R-01	1.74	0.130	1.152
DP-2:				
DP-3:				
DP-4:				
TOTALS:				

Site Construction Plans (Indicate that the following applicable specifications are provided)		
YES	**NO**	
☒	☐	Existing and proposed plans (scale not greater than 1" = 40') with North arrow
☒	☐	Existing and proposed site topography (with 1 or 2-foot contours); 10-foot contours accepted for off-site areas
☒	☐	Boundaries of existing predominant vegetation and proposed limits of clearing
☒	☐	Site Location clarification
☒	☐	Location and field-verified boundaries of resource protection areas such as: ▸ freshwater and coastal wetlands, including lakes and ponds ▸ coastal shoreline features Perennial and intermittent streams, in addition to Areas Subject to Storm Flowage (ASSFs)
☒	☐	All required setbacks (e.g., buffers, water-supply wells, septic systems)
☒	☐	Representative cross-section and profile drawings, and notes and details of structural stormwater management practices and conveyances (i.e., storm drains, open channels, swales, etc.), which include: ▸ Location and size of the stormwater treatment practices (type of practice, depth, area). Stormwater treatment practices (BMPs) must have labels that correspond to RISDISM Table 5-2; ▸ Design water surface elevations (applicable storms); ▸ Structural details of outlet structures, embankments, spillways, stilling basins, grade-control structures, conveyance channels, etc.; ▸ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.); ▸ Location of floodplain and, if applicable, floodway limits and relationship of site to upstream and downstream properties or drainage that could be affected by work in the floodplain; ▸ Planting plans for structural stormwater BMPs, including species, size, planting methods, and maintenance requirements of proposed planting
☒	☐	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report and corresponding water tables
☒	☐	Mapping of any OWM-approved remedial actions/systems (including ELURs)
☒	☐	Location of existing and proposed roads, buildings, and other structures including limits of disturbance; ▸ Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements; ▸ Location of existing and proposed conveyance systems, such as grass channels, swales, and storm drains, and location(s) of final discharge point(s) (wetland, waterbody, etc.); ▸ Cross sections of roadways, with edge details such as curbs and sidewalks; ▸ Location and dimensions of channel modifications, such as bridge or culvert crossings
☒	☐	Locations, cross sections, and profiles of all stream or wetland crossings and their method of stabilization

1.0 Project Description

The purpose of this report is to specify a Storm Water Management System to be implemented at the new project on Gooding Avenue.

The site totals 9.78 acres located on Assessor's Plat 111 Lot 1 in Bristol, Rhode Island. The site is located south of Gooding Avenue near the intersection of Broadcommon Road. A National Forest to the east of the site provides a buffer between the site and Silver Creek.

The proposed development will include a new 13,364 sf hotel building, associated parking and access driveways. The site will be serviced by public water and sewer. Water will be provided by Bristol Country Water Authority and Sewer will be provided by the Town of Bristol.

The stormwater quality will be improved by utilizing Best Management Practices (BMPs) as established by the RISDISM for the treatment of stormwater runoff from the proposed development. BMPs will consist of a sand filter and underground infiltration/detention system. The systems have been designed to meet the RIDEM Stormwater Design and Installations Standards Manual.

2.0 Site Conditions

2.1 SOILS

There are the following soil types within the analyzed area of the Site as mapped by the NRCS USDA Soil Conservation service:

Soil Symbol	Description	Hydrologic Group
PmA	Pittstown silt loam, 0 to 3 percent slopes	C
PmB	Pittstown silt loam, 3 to 8 percent slopes	C
Se	Stissing silt loam	D

Site specific soil evaluations can be found in Appendix A2.1.

2.2 EXISTING SITE CONDITIONS

Currently the site is undeveloped and predominately woods. All stormwater from the site discharges directly to the onsite wetland areas and ultimately to Silver Creek. The site is largely made up of wetland and perimeter wetland areas and is almost entirely Hydrologic Group D soils. Groundwater tables range from 24" to 36" below existing grade. There is an existing sewer easement that bisects the site.

The entire site slopes diagonally from the higher elevation at the northwest corner along Gooding Avenue to the southeast with all existing slopes < 15%. Stormwater from the site flows overland following the existing slopes. Gooding Avenue has curbing along both sides of the road and a closed drainage network that prevents stormwater from Gooding Avenue from flowing onto the site. However,

a portion of the adjacent residential lots to the west of the site does flow toward the site. These flows have been incorporated into the model.

Currently, none of the existing runoff is treated or detained before being discharged to the wetland. The design point that has been used in modeling the site is the onsite wetland.

2.3 POST SITE CONDITIONS

Following development, the site will be modeled as multiple sub-catchment areas. A small portion of the site to the east will be directed via overland flow first to the Cascade Separator for pretreatment and then to the sand filter (Sand Filter B). An underground detention system (UDS-B) will provide additional storage for the sand filter, allowing a greater volume of water to be stored and infiltrated above the required 1.2" water quality storm.

The main subcatchment of the site contains the proposed building and parking areas. All runoff from the parking areas will be collected in the proposed drainage network and directed to a WQ bypass structure. This structure will direct the WQ storm to the underground infiltration system (UIS-A) and all larger storms to the underground detention system (UDS-A). All runoff from the proposed roof will also tie into the drainage network via roof leader. UDS-A will handle peak mitigation for the site and contains a low flow outlet to meet CPv criteria. Outflows from UDS-A will discharge to the wetland via a culvert and headwall. UIS-A will be equipped with isolator rows to infiltrate 25% of the water quality storm. An isolator row bypass will be used to direct flows to the appropriate areas of the underground infiltration system.

Stormwater from all undetained areas will flow overland as in pre-development conditions. This water will flow overland directly to the wetland. Since all stormwater will continue to be discharged to the wetland, post development conditions have also been modeled with one design point.

The proposed drainage analysis uses stormwater management systems to control and treat runoff from the proposed development. The following BMP's are used on site and have been designed to include the following elements:

- Pretreatment Proprietary Device
    - Pretreatment TSS removal of runoff from roadways and sidewalks
    - Contech's Cascade Separator selected as RIDEM pre-approved product for this application
- Sand Filter
    - Fully infiltrates the 1.2" water quality stormwater event
    - 2.0' of sand media mix including 6" of top soil and 1.5' of sand filter sand for stormwater infiltration
- Underground Infiltration System
    - Stormtech SC-740 Chambers or approved equal
    - Fully infiltrates the 1.2" water quality stormwater event
    - Equipped with isolator rows to infiltrate a minimum of 25% of the WQv
    - Variable depth sand layer to native soil beneath bottom of stone where fill is required

- Underground Detention System
    - Stores Channel Protection Volume (CPv)
    - Provided Overbank Flood Protection (Qp) for the 1-100 year storm events

The above elements are used to meet the design standards of the Rhode Island Stormwater Design and Installation Standard.

The primary goal of increasing water quality treatment is accomplished by providing water quality BMPs. Stormwater runoff mitigation is provided through the use of the underground detention system with a low flow outlet. By reducing post development stormwater flow rate to a level no greater than the pre development rate, the second goal of the proposed drainage system is achieved. Any potential impacts from the proposed development on the abutting properties and wetlands has been mitigated.

3.0 Minimum Standards

The site has been designed to meet the minimum standards as outlined in the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM). The following sections outline how the site meets and exceeds the minimum required standards.

3.1 Minimum Standard 1: LID Site Planning and Design Strategies

See "Appendix A: Stormwater Management Checklist" from the RISDISM provided at the beginning of this report.

3.2 Minimum Standard 2: Groundwater Recharge

Groundwater is to be recharged per watershed based on impervious area coverage in accordance with section 3.2.2 of the RISDISM.

The required recharge volume is based on all impervious area, not just areas which are captured in the proposed BMPs.

Groundwater recharge is determined from the following equation:
Re_V=1"*F*I/12

Where:

Re_V=Groundwater Recharge Volume (ac-ft)

F=Recharge Factor based on Hydrologic Soil Groups (HSG) (see table below)

I=Impervious Area (acres)

HSG	Recharge Factor (F)
A	0.60
B	0.35
C	0.25
D	0.10

Recharge volume for watershed 1 is provided through the use of UIS-A and Sand Filter B. The total impervious on the site is 1.152 acres. The soil has been modeled as HSG D, therefore the total recharge required for the site is 418 cu.ft. See Table 2-1 of the Appendix A checklist for a summary of recharge values.

HydroCAD printouts are available in Appendix A3.2 for the 1.2" water quality storm. The water quality storm is calculated in HydroCAD using the 'calculate separate Pervious/Impervious runoff' option.

3.3 Minimum Standard 3: Water Quality

All stormwater from developed area is treated through an approved BMP before being discharged. This site has been designed to use a sand filter and an underground infiltration system to treat stormwater before either being discharged to the wetland or being stored within the detention system. See the following sand filter design sheet and water quality underground infiltration section for water quality requirements. There are no pollutant-specific requirements and/or pollutant removal efficiencies applicable to the site as the result of SAMP, TMDL, or other watershed-specific requirements.

3.3.1 Sand Filter Calculations

Sand Filter Sizing

Name of Sand Filter: SF-B

Sand Filter Parameters		
At,Total Area to Sand Filter	0.615	(Acres)
Impervious Area To Sand Filter	0.265	(Acres)
d_f, Filter Bed Depth	2.00	(feet)
k, Coefficient of Permeability	3.5	(ft/day)
h_f, Average Height of Water	0.50	(ft)
t_f, Design Filter Bed Drain Time	2.00	(days)
Ponding Depth	12	(in)
Loam Depth	6	(in)

Water Quality Calculations

WQ_v= 1inch x Impervious Area

WQ_v= 962 (Cubic Feet)

Minimum Size of Sand Filter Filter Area

$A_f=(WQ_v)x(d_f)/[(k)x(h_f+d_f)(t_f)]$

Required Af= 110 (Square Feet)

Where A_f is the required filter bed area

Provided Af= 324 (Square Feet)

Sand Filter Pre Treatment

Type of Pre Treatment: Other

Required Water Quality Volume

75% of the WQv must be held within system

Required WQ_v 721 (Cubic Feet)

Volume of Loam	53 (Cubic Feet)
Volume of Ponding	507 (Cubic Feet)
Volume of Voids in Filter Bed	214 (Cubic Feet)
Total	**774 (Cubic Feet)**

3.3.2 Water Quality Underground Infiltration System

The Underground Infiltration System (UIS-A) has been designed as a water quality system. The system has been sized using HydroCAD and an infiltration rate based on a parent material within the footprint of the BMP. The project site largely consists of sandy loam and an infiltration rate was used from table 5.5.4 of the RISDISM. See Appendix A3.2 for HydroCAD printouts for the water quality event. The underground infiltration system has been designed to fully infiltrate the water quality event.

Pretreatment for the underground infiltration system has been provided through the use of isolator rows. The isolator rows have been designed to store and infiltrate a minimum of 25% of the water quality volume.

3.4 Minimum Standard 4: Conveyance and Natural Channel Protection

3.4.1 Drainage Network Design Parameters:

A. PIPES

- All drainage pipes are HDPE or equivalent unless otherwise noted.
- Manning's coefficient = 0.012 for HDPE Pipe
- Diameters & lengths as specified
- The 100-year design storm is utilized for the drainage pipe design to ensure that the drainage system contains and channels water to the BMP areas as shown on the plans.
- The rational method has been used for the closed drainage system.

B. STRUCTURES

- Catch basins – Pre-cast concrete with 2' sump unless otherwise noted and inverts as specified
- Manholes – Pre-cast concrete with inverts as specified.

See the Inlet and Pipe summaries on the following pages designed for the 100-year storm event as noted above. All runoff from the 100-year storm event will be captured in the proposed drainage system without bypassing.

3.4.2 Channel Protection Volume:

The underground detention system has been designed to release the 1 year storm volume over a 24 hour time span in accordance with Section 3.2.4 of the RISDISM. The underground detention system has been designed to hold the full CPv for the site.

Based on site constraints, a sand filter with accompanying detention storage is provided in the northeast portion of the site. The entire water quality (1.2") storm is infiltrated through the practice, however there is a small amount of runoff overflowing the proposed spillway for the 1-year storm. The total volume flowing to the wetland from developed areas during the 1-year storm is only 0.035 ac-ft.

The Channel Protection Volume is determined from the following equation:
$CP_V=0.65V_r$

CP_V=required channel protection storage volume
V_r=runoff volume from the 1-year, 24-hour storm (obtained from HydroCAD)
Average release rate, $CP_{qavg}=V_r/T=Q_{CPv}$
Max Release Rate=$CP_{qmax}=2*CP_{qavg}$
T=extended detention time (24 hours)

BMP / Subcatchment	V_r (cf) To BMP	CP_v (cf) Required (0.65* V_r)	CP_v (cf) BMP Volume Infiltrated	CP_V (cf) Total	Required Max Release Rate (cfs)	Provided Max Release Rate (cfs)
Wetland/Silver Creek	12,719	8,268	6,273	8,268	0.294	HCAD

HydroCAD printouts are available in Appendix A3.5.4.2 for the 1-year storm event.

3.5 Minimum Standard 5: Overbank Flood Protection & Downstream Analysis

3.5.1 Method of Analysis

USDA Soil Conservation Service Method as defined by Technical Release No. 20 (TR-20) determines Stormwater runoff rate and volume. Type III rainfall distribution is utilized. Time of concentration is determined using Technical Release No 55 (TR-55) methodology, through the computer program *HydroCAD ver. 10.0* by Applied Microcomputer Systems.

Soil evaluations have been performed by SITEC, Inc. The existing soil has a texture of sandy loam. Due to the presence of wetland areas and HSG D soils, the soils have been modeled as a loam texture for a more conservative approach. Based on table 5.3 of the RIDISM an infiltration rate of 0.52 in/hr has been used in HydroCAD.

The drainage system has been designed to mitigate all stormwater flows for the 1 through 100 year storm events. The emergency outlets have been sized to handle the 100 year storm event.

3.5.2 Design Storm

Analysis of 1-year, 10-year, 25-year, and 100-year frequency storms are included. The following 24-hour rainfall intensities are obtained from the Rhode Island Stormwater Design and Installation Standards Manual, Table 3-1 for Bristol County.

1 year =	2.8 inches
10 year =	4.9 inches
25 year =	6.1 inches
100 year=	8.6 inches

3.5.3 Design Point Breakdown

The site is analyzed as one watershed area. In the pre development stage there is 1 subcatchment. In the post development stage there are 3 subcatchments. The watershed will demonstrate zero increase in runoff rate due to the proposed development. A description of each subcatchment is summarized as follows:

<u>Design Point #1: Wetland</u>

Watershed #1 flows to Design Point- 1 (DP-1). The design point is the on-site wetland.

In pre development conditions there is only one watershed to the Design Point. Pre-01 (10) contains the entire site and some off-site areas. Stormwater reaches DP-1 (11) via overland flow. Pre-01 is predominately woods with some grass areas along Gooding Avenue. The watershed also includes two residential homes with driveways along Gooding Avenue to the west of the site. A Tc value of 14.6 minutes was used.

In post development conditions there are 3 sub watersheds:

Post-01 (100) contains all undetained areas surrounding the proposed development. These areas will either be grass or undisturbed areas from pre-conditions. Stormwater will reach the design point via overland flow as in existing conditions. Some stormwater will be directed around the proposed

development via a small grassed swale to the west of the parking area. A Tc value of 7.3 minutes was used.

Post-02 (101) collects runoff from the proposed building and parking areas. Stormwater is captured in the proposed drainage network and directed to the WQ bypass structure (102) in the parking area south of the building. This bypass will direct the WQv to UIS-A via the isolator row bypass structure (103). Larger storms will be directed to the peak detention system (UDS-A) (106). Discharges from UDS-A will be directed to the design point through a culvert with a headwall. A Tc value of 6.0 minutes was used.

Post-03 (107) collects runoff from the drive aisle and a small portion of the parking area as well as the walkway and grass areas north of the proposed building to Sand Filter B and Underground Detention System B. Stormwater will flow overland and reach the cascade separator through the pipe network into the Sand Filter (109). The sand filter will receive additional storage from Underground Detention System B (110) which is connected by four 6" culverts. Larger storms will be discharged via overflow spillway and directed to the design point. A Tc value of 6.0 minutes was used.

Below is a summary of the hydrologic parameters for the pre and post development sub-areas in Design Point-1.

	Area (acres)	CN	Tc (min)
Pre-01	2.765	78	14.6
Post-01	0.858	79	7.3
Post-02	1.334	91	6.0
Post-03	0.572	88	6.0

3.5.4 Q_p BMP Calculations

This section includes calculations for the Qp BMPs for the site. Calculations include Rip Rap Aprons and the Emergency Outlet Calculations.

The underground detention system has been sized to safely pass the 100 year storm without overtopping the system. The outlet control structure will be equipped with an overflow weir. In the event that an outlet is clogged or not functioning, stormwater would flow over the weir and through the culvert to the wetland. See attached HydroCAD.

Outlet Protection

A rip rap apron and level spreader have been designed at the drainage pipe discharge from the underground detention system. The rip rap apron is designed to prevent scour at the storm water outlet and to minimize the potential for downstream erosion by reducing the velocity of concentrated storm water flows. See calculations on the following page. A level spreader is also proposed at the end of the rip rap apron of the underground detention system.

3.5.5 Downstream Analysis

A downstream analysis is required under the following conditions:

Area of Disturbance (Acres)	Impervious Cover (%)
>5 to 10	>75
>10 to 25	>50
>25 to 50	>25
>50	All Projects

The total site is 9.78 acres. The project proposes to disturb 1.74 acres and is 1.152 acres of impervious. This is approximately 12% impervious cover. Since the disturbed area is less than 5 acres, a downstream analysis is not required. However, in order to provide a comparison of flows with respect to a stream that historically floods (Silver Creek), we have provided a Downstream Summary in Appendix A3.5.4.7.

3.5.6 Overbank Flood Protection Conclusion

The tables below present a summary of the pre development flows vs. the mitigated post development 1flows. The table shows a decrease in the rate of runoff for all storms included in the analysis.

Pre Development Flows vs. Post Development Flows Mitigated

Watershed #1: (DP-1)

Subwatershed (design point)	**1-yr Peak Flow**		**10-yr Peak Flow**		**25-yr Peak Flow**		**100-yr Peak Flow**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
DP-1:	2.34	0.99	6.50	4.99	9.08	6.75	14.58	10.39

All flows in cubic feet per second (cfs)

As shown in the tables above, no increase in stormwater runoff rate will occur following the proposed construction during the 1 through 100 year storm events.

Also note that, due to concerns within the overall Silver Creek watershed and constraints therein, the applicant is also demonstrating that the proposed stormwater system will result in a decrease in runoff volume.

Watershed #1: (DP-1)

Sub-watershed (design point)	1-yr Volume		10-yr Volume		25-yr Volume		100-yr Volume	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DP-1:	0.228	0.131	0.605	0.421	0.845	0.639	1.371	1.182

All flows in acre feet per second (af)

As shown in the tables above, no increase in stormwater runoff volume will occur following the proposed construction during the 1 through 100 year storm events.

3.6 Minimum Standard 6: Redevelopment and Infill Projects.

The site is not classified as a redevelopment or infill project.

3.7 Minimum Standard 7: Pollution Prevention

A Soil Erosion and Sediment Control Plan (SESC) for this development can be found under a separate document. See the Soil Erosion and Sediment Control Plan for the development prepared by DiPrete Engineering. The SESC contains information for construction pollution prevention. For post construction pollution prevention see the Operations and Maintenance (O&M) document prepared for this development by DiPrete Engineering.

3.8 Minimum Standard 8: Land Uses with High Potential Pollutant Loads (LUHPPLs)

The site is not considered LUHHPL.

3.9 Minimum Standard 9: Illicit Discharges

There are no proposed Illicit Discharges on site. The site will be serviced by public water and sewer.

3.10 Minimum Standard 10: Construction Activity Soil Erosion, Runoff and Sedimentation and Pollution Prevention Control Measure Requirements

See the SESC for this development prepared by DiPrete Engineering.

3.11 Minimum Standard 11: Stormwater Management System Operation and Maintenance

See the O&M for this development prepared by DiPrete Engineering.

Appendix A

A2.1 Soil Evaluations

Hotel Development
Gooding Avenue
Bristol, Rhode Island

Test Pits to Determine Groundwater
John Keegan RI Soil Evaluator D-4008
12/12/14

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
1	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 24"	Bw2	SL	5Y4/3	m2p 10YR4/4	24"
	24"-72"	Cd	SL	5Y 5/1	m3p 10YR4/4	36"

Till becomes denser and rocky with depth
Hole is dry

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
2	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 30"	Bw2	SL	5Y4/3	m2p 10YR4/4	30"
	30"-77"	Cd	SL	5Y 5/1	m3p 10YR4/4	32"

Till becomes denser and rocky with depth
Hole is dry

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
3	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 30"	Bw2	SL	5Y4/3	m2p 10YR4/4	28"
	30"-72"	Cd	SL	5Y 5/1	m3p 10YR4/4	32"

Till becomes denser and rocky with depth
Hole is dry

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
4	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 30"	Bw2	SL	5Y4/3	m2p 10YR4/4	30"
	30"-72"	Cd	SL	5Y 5/1	m3p 10YR4/4	32"

Till becomes denser and rocky with depth
Hole is dry

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
5	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 30"	Bw2	SL	5Y4/3	m2p 10YR4/4	28"
	30"-60"	Cd	SL	5Y 5/1	m3p 10YR4/4	32"

Till becomes denser and rocky with depth
Hole is dry

Hotel Development
Gooding Avenue
Bristol, Rhode Island

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
6	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 36"	Bw2	SL	5Y4/3	m2p 10YR4/4	36"
	36"-77"	Cd	SL	5Y 5/1	m3p 10YR4/4	38"

Sandy lenses and Mixing at 30"
Till becomes denser and rocky with depth
Hole is dry

TestPit#	Depth	Horizon	Texture	Color	REDOX	Depth
7	0"-12"	Ap	SL	10YR 3/2		
	12"-20"	Bw1	SL	2.5Y4/4		
	20"- 36"	Bw2	SL	5Y4/3	m2p 10YR4/4	36"
	36"-72"	Cd	SL	5Y 5/1	m3p 10YR4/4	38"

Till becomes denser and rocky with depth
Hole is dry

A3.2 Water Quality HydroCAD 1.2” Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: WPre-01 Runoff Area=2.765 ac 4.59% Impervious Runoff Depth=0.14"
Flow Length=409' Tc=14.6 min CN=77/98 Runoff=0.17 cfs 0.033 af

Subcatchment 100: WPost-01 Runoff Area=0.858 ac 10.02% Impervious Runoff Depth=0.19"
Flow Length=339' Tc=7.3 min CN=77/98 Runoff=0.10 cfs 0.014 af

Subcatchment 101: WPost-02 Runoff Area=1.334 ac 68.74% Impervious Runoff Depth=0.71"
Tc=6.0 min CN=77/98 Runoff=1.01 cfs 0.079 af

Subcatchment 107: WPost-03 Runoff Area=0.572 ac 48.25% Impervious Runoff Depth=0.55"
Tc=6.0 min CN=80/98 Runoff=0.33 cfs 0.026 af

Reach 11: Wetland Inflow=0.17 cfs 0.033 af
Outflow=0.17 cfs 0.033 af

Reach 111: Wetland Inflow=0.10 cfs 0.014 af
Outflow=0.10 cfs 0.014 af

Pond 102: Qp/WQ ByPass Peak Elev=74.89' Inflow=1.01 cfs 0.079 af
Primary=1.01 cfs 0.079 af Secondary=0.00 cfs 0.000 af Outflow=1.01 cfs 0.079 af

Pond 103: Isolator ByPass Peak Elev=74.03' Inflow=1.01 cfs 0.079 af
Primary=1.01 cfs 0.065 af Secondary=0.08 cfs 0.014 af Outflow=1.01 cfs 0.079 af

Pond 104: UIS A (Isolator Row) with Peak Elev=74.03' Storage=1,935 cf Inflow=1.01 cfs 0.065 af
Outflow=0.01 cfs 0.065 af

Pond 105: UIS A with Underground Sand Filter Peak Elev=70.08' Storage=91 cf Inflow=0.08 cfs 0.014 af
Outflow=0.04 cfs 0.014 af

Pond 106: UDS A Peak Elev=70.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 109: Sand Filter B Peak Elev=69.75' Storage=897 cf Inflow=0.33 cfs 0.026 af
Discarded=0.00 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.021 af

A3.4.2 Drainage Network Hydraulic Calculations

DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Gooding Avenue — 25-Year Sto
Project Number: 2536-001 — Date: 2/28/2024

Pipe Analysis

Pipe ID	Pipe Length	Pipe Size	Pipe Slope	Flow Rate	Capacity Full	Velocity	Invert Down	Invert Up
	(ft)	(in)	(%)	(cfs)	(cfs)	(ft/s)	(Ft)	(ft)
7 - 8	31.23	18	0.50%	4.6	8.05	4.7	73.50	73.66
4 - 7	31.77	18	0.50%	1.8	8.05	3.7	73.66	73.82
3 - 4	70.67	18	0.50%	0.8	8.06	2.9	73.82	74.17
2 - 3	34.57	15	0.50%	0.8	4.95	2.9	74.85	75.02
1 - 2	96.10	8.004	0.50%	0.3	0.93	2.4	75.18	75.66
6 - 7	26.04	15	0.51%	2.9	5.01	4.2	73.90	74.03
5 - 6	89.55	12	0.50%	0.6	2.73	2.8	74.28	74.73
CS-3 - 22	5.51	12	0.50%	2.5	2.73	3.9	69.00	69.03
17 - CS-3	9.18	12	0.50%	2.6	2.73	3.9	69.03	69.07
16 - 17	28.66	12	0.50%	2.6	2.73	4.0	69.07	69.22
12 - 16	39.32	12	6.12%	1.7	9.56	9.2	69.22	71.62
11 - 12	71.81	12	1.00%	0.8	3.86	3.9	71.62	72.34
15 - 16	28.72	12	0.53%	0.5	2.81	2.7	69.22	69.37
14 - 15	93.35	12	1.89%	0.4	5.31	3.8	69.37	71.13
13 - 14	31.42	12	1.00%	0.1	3.86	2.2	71.13	71.44

DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Gooding Avenue 100-Year St
Project Number: 2536-001 Date: 2/28/2024

Pipe Analysis

Pipe ID	Pipe Length	Pipe Size	Pipe Slope	Flow Rate	Capacity Full	Velocity	Invert Down	Invert Up
	(ft)	(in)	(%)	(cfs)	(cfs)	(ft/s)	(Ft)	(ft)
7 - 8	31.23	18	0.50%	6.0	8.05	5.0	73.50	73.66
4 - 7	31.77	18	0.50%	2.4	8.05	4.0	73.66	73.82
3 - 4	70.67	18	0.50%	1.0	8.06	3.1	73.82	74.17
2 - 3	34.57	15	0.50%	1.0	4.95	3.1	74.85	75.02
1 - 2	96.10	9.996	0.50%	0.4	1.68	2.5	75.18	75.66
6 - 7	26.04	15	0.51%	3.8	5.01	4.5	73.90	74.03
5 - 6	89.55	12	0.50%	0.7	2.73	3.0	74.28	74.73
CS-3 - 22	5.51	12	0.50%	3.3	2.73	4.2	69.00	69.03
17 - CS-3	9.18	12	0.50%	3.3	2.73	4.2	69.03	69.07
16 - 17	28.66	12	0.50%	3.3	2.73	4.2	69.07	69.22
12 - 16	39.32	12	6.12%	2.2	9.56	9.9	69.22	71.62
11 - 12	71.81	12	1.00%	1.1	3.86	4.2	71.62	72.34
15 - 16	28.72	12	0.53%	0.7	2.81	2.9	69.22	69.37
14 - 15	93.35	12	1.89%	0.5	5.31	4.1	69.37	71.13
13 - 14	31.42	12	1.00%	0.1	3.86	2.4	71.13	71.44

DiPrete Engineering
Engineers • Planners • Surveyors

Project Name: Gooding Avenue 100-Year Storm
Project Number: 2536-001 Date: 2/28/2024

HGL at Structure

Structure	Rim Elevation	HGL Elevation	Rim-HGL
	(ft)	(ft)	(ft)
8	78.12	0.00	N/A
7	77.79	76.49	1.31
4	78.13	76.81	1.32
3	78.99	76.85	2.14
2	78.66	76.86	1.80
1	76.94	76.90	0.05
6	77.53	76.80	0.73
5	77.23	77.02	0.21
22	71.01	0.00	N/A
CS-3	71.46	70.87	0.59
17	72.05	71.17	0.89
16	72.48	71.65	0.83
12	75.12	71.95	3.17
11	76.00	73.51	2.50
15	73.60	72.09	1.51
14	76.75	72.12	4.64
13	75.14	72.04	3.11

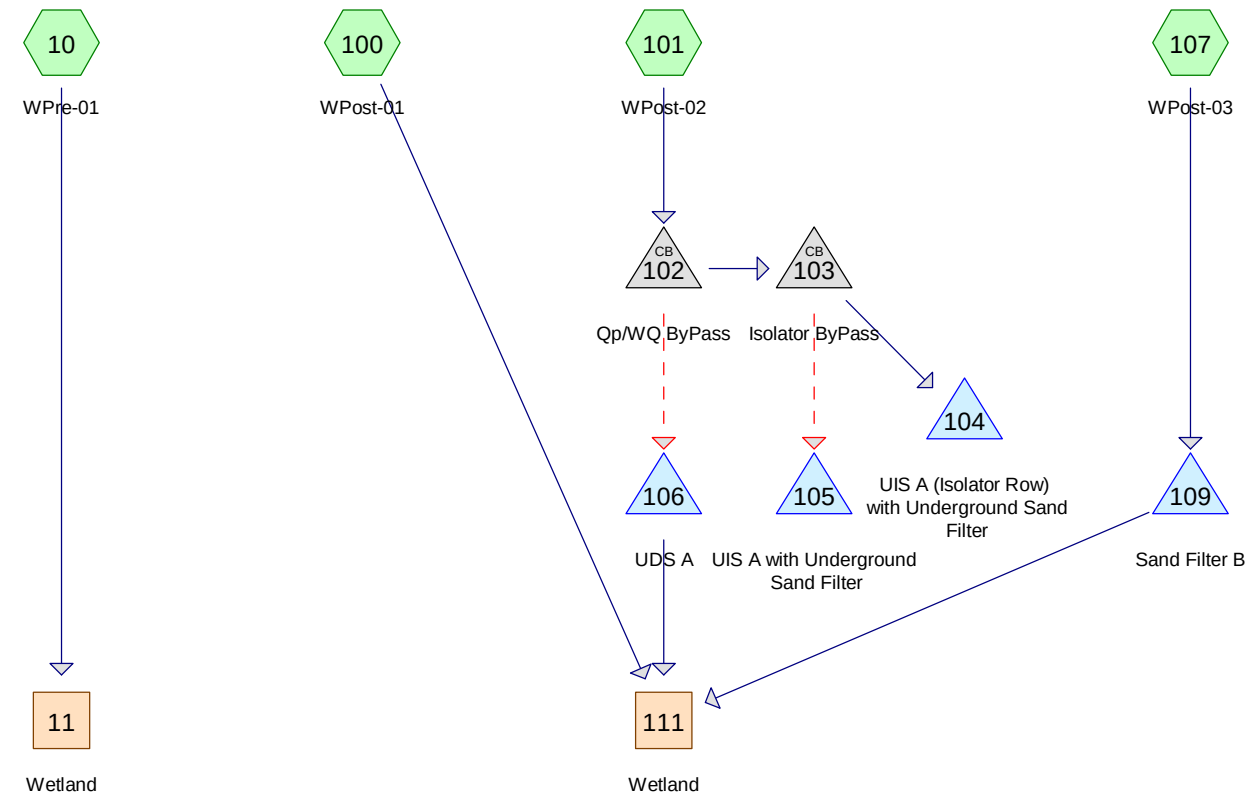
DiPrete Engineering
Engineers • Planners • Surveyors

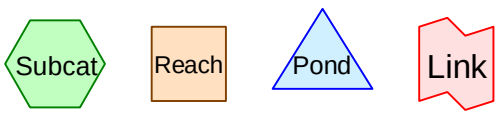
Project Name: Gooding Avenue
Project Number: 2536-001

10-Year Storm
Date: 2/28/2024

Structure	Area	Inlet Time	Intensity	Runoff C	Q=Cia	Q Carry over	Q Captured	Q Bypassed	Bypass Structure	Inlet Type	Curb Opening	Curb Opening	Grate Length	Grate Width	Depth	Spread
	(sf)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
6	14,736	6	6.94	0.84	1.99	0	1.99	0.00	---	Grate inlet	---	---	2	2	0.24	24.019
5	3,652	6	6.938	0.81	0.48	0	0.48	0.00	---	Grate inlet	---	---	2	2	0.099	9.865
2	5,863	6	6.938	0.42	0.40	0	0.40	0.00	---	Grate inlet	---	---	2	2	0.088	8.844
4	7,027	6	6.938	0.85	0.96	0	0.96	0.00	---	Grate inlet	---	---	2	2	0.152	15.161
1	4,503	6	6.938	0.34	0.25	0	0.25	0.00	---	Grate inlet	---	---	2	2	0.067	6.714
11	5,075	6	6.938	0.84	0.69	0	0.60	0.09	12	Grate inlet	---	---	2	2	0.145	3.979
12	6,060	6	6.938	0.76	0.74	0.085	0.48	0.34	16	Grate inlet	---	---	2	2	0.075	7.471
16	2,806	6	6.938	0.72	0.32	0.355	0.67	0.01	---	Grate inlet	---	---	2	2	0.106	2.397
14	4,978	6	6.938	0.25	0.20	0.013	0.17	0.04	15	Grate inlet	---	---	2	2	0.06	4.715
13	2,363	6	6.938	0.25	0.10	0	0.08	0.01	14	Grate inlet	---	---	2	2	0.043	4.252
15	2,987	6	6.938	0.29	0.14	0.041	0.17	0.01	16	Grate inlet	---	---	2	2	0.047	3.2

A3.5.4.1 HydroCAD Node Diagram





Routing Diagram for 2536-001-ALLS-PHCD-INHS
Prepared by DiPrete Engineering, Printed 7/25/2024
HydroCAD® 10.20-3g s/n 01125 © 2023 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.972	74	>75% Grass cover, Good, HSG C (10, 100, 101, 107)
0.848	80	>75% Grass cover, Good, HSG D (10, 100, 101, 107)
1.152	98	Impervious (101, 107)
0.254	98	Offsite Impervious (10, 100, 101)
2.303	77	Woods, Good, HSG D (10, 100, 101)
5.529	**82**	**TOTAL AREA**

A3.5.4.2 HydroCAD 1-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: WPre-01 Runoff Area=2.765 ac 4.59% Impervious Runoff Depth=0.99"
Flow Length=409' Tc=14.6 min CN=78 Runoff=2.34 cfs 0.228 af

Subcatchment 100: WPost-01 Runoff Area=0.858 ac 10.02% Impervious Runoff Depth=1.04"
Flow Length=339' Tc=7.3 min CN=79 Runoff=0.97 cfs 0.075 af

Subcatchment 101: WPost-02 Runoff Area=1.334 ac 68.74% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=91 Runoff=2.92 cfs 0.210 af

Subcatchment 107: WPost-03 Runoff Area=0.572 ac 48.25% Impervious Runoff Depth=1.72"
Tc=6.0 min CN=89 Runoff=1.15 cfs 0.082 af

Reach 11: Wetland Inflow=2.34 cfs 0.228 af
Outflow=2.34 cfs 0.228 af

Reach 111: Wetland Inflow=0.99 cfs 0.131 af
Outflow=0.99 cfs 0.131 af

Pond 102: Qp/WQ ByPass Peak Elev=75.94' Inflow=2.92 cfs 0.210 af
Primary=1.26 cfs 0.188 af Secondary=1.67 cfs 0.022 af Outflow=2.92 cfs 0.210 af

Pond 103: Isolator ByPass Peak Elev=74.21' Inflow=1.26 cfs 0.188 af
Primary=1.23 cfs 0.064 af Secondary=1.23 cfs 0.123 af Outflow=1.26 cfs 0.188 af

Pond 104: UIS A (Isolator Row) with Peak Elev=74.21' Storage=2,102 cf Inflow=1.23 cfs 0.064 af
Outflow=0.01 cfs 0.064 af

Pond 105: UIS A with Underground Sand Filter Peak Elev=73.28' Storage=3,841 cf Inflow=1.23 cfs 0.123 af
Outflow=0.04 cfs 0.123 af

Pond 106: UDS A Peak Elev=70.43' Storage=938 cf Inflow=1.67 cfs 0.022 af
Outflow=0.02 cfs 0.022 af

Pond 109: Sand Filter B Peak Elev=70.55' Storage=1,874 cf Inflow=1.15 cfs 0.082 af
Discarded=0.00 cfs 0.021 af Primary=0.25 cfs 0.035 af Outflow=0.26 cfs 0.056 af

A3.5.4.3 HydroCAD 10-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: WPre-01 Runoff Area=2.765 ac 4.59% Impervious Runoff Depth=2.63"
Flow Length=409' Tc=14.6 min CN=78 Runoff=6.50 cfs 0.605 af

Subcatchment 100: WPost-01 Runoff Area=0.858 ac 10.02% Impervious Runoff Depth=2.72"
Flow Length=339' Tc=7.3 min CN=79 Runoff=2.61 cfs 0.194 af

Subcatchment 101: WPost-02 Runoff Area=1.334 ac 68.74% Impervious Runoff Depth=3.89"
Tc=6.0 min CN=91 Runoff=5.82 cfs 0.432 af

Subcatchment 107: WPost-03 Runoff Area=0.572 ac 48.25% Impervious Runoff Depth=3.68"
Tc=6.0 min CN=89 Runoff=2.40 cfs 0.175 af

Reach 11: Wetland Inflow=6.50 cfs 0.605 af
Outflow=6.50 cfs 0.605 af

Reach 111: Wetland Inflow=4.99 cfs 0.421 af
Outflow=4.99 cfs 0.421 af

Pond 102: Qp/WQ ByPass Peak Elev=76.13' Inflow=5.82 cfs 0.432 af
Primary=1.31 cfs 0.332 af Secondary=4.52 cfs 0.099 af Outflow=5.82 cfs 0.432 af

Pond 103: Isolator ByPass Peak Elev=75.14' Inflow=1.31 cfs 0.332 af
Primary=0.33 cfs 0.090 af Secondary=1.29 cfs 0.242 af Outflow=1.31 cfs 0.332 af

Pond 104: UIS A (Isolator Row) with Peak Elev=75.14' Storage=2,918 cf Inflow=0.33 cfs 0.090 af
Outflow=0.01 cfs 0.081 af

Pond 105: UIS A with Underground Sand Filter Peak Elev=75.14' Storage=8,530 cf Inflow=1.29 cfs 0.242 af
Outflow=0.04 cfs 0.214 af

Pond 106: UDS A Peak Elev=71.20' Storage=4,162 cf Inflow=4.52 cfs 0.099 af
Outflow=0.12 cfs 0.099 af

Pond 109: Sand Filter B Peak Elev=70.71' Storage=2,062 cf Inflow=2.40 cfs 0.175 af
Discarded=0.00 cfs 0.022 af Primary=2.33 cfs 0.127 af Outflow=2.34 cfs 0.149 af

A3.5.4.4 HydroCAD 25-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: WPre-01 Runoff Area=2.765 ac 4.59% Impervious Runoff Depth=3.67"
Flow Length=409' Tc=14.6 min CN=78 Runoff=9.08 cfs 0.845 af

Subcatchment 100: WPost-01 Runoff Area=0.858 ac 10.02% Impervious Runoff Depth=3.77"
Flow Length=339' Tc=7.3 min CN=79 Runoff=3.61 cfs 0.269 af

Subcatchment 101: WPost-02 Runoff Area=1.334 ac 68.74% Impervious Runoff Depth=5.06"
Tc=6.0 min CN=91 Runoff=7.47 cfs 0.562 af

Subcatchment 107: WPost-03 Runoff Area=0.572 ac 48.25% Impervious Runoff Depth=4.83"
Tc=6.0 min CN=89 Runoff=3.11 cfs 0.230 af

Reach 11: Wetland Inflow=9.08 cfs 0.845 af
Outflow=9.08 cfs 0.845 af

Reach 111: Wetland Inflow=6.75 cfs 0.639 af
Outflow=6.75 cfs 0.639 af

Pond 102: Qp/WQ ByPass Peak Elev=76.22' Inflow=7.47 cfs 0.562 af
Primary=1.34 cfs 0.375 af Secondary=6.13 cfs 0.187 af Outflow=7.47 cfs 0.562 af

Pond 103: Isolator ByPass Peak Elev=76.15' Inflow=1.34 cfs 0.375 af
Primary=0.30 cfs 0.101 af Secondary=1.32 cfs 0.274 af Outflow=1.34 cfs 0.375 af

Pond 104: UIS A (Isolator Row) with Peak Elev=75.81' Storage=3,368 cf Inflow=0.30 cfs 0.101 af
Outflow=0.01 cfs 0.082 af

Pond 105: UIS A with Underground Sand Filter Peak Elev=75.80' Storage=9,848 cf Inflow=1.32 cfs 0.274 af
Outflow=0.04 cfs 0.217 af

Pond 106: UDS A Peak Elev=71.61' Storage=6,321 cf Inflow=6.13 cfs 0.187 af
Outflow=0.16 cfs 0.187 af

Pond 109: Sand Filter B Peak Elev=70.75' Storage=2,107 cf Inflow=3.11 cfs 0.230 af
Discarded=0.00 cfs 0.022 af Primary=3.04 cfs 0.182 af Outflow=3.04 cfs 0.204 af

A3.5.4.5 HydroCAD 100-Year Storm Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10: WPre-01 Runoff Area=2.765 ac 4.59% Impervious Runoff Depth=5.95"
Flow Length=409' Tc=14.6 min CN=78 Runoff=14.58 cfs 1.371 af

Subcatchment 100: WPost-01 Runoff Area=0.858 ac 10.02% Impervious Runoff Depth=6.07"
Flow Length=339' Tc=7.3 min CN=79 Runoff=5.74 cfs 0.434 af

Subcatchment 101: WPost-02 Runoff Area=1.334 ac 68.74% Impervious Runoff Depth=7.52"
Tc=6.0 min CN=91 Runoff=10.86 cfs 0.836 af

Subcatchment 107: WPost-03 Runoff Area=0.572 ac 48.25% Impervious Runoff Depth=7.28"
Tc=6.0 min CN=89 Runoff=4.57 cfs 0.347 af

Reach 11: Wetland Inflow=14.58 cfs 1.371 af
Outflow=14.58 cfs 1.371 af

Reach 111: Wetland Inflow=10.39 cfs 1.182 af
Outflow=10.39 cfs 1.182 af

Pond 102: Qp/WQ ByPass Peak Elev=76.38' Inflow=10.86 cfs 0.836 af
Primary=1.30 cfs 0.382 af Secondary=9.56 cfs 0.454 af Outflow=10.86 cfs 0.836 af

Pond 103: Isolator ByPass Peak Elev=76.23' Inflow=1.30 cfs 0.382 af
Primary=0.44 cfs 0.103 af Secondary=1.21 cfs 0.279 af Outflow=1.30 cfs 0.382 af

Pond 104: UIS A (Isolator Row) with Peak Elev=75.90' Storage=3,412 cf Inflow=0.44 cfs 0.103 af
Outflow=0.01 cfs 0.083 af

Pond 105: UIS A with Underground Sand Filter Peak Elev=75.88' Storage=9,947 cf Inflow=1.21 cfs 0.279 af
Outflow=0.04 cfs 0.222 af

Pond 106: UDS A Peak Elev=72.84' Storage=13,272 cf Inflow=9.56 cfs 0.454 af
Outflow=0.24 cfs 0.450 af

Pond 109: Sand Filter B Peak Elev=70.82' Storage=2,185 cf Inflow=4.57 cfs 0.347 af
Discarded=0.00 cfs 0.022 af Primary=4.50 cfs 0.298 af Outflow=4.51 cfs 0.321 af

Summary for Subcatchment 10: WPre-01

Runoff = 14.58 cfs @ 12.20 hrs, Volume= 1.371 af, Depth= 5.95"
Routed to Reach 11 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.60"

	Area (ac)	CN	Description
*	0.127	98	Offsite Impervious
	0.478	74	>75% Grass cover, Good, HSG C
	0.240	80	>75% Grass cover, Good, HSG D
	1.920	77	Woods, Good, HSG D
	2.765	78	Weighted Average
	2.638	77	95.41% Pervious Area
	0.127	98	4.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	37	0.0450	0.13		**Sheet Flow, 1A-1B** Grass: Dense n= 0.240 P2= 3.30"
8.5	63	0.0778	0.12		**Sheet Flow, 1B-1C** Woods: Light underbrush n= 0.400 P2= 3.30"
0.2	41	0.0341	2.97		**Shallow Concentrated Flow, 1C-1D** Unpaved Kv= 16.1 fps
1.3	268	0.0451	3.42		**Shallow Concentrated Flow, 1D-1E** Unpaved Kv= 16.1 fps
14.6	409	Total			

Summary for Subcatchment 100: WPost-01

Runoff = 5.74 cfs @ 12.10 hrs, Volume= 0.434 af, Depth= 6.07"
Routed to Reach 111 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.60"

	Area (ac)	CN	Description
*	0.086	98	Offsite Impervious
	0.292	74	>75% Grass cover, Good, HSG C
	0.176	80	>75% Grass cover, Good, HSG D
	0.304	77	Woods, Good, HSG D
	0.858	79	Weighted Average
	0.772	77	89.98% Pervious Area
	0.086	98	10.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.0610	0.27		**Sheet Flow, 1A-1B**
					Grass: Short n= 0.150 P2= 3.30"
1.1	239	0.0468	3.48		**Shallow Concentrated Flow, 1B-1C**
					Unpaved Kv= 16.1 fps
7.3	339	Total			

Summary for Subcatchment 101: WPost-02

Runoff = 10.86 cfs @ 12.08 hrs, Volume= 0.836 af, Depth= 7.52"
Routed to Pond 102 : Qp/WQ ByPass

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.60"

	Area (ac)	CN	Description
*	0.876	98	Impervious
*	0.041	98	Offsite Impervious
	0.192	74	>75% Grass cover, Good, HSG C
	0.146	80	>75% Grass cover, Good, HSG D
	0.079	77	Woods, Good, HSG D
	1.334	91	Weighted Average
	0.417	77	31.26% Pervious Area
	0.917	98	68.74% Impervious Area

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

Summary for Subcatchment 107: WPost-03

Runoff = 4.57 cfs @ 12.08 hrs, Volume= 0.347 af, Depth= 7.28"
Routed to Pond 109 : Sand Filter B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.60"

	Area (ac)	CN	Description
*	0.276	98	Impervious
	0.286	80	>75% Grass cover, Good, HSG D
	0.010	74	>75% Grass cover, Good, HSG C
	0.572	89	Weighted Average
	0.296	80	51.75% Pervious Area
	0.276	98	48.25% Impervious Area

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

Summary for Reach 11: Wetland

Inflow Area = 2.765 ac, 4.59% Impervious, Inflow Depth = 5.95" for 100-Year event
Inflow = 14.58 cfs @ 12.20 hrs, Volume= 1.371 af
Outflow = 14.58 cfs @ 12.20 hrs, Volume= 1.371 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Reach 111: Wetland

Inflow Area = 1.430 ac, 25.31% Impervious, Inflow Depth > 9.92" for 100-Year event
Inflow = 10.39 cfs @ 12.10 hrs, Volume= 1.182 af
Outflow = 10.39 cfs @ 12.10 hrs, Volume= 1.182 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 102: Qp/WQ ByPass

Inflow Area = 1.334 ac, 68.74% Impervious, Inflow Depth = 7.52" for 100-Year event
Inflow = 10.86 cfs @ 12.08 hrs, Volume= 0.836 af
Outflow = 10.86 cfs @ 12.08 hrs, Volume= 0.836 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.07 hrs, Volume= 0.382 af
Routed to Pond 103 : Isolator ByPass
Secondary = 9.56 cfs @ 12.08 hrs, Volume= 0.454 af
Routed to Pond 106 : UDS A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 76.38' @ 12.08 hrs
Flood Elev= 78.61'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.50'	**6.00" Vert. WQ UIS** C= 0.600 Limited to weir flow at low heads
#2	Device 3	75.75'	**6.0' long Weir Plate** 2 End Contraction(s)
#3	Secondary	72.50'	**18.00" Vert. QP Pond** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.29 cfs @ 12.07 hrs HW=76.37' TW=74.49' (Dynamic Tailwater)
↑—**1=WQ UIS** (Orifice Controls 1.29 cfs @ 6.59 fps)

Secondary OutFlow Max=9.54 cfs @ 12.08 hrs HW=76.38' TW=71.44' (Dynamic Tailwater)
↑—**3=QP Pond** (Passes 9.54 cfs of 15.05 cfs potential flow)
↑—**2=Weir Plate** (Weir Controls 9.54 cfs @ 2.59 fps)

Summary for Pond 103: Isolator ByPass

Inflow Area = 1.334 ac, 68.74% Impervious, Inflow Depth = 3.44" for 100-Year event
Inflow = 1.30 cfs @ 12.07 hrs, Volume= 0.382 af
Outflow = 1.30 cfs @ 12.07 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 14.98 hrs, Volume= 0.103 af
Routed to Pond 104 : UIS A (Isolator Row) with Underground Sand Filter
Secondary = 1.21 cfs @ 11.72 hrs, Volume= 0.279 af
Routed to Pond 105 : UIS A with Underground Sand Filter

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 76.23' @ 14.98 hrs
Flood Elev= 78.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.00'	**15.00" Vert. Isolator Row** C= 0.600 Limited to weir flow at low heads
#2	Device 3	74.00'	**4.0' long Weir Plate** 2 End Contraction(s)
#3	Secondary	73.55'	**15.00" Vert. UIS** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 14.98 hrs HW=75.88' TW=75.89' (Dynamic Tailwater)
↑—**1=Isolator Row** (Controls 0.00 cfs)

Secondary OutFlow Max=1.20 cfs @ 11.72 hrs HW=74.21' TW=74.01' (Dynamic Tailwater)
↑—**3=UIS** (Passes 1.20 cfs of 1.37 cfs potential flow)
↑—**2=Weir Plate** (Weir Controls 1.20 cfs @ 1.47 fps)

Summary for Pond 104: UIS A (Isolator Row) with Underground Sand Filter

Inflow Area = 1.334 ac, 68.74% Impervious, Inflow Depth = 0.92" for 100-Year event
Inflow = 0.44 cfs @ 14.98 hrs, Volume= 0.103 af
Outflow = 0.01 cfs @ 3.88 hrs, Volume= 0.083 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.01 cfs @ 3.88 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 75.90' @ 14.99 hrs Surf.Area= 1,211 sf Storage= 3,412 cf

Plug-Flow detention time= 1,716.7 min calculated for 0.083 af (81% of inflow)
Center-of-Mass det. time= 1,626.6 min (2,243.5 - 616.9)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	1,210 cf	**Sand Filter (Prismatic)** Listed below (Recalc) 3,633 cf Overall x 33.3% Voids
#2A	73.00'	904 cf	**15.00'W x 80.76'L x 3.50'H Field A** -Impervious 4,240 cf Overall - 1,525 cf Embedded = 2,715 cf x 33.3% Voids
#3A	73.50'	1,525 cf	**ADS_StormTech SC-740** x 33 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 3 rows
#4	73.50'	34 cf	**4.00'D x 5.46'H Vertical Cone/Cylinder** x 0.5 -Impervious
		3,673 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	1,211	0	0
73.00	1,211	3,633	3,633

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**0.520 in/hr Infilration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 3.88 hrs HW=70.09' (Free Discharge)
1=Infilration (Exfiltration Controls 0.01 cfs)

Summary for Pond 105: UIS A with Underground Sand Filter

Inflow	=	1.21 cfs @	11.72 hrs, Volume=	0.279 af
Outflow	=	0.04 cfs @	11.33 hrs, Volume=	0.222 af, Atten= 96%, Lag= 0.0 min
Discarded	=	0.04 cfs @	11.33 hrs, Volume=	0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 75.88' @ 14.96 hrs Surf.Area= 3,526 sf Storage= 9,947 cf

Plug-Flow detention time= 1,748.5 min calculated for 0.222 af (79% of inflow)
Center-of-Mass det. time= 1,681.0 min (2,422.2 - 741.2)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	3,509 cf	**Sand Filter (Prismatic)** Listed below (Recalc) 10,539 cf Overall x 33.3% Voids
#2A	73.00'	2,571 cf	**43.50'W x 80.76'L x 3.50'H Field A** -Impervious 12,295 cf Overall - 4,574 cf Embedded = 7,722 cf x 33.3% Voids
#3A	73.50'	4,574 cf	**ADS_StormTech SC-740** x 99 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 9 rows
#4	73.50'	69 cf	**4.00'D x 5.46'H Vertical Cone/Cylinder**
		10,723 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	3,513	0	0
73.00	3,513	10,539	10,539

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**0.520 in/hr Infiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 11.33 hrs HW=73.50' (Free Discharge)
1=Infiltration (Exfiltration Controls 0.04 cfs)

Summary for Pond 106: UDS A

Inflow = 9.56 cfs @ 12.08 hrs, Volume= 0.454 af
Outflow = 0.24 cfs @ 16.56 hrs, Volume= 0.450 af, Atten= 98%, Lag= 268.4 min
Primary = 0.24 cfs @ 16.56 hrs, Volume= 0.450 af
Routed to Reach 111 : Wetland

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 72.84' @ 16.56 hrs Surf.Area= 5,712 sf Storage= 13,272 cf

Plug-Flow detention time= 780.6 min calculated for 0.450 af (99% of inflow)
Center-of-Mass det. time= 776.0 min (1,599.5 - 823.5)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	3,495 cf	**60.00" Round CMP_Round 60" - Header** x 2 L= 89.0'
#2	70.00'	19,144 cf	**60.00" Round Pipe Storage** x 13 L= 75.0'
		22,639 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 4	70.00'	**1.00" Horiz. Low Flow CPv** C= 0.600 Limited to weir flow at low heads
#2	Device 4	70.65'	**2.00" W x 2.00" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 4	74.50'	**4.0' long x 0.5' breadth Outlet Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Primary	69.00'	**12.00" Round Culvert** L= 120.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.00' / 68.00' S= 0.0083 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=0.24 cfs @ 16.56 hrs HW=72.84' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Passes 0.24 cfs of 6.03 cfs potential flow)
  ├**1=Low Flow CPv** (Orifice Controls 0.04 cfs @ 8.11 fps)
  ├**2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 6.99 fps)
  └**3=Outlet Weir** (Controls 0.00 cfs)

Summary for Pond 109: Sand Filter B

Inflow Area = 0.572 ac, 48.25% Impervious, Inflow Depth = 7.28" for 100-Year event
Inflow = 4.57 cfs @ 12.08 hrs, Volume= 0.347 af
Outflow = 4.51 cfs @ 12.10 hrs, Volume= 0.321 af, Atten= 1%, Lag= 0.8 min
Discarded = 0.00 cfs @ 3.80 hrs, Volume= 0.022 af
Primary = 4.50 cfs @ 12.10 hrs, Volume= 0.298 af
Routed to Reach 111 : Wetland

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 70.82' @ 12.10 hrs Surf.Area= 326 sf Storage= 2,185 cf

Plug-Flow detention time= 177.0 min calculated for 0.321 af (92% of inflow)
Center-of-Mass det. time= 137.1 min (914.0 - 776.9)

Volume	Invert	Avail.Storage	Storage Description
#1	69.00'	1,003 cf	**Ponding Storage (Prismatic)** Listed below (Recalc) -Impervious
#2	67.00'	215 cf	**Sand/Loam (Prismatic)** Listed below (Recalc) 652 cf Overall x 33.0% Voids
#3	69.00'	1,068 cf	**24.00" Round UDS-B** x 4 -Impervious L= 85.0'
#4	69.00'	75 cf	**24.00" Round UDS-B** x 2 -Impervious L= 12.0'
		2,361 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
69.00	326	0	0
70.00	494	410	410
71.00	691	593	1,003

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	326	0	0
69.00	326	652	652

Device	Routing	Invert	Outlet Devices
#1	Discarded	67.00'	**0.520 in/hr Infiltration over Surface area** Phase-In= 0.01'
#2	Primary	70.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.00 cfs @ 3.80 hrs HW=67.04' (Free Discharge)
↑—**1=Infiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=4.50 cfs @ 12.10 hrs HW=70.82' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.50 cfs @ 1.42 fps)

A3.5.4.6 HydroCAD Tailwater Analysis

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100: WPost-01 Runoff Area=0.858 ac 10.02% Impervious Runoff Depth=6.07"
Flow Length=339' Tc=7.3 min CN=79 Runoff=5.74 cfs 0.434 af

Subcatchment 101: WPost-02 Runoff Area=1.334 ac 68.74% Impervious Runoff Depth=7.52"
Tc=6.0 min CN=91 Runoff=10.86 cfs 0.836 af

Subcatchment 107: WPost-03 Runoff Area=0.572 ac 48.25% Impervious Runoff Depth=7.28"
Tc=6.0 min CN=89 Runoff=4.57 cfs 0.347 af

Reach 111-1: Silver Creek Flood Avg. Flow Depth=11.00' Max Vel=5.89 fps Inflow=8,889.84 cfs 52,844.917 af
n=0.030 L=2,100.0' S=0.0014 '/' Capacity=8,879.45 cfs Outflow=8,888.23 cfs 52,772.266 af

Pond 102: Qp/WQ ByPass Peak Elev=76.38' Inflow=10.86 cfs 0.836 af
Primary=1.30 cfs 0.382 af Secondary=9.56 cfs 0.454 af Outflow=10.86 cfs 0.836 af

Pond 103: Isolator ByPass Peak Elev=76.23' Inflow=1.30 cfs 0.382 af
Primary=0.44 cfs 0.103 af Secondary=1.21 cfs 0.279 af Outflow=1.30 cfs 0.382 af

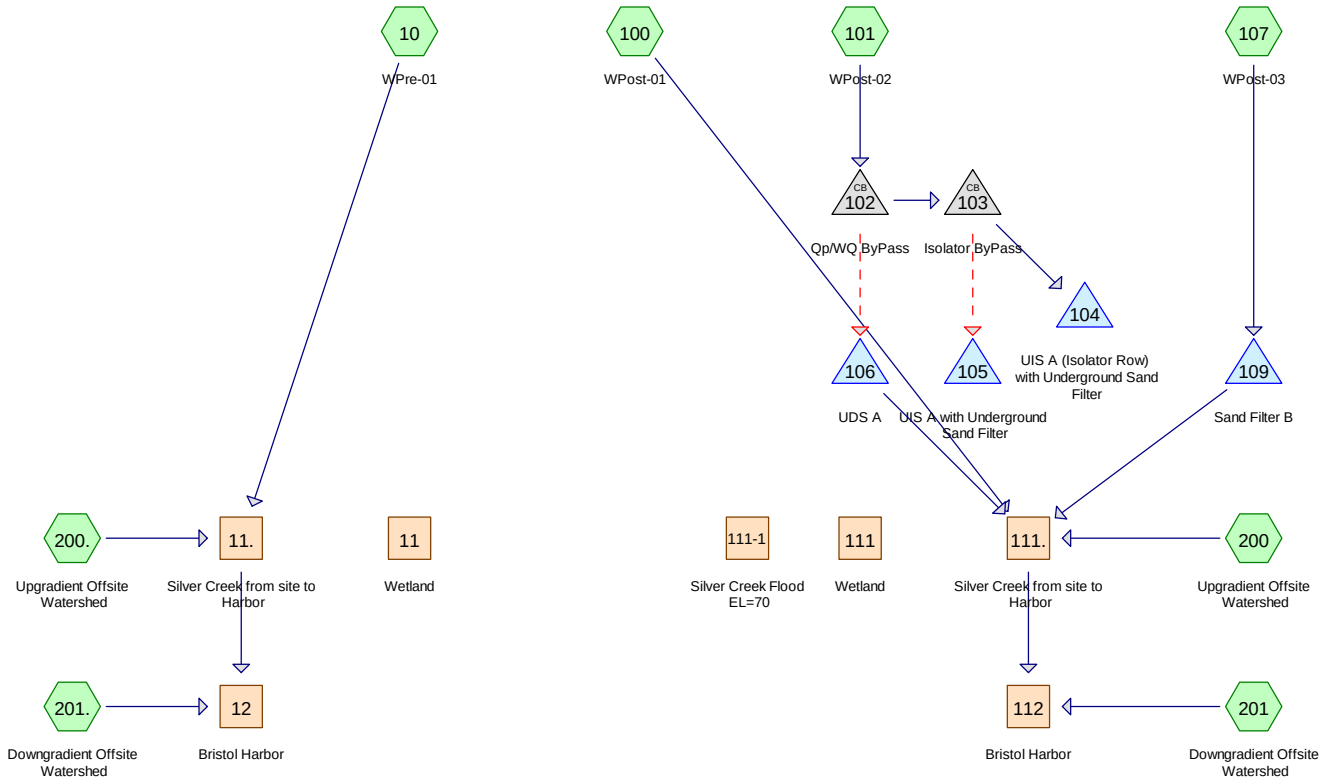
Pond 104: UIS A (Isolator Row) with Peak Elev=75.90' Storage=3,412 cf Inflow=0.44 cfs 0.103 af
Outflow=0.01 cfs 0.083 af

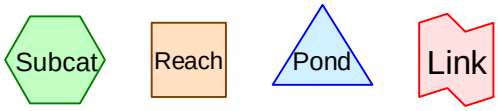
Pond 105: UIS A with Underground Sand Filter Peak Elev=75.88' Storage=9,947 cf Inflow=1.21 cfs 0.279 af
Outflow=0.04 cfs 0.222 af

Pond 106: UDS A Peak Elev=72.84' Storage=13,272 cf Inflow=9.56 cfs 0.454 af
Outflow=0.24 cfs 0.450 af

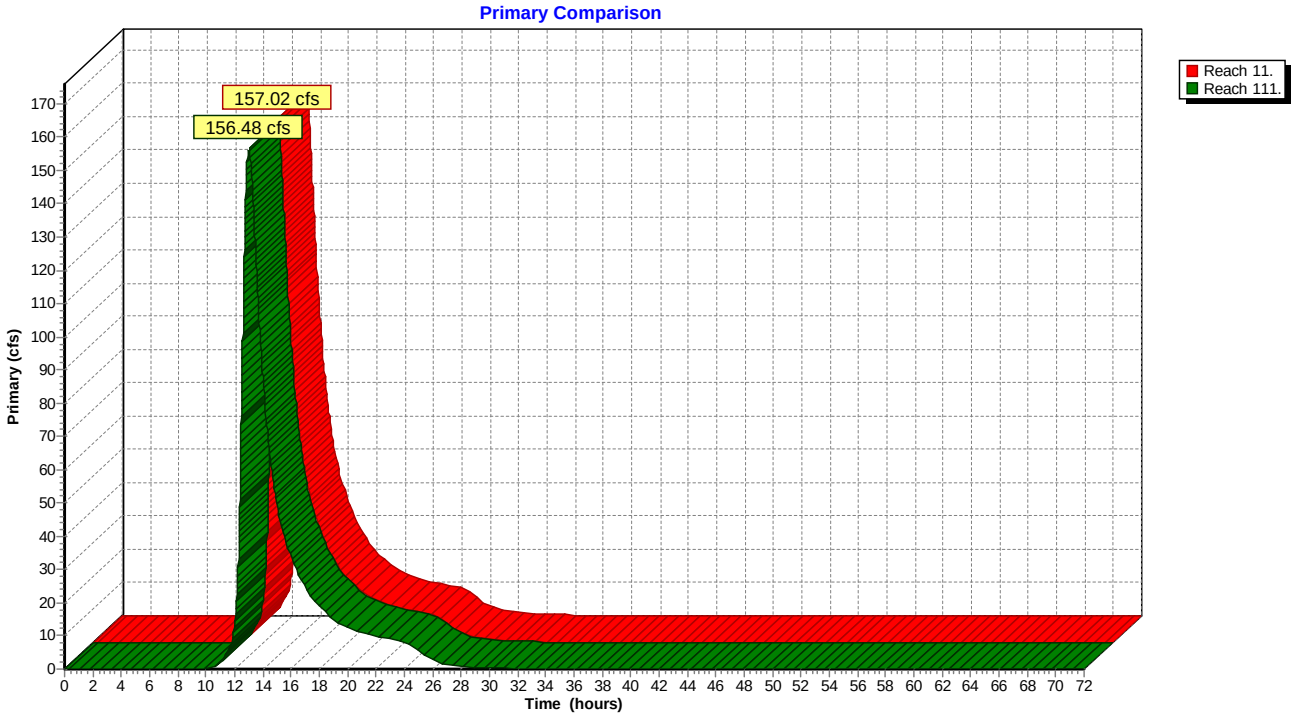
Pond 109: Sand Filter B Peak Elev=70.82' Storage=2,185 cf Inflow=4.57 cfs 0.347 af
Discarded=0.00 cfs 0.022 af Primary=4.50 cfs 0.298 af Outflow=4.51 cfs 0.321 af

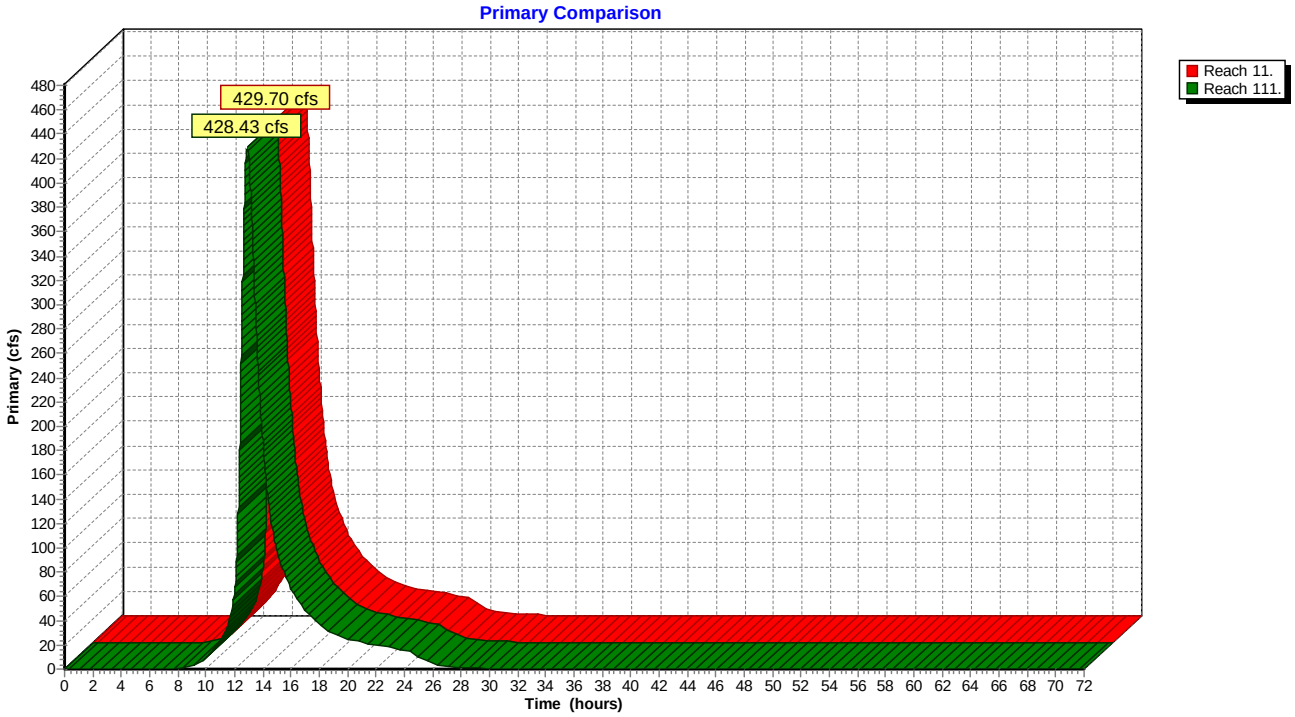
A3.5.5 Downstream Analysis

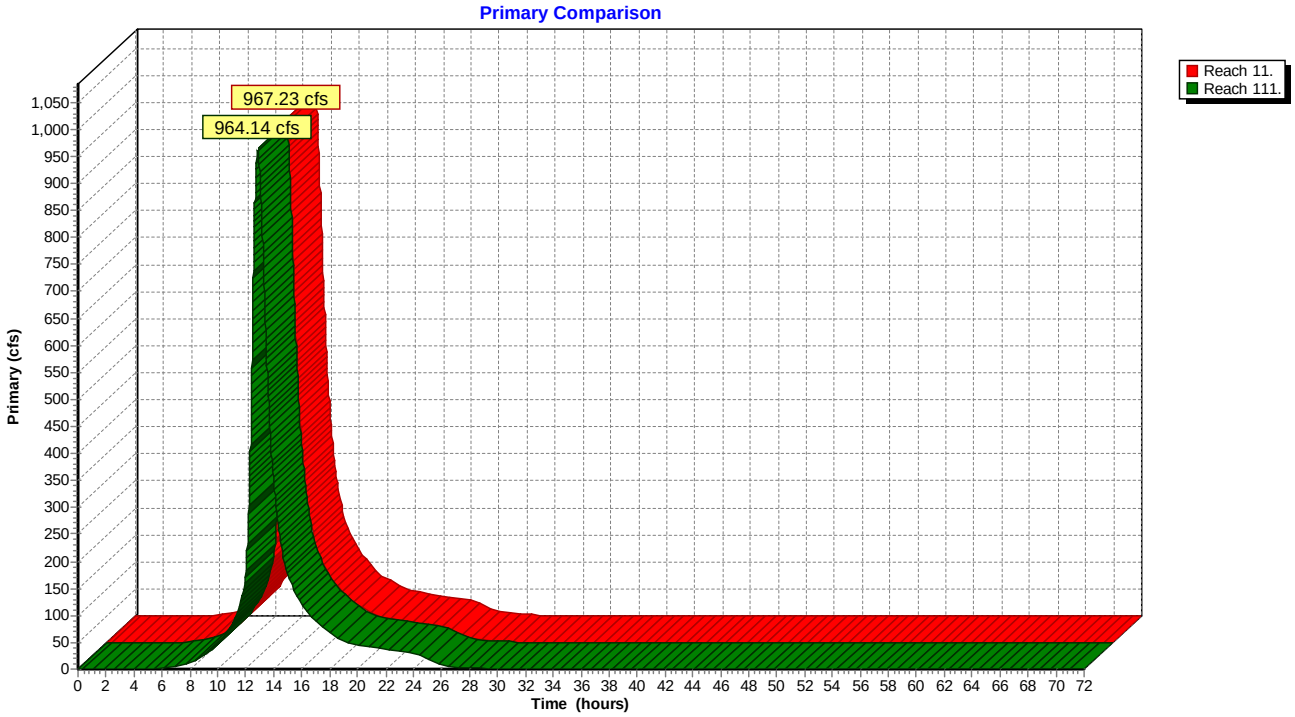




Routing Diagram for 2536-001-ALLS-PHCD-INHS
Prepared by DiPrete Engineering, Printed 2/28/2024
HydroCAD® 10.20-3g s/n 01125 © 2023 HydroCAD Software Solutions LLC


Primary Comparison
157.02 cfs
156.48 cfs
Reach 11.
Reach 111.
Primary (cfs)
Time (hours)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72


Primary Comparison
429.70 cfs
428.43 cfs
Reach 11.
Reach 111.
Primary (cfs)
Time (hours)
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72


Primary Comparison
967.23 cfs
964.14 cfs
Reach 11.
Reach 111.
Primary (cfs)
Time (hours)

Primary Comparison

Time (hours)	Reach 11. (cfs)	Reach 111. (cfs)	Time (hours)	Reach 11. (cfs)	Reach 111. (cfs)	Time (hours)	Reach 11. (cfs)	Reach 111. (cfs)
0.00	0.00	0.00	27.00	3.51	3.66	54.00	0.00	0.02
0.50	0.00	0.00	27.50	2.49	2.65	54.50	0.00	0.02
1.00	0.00	0.00	28.00	1.83	1.98	55.00	0.00	0.02
1.50	0.00	0.00	28.50	1.36	1.51	55.50	0.00	0.02
2.00	0.00	0.00	29.00	1.05	1.18	56.00	0.00	0.02
2.50	0.00	0.00	29.50	0.81	0.95	56.50	0.00	0.02
3.00	0.00	0.00	30.00	0.63	0.77	57.00	0.00	0.02
3.50	0.00	0.00	30.50	0.51	0.63	57.50	0.00	0.02
4.00	0.00	0.00	31.00	0.42	0.54	58.00	0.00	0.02
4.50	0.00	0.00	31.50	0.34	0.47	58.50	0.00	0.02
5.00	0.01	0.01	32.00	0.28	0.41	59.00	0.00	0.02
5.50	0.20	0.20	32.50	0.23	0.36	59.50	0.00	0.02
6.00	0.92	0.92	33.00	0.19	0.31	60.00	0.00	0.02
6.50	2.32	2.32	33.50	0.16	0.28	60.50	0.00	0.02
7.00	4.57	4.57	34.00	0.14	0.25	61.00	0.00	0.02
7.50	7.83	7.80	34.50	0.12	0.23	61.50	0.00	0.02
8.00	12.22	12.17	35.00	0.11	0.20	62.00	0.00	0.02
8.50	17.74	17.67	35.50	0.09	0.19	62.50	0.00	0.02
9.00	25.02	24.91	36.00	0.08	0.18	63.00	0.00	0.02
9.50	35.05	34.89	36.50	0.07	0.17	63.50	0.00	0.02
10.00	47.95	47.72	37.00	0.06	0.16	64.00	0.00	0.02
10.50	63.54	63.21	37.50	0.05	0.15	64.50	0.00	0.02
11.00	83.96	83.61	38.00	0.04	0.14	65.00	0.00	0.02
11.50	112.70	112.31	38.50	0.04	0.13	65.50	0.00	0.02
12.00	182.24	181.65	39.00	0.03	0.12	66.00	0.00	0.02
12.50	**669.38**	**665.22**	39.50	0.03	0.11	66.50	0.00	0.02
13.00	**920.84**	**918.55**	40.00	0.03	0.10	67.00	0.00	0.02
13.50	572.40	571.47	40.50	0.03	0.10	67.50	0.00	0.02
14.00	344.57	344.06	41.00	0.02	0.09	68.00	0.00	0.02
14.50	233.72	233.38	41.50	0.02	0.08	68.50	0.00	0.01
15.00	176.43	176.18	42.00	0.02	0.07	69.00	0.00	0.01
15.50	143.93	143.75	42.50	0.02	0.07	69.50	0.00	0.01
16.00	121.38	121.25	43.00	0.02	0.06	70.00	0.00	0.01
16.50	102.95	102.87	43.50	0.02	0.06	70.50	0.00	0.01
17.00	88.05	88.01	44.00	0.01	0.05	71.00	0.00	0.01
17.50	76.90	76.89	44.50	0.01	0.05	71.50	0.00	0.01
18.00	67.92	67.93	45.00	0.01	0.04	72.00	0.00	0.01
18.50	60.03	60.06	45.50	0.01	0.04			
19.00	53.63	53.69	46.00	0.01	0.04			
19.50	49.10	49.17	46.50	0.01	0.04			
20.00	45.70	45.77	47.00	0.01	0.03			
20.50	42.94	43.01	47.50	0.01	0.03			
21.00	40.60	40.68	48.00	0.01	0.03			
21.50	38.56	38.65	48.50	0.01	0.03			
22.00	36.70	36.79	49.00	0.01	0.03			
22.50	35.00	35.09	49.50	0.01	0.03			
23.00	33.32	33.42	50.00	0.01	0.03			
23.50	31.66	31.76	50.50	0.00	0.03			
24.00	30.00	30.10	51.00	0.00	0.03			
24.50	27.20	27.32	51.50	0.00	0.03			
25.00	18.94	19.08	52.00	0.00	0.03			
25.50	11.96	12.11	52.50	0.00	0.02			
26.00	7.67	7.82	53.00	0.00	0.02			
26.50	5.10	5.25	53.50	0.00	0.02			

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Reach 11.: Silver Creek from site to Avg. Flow Depth=2.39' Max Vel=4.23 fps Inflow=1,269.74 cfs 194.068 af
n=0.035 L=7,022.0' S=0.0078 '/' Capacity=6,919.98 cfs Outflow=967.23 cfs 194.067 af

Reach 111.: Silver Creek from site to Avg. Flow Depth=2.39' Max Vel=4.23 fps Inflow=1,266.30 cfs 193.879 af
n=0.035 L=7,022.0' S=0.0078 '/' Capacity=6,919.98 cfs Outflow=964.14 cfs 193.873 af

Appendix B – Mounding Calculations

DiPrete Engineering has prepared groundwater mounding calculations for the Underground Infiltration System (UIS-A).

DiPrete Engineering has calculated the groundwater mounding using the USGS Hantush Calculator. The calculator is available online at http://pubs.usgs.gov/sir/2010/5102/.

The calculator provided by the USGS requires several variables:

R – Recharge infiltration rate (feet/day):
Recharge rate is the vertical conductivity (Kv) of the soil. The vertical conductivity was determined based on soil texture and table 5-3 in section 5.3.4 of the RISDISM of the RISDISM. A value of 0.52 in/hr or 1.04 ft/day has been used for these calculations.

Sy – Specific Yield:
Specific Yield is specific to the parent material through which the infiltration occurs. Onsite soil evaluations classified the soils as coarse sand. A value for Sy has been obtained from Table 4.3 of Hydrology and Hydraulic Systems by Ram S. Gupta:

TABLE 4.3 REPRESENTATIVE VALUES OF SPECIFIC YIELD FOR SOILS AND ROCKS

Material	Specific Yield (%)
Gravel, coarse	23
Gravel, medium	24
Gravel, fine	25
Sand, coarse	27
Sand, medium	28
Sand, fine	23
Silt	8
Clay	3
Sandstone, fine-grained	21
Sandstone, medium-grained	27
Limestone	14
Dune sand	38
Loess	18
Peat	44
Schist	26
Siltstone	12
Till, predominantly silt	6
Till, predominantly sand	16
Till, predominantly gravel	16
Tuff	21

Source: Todd, 1980.

HYDROLOGY & HYDRAULIC SYSTEMS

RAM S. GUPTA, Ph.D., P.E.
Roger Williams University, Bristol, RI
Delta Engineers, Inc., Bristol, RI

K – Hydraulic conductivity, Kh (feet/day):
Mounding calculations require the hydraulic conductivity (Kh) value of the soils. According to USGS SIR 2010-5102, Vertical Conductivity is approximately 1/10 of horizontal conductivity. The vertical conductivity was determined based on soil texture and table 5-3 in section 5.3.4 of the RISDISM of the RISDISM. To perform the most conservative calculation, rather than use the RISDISM book value of 0.52 inches per hour the maximum value of the USDA.gov published range of 0.6-2.0 in/hr was used to arrive at a more conservative horizontal conductivity of 2.0 in/hr x 10 = 20 inches per hour (40 ft/day).

x & y – ½ of the basin length:
The x and y variables represent the length and width of the system. The overall system is approximately 80.76' x 48.50' and the ½ basin length and width is 40.38' x 29.25.

t – Duration of infiltration period in (days):
For these calculations the infiltration period considered is two days.

hi(0) – initial thickness of saturated zone (feet):
The initial thickness of the saturated zone is the depth from the water table to the impervious limiting layer. Test holes performed nearby did not encounter ledge. Deepest test hole was 77" which was approximately 4' below measured groundwater table. Estimated 2' between bottom of test hole and ledge. Test hole 4 reached a seasonal high groundwater table elevation at depth 30". Ledge could be significantly deeper in the area of the infiltration system but based on available data we provided a conservative assumption for this calculation.

Conclusion:

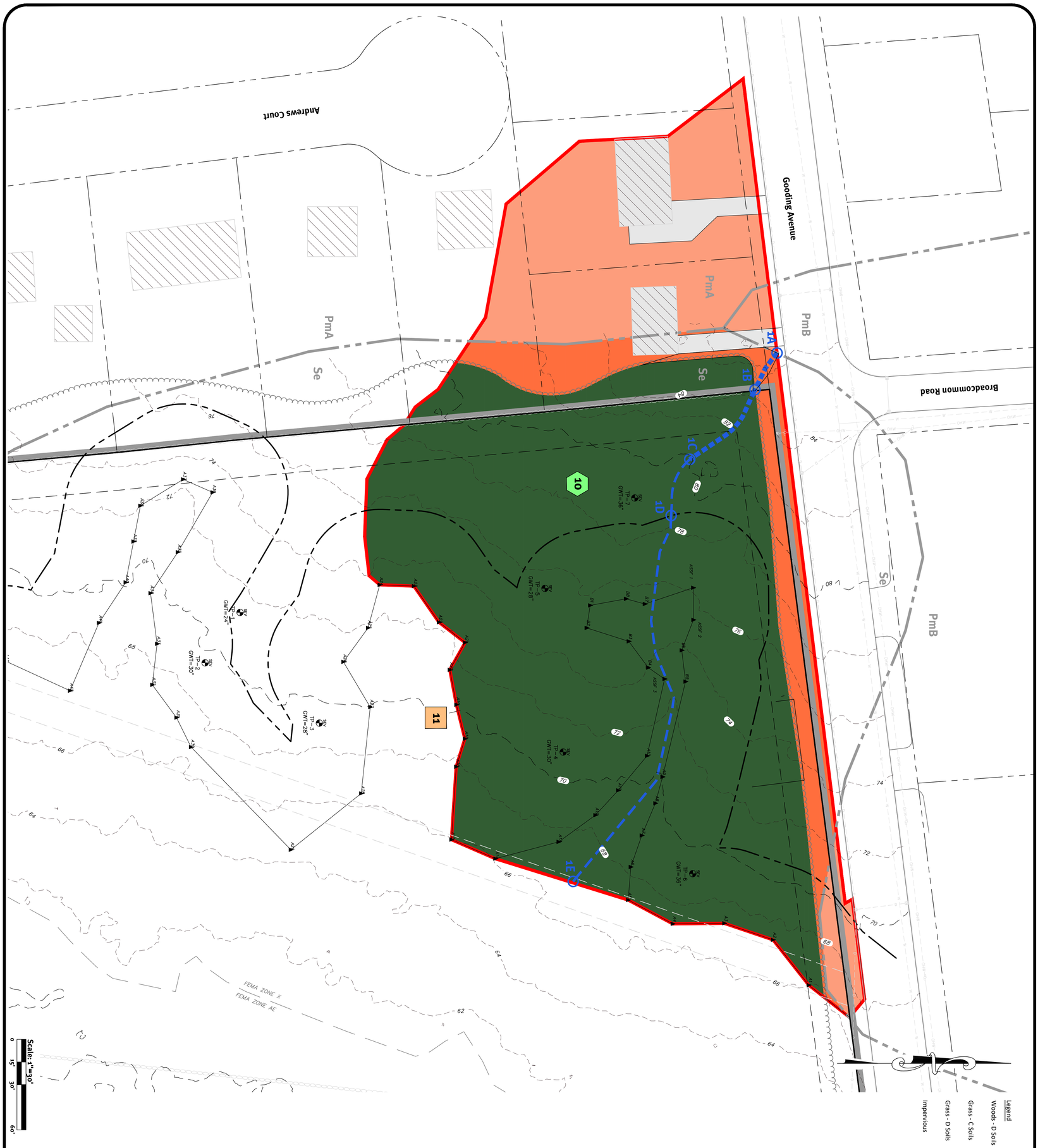
System Bottom	System Top	100-Year Mound height (ft)	100-Year Mound Elevation
73.00	76.50	2.89	72.89

The mounding height is obtained from the USGS Hantush Calculator. The mound elevation is determined by adding the mound height to the average seasonal high groundwater for each respective storm system.

The mounding calculations for the systems show that for all storm events up to the 100-year storm, the mound is below bottom of the underground chamber system. This means the basin will function as designed for the majority off all storm events.

See attached Mounding Calculation Sheets and HydroCAD.

Watershed Maps



SHEET 1 OF 2

Pre-Watershed Map

Gooding Avenue Development

Bristol, Rhode Island
AP 111 Lot 1

Applicant
Donovan & Sons, Inc.
613 Aquidneck Avenue, Middletown, Rhode Island 02842
tel 401-846-3486

No.	Date	Description	By:
0	11-03-2017	Watershed Maps	D.R.N.

Drawn By: D.R.N. | Design By: K.J.D.

This regulatory submission set shall not be used for construction purposes unless stamped 'Issued for Construction' and signed by a DiPrete Engineering representative.

The contractor is responsible for all of the means, methods, safety precautions and requirements, and OSHA conformance in the implementation of this plan and design.

DiPrete Engineering
Two Stafford Court Cranston, RI 02920
tel 401-943-1000 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

DE Job No: 2536-001 Copyright 2024 by DiPrete Engineering Associates, Inc.

Item C2

Legend

Woods - D Soils
Grass - C Soils
Grass - D Soils
Impervious

Legend

Tc Line (With Elevations)
Subcat Area
Soil Boundary
Subcatchment
Drainage BMP/Sand Filter/ Detention Pond
Bypass Structure
Reach/Design Point

Post-Watershed Map

Gooding Avenue Development

Bristol, Rhode Island
AP 111 Lot 1

Applicant
Donovan & Sons, Inc.
613 Aquidneck Avenue, Middletown, Rhode Island 02842
tel 401-846-3486

SHEET 2 OF 2

No.	Date	Description	By:
1	12-08-2020	Watershed Maps	N.M.P.
0	11-03-2017	Watershed Maps	D.R.N.

Drawn By: D.R.N. | Design By: K.J.D.

This regulatory submission set shall not be used for construction purposes unless stamped 'Issued for Construction' and signed by a DiPrete Engineering representative.

The contractor is responsible for all of the means, methods, safety precautions and requirements, and OSHA conformance in the implementation of this plan and design.

DiPrete Engineering
Two Stafford Court Cranston, RI 02920
tel 401-943-1000 fax 401-464-6006 www.diprete-eng.com
Boston • Providence • Newport

DE Job No: 2536-001 Copyright 2024 by DiPrete Engineering Associates, Inc.

Item C2

Water Availability Request

BCW BRISTOL COUNTY WATER AUTHORITY

Applicant Information

Date: 1/27/2025

Property Owner Signature: _____

Owner (please print): D&M Boca Development, LLC

Corporate Title (if not an individual): Principal

Address: 92 Faunce Corner Road, Suite 160, North Darthmouth, MA 02747

Phone: 508-562-1650 Email: ddegrazia@highridge-us.com

Contractor: TBD Email: _____

Location

Preliminary request is hereby made for a confirmation that public water is available from BCWA to service this property:

Town: Bristol Location: Gooding Ave, Bristol RI

Address/Plat and Lot: AP 111 Lot 1

☐ Residential*

☒ Commercial*

Building Footprint: 13,370 SF

Occupancy: 80 Rooms

Estimated Water Use: 10,000 GPD

***Site Plan Must Be Attached to All Applications**

For BCWA Office Use Only

Action by the Bristol County Water Authority

☑ Water Available ☐ Water Not Available

Approximate Static Pressure: 70 psi

Conditions: _____

If connection to BCWA is desired, you must:

☐ Submit Application for Main Extension Form and Engineering Plans for Review

☑ Submit Application for New Water Service Installation and Fee

Date of Review: 2/6/2025 BCWA Engineer: Colin O'Hara

Rev April 2017

Town of Bristol, Rhode Island

Department of Community Development

10 Court Street
Bristol, RI 02809
www.bristolri.gov
401-253-7000

TECHNICAL REVIEW COMMITTEE MEETING

The meeting was held on **Tuesday, August 26th, 2025** at 1:00pm
at 235 High Street, 1st Floor Conference Room, Department of Community Development
The Technical Review Committee held a meeting for the purpose of review of the application for **Master Plan Phase of Major Land Development for Comfort Inn & Suites, Gooding at Broadcommon**

Present for the Town of Bristol:
Diane Williamson, Director of Community Development & TRC member
Edward M. Tanner, Zoning Officer/Principal Planner & TRC member
Steve Katz, Planning Board member & TRC member
Michael Sousa, Alternate Planning Board member & TRC member
Chief Michael DeMello, Bristol Fire Department
Christopher Parella, DPW Director
Colin O'Hara, BCWA
Amy Goins, Town Solicitor

Bree Sullivan, Fuss & O'Neill
Christine Shea, Brewster Thornton Architect Group

Present for the Applicant:
Chris Duhamel, DiPrete Engineering
Michael A. Kelly, KSPR Law

Introductions were made along with a review of the technical aspects of the proposal. The public hearing is Thursday, September 11th, 2025 with the Planning Board.

Peer review architect comments were received by applicant and sent to the owners.

Chris Duhamel from DiPrete Engineering led the presentation. The property is a 9.8 acre site that is currently undeveloped. There are wetlands on the site. A sewer easement crosses the site with residential areas to the west and south. 1.7 acres of the site are proposed for development. Silver Creek flows north to south on abutting property. Flood zone extends onto the site but not on proposed development area. Gooding Avenue is a state road. Approximately 4,700 square feet of wetlands are

proposed to be filled by the project. RIDEM wetlands permit has been received. Drainage and stormwater management design is shown on the plans.

The proposed building will be an 80 unit hotel. Access will be on the east side of the building. The parking lot will be located behind the building to south. A main entrance with canopy and drop off area will be to east end of the building. There will be no access in front.

RIDEM Stormwater: runoff rate & volume will be reduced in all storm events. Underground detention & infiltration and sand filters will provide water quality and meet stormwater management requirements. No encroachment proposed into the floodplain. A decrease in runoff to floodplain is calculated.

TRC discussed the proposed sanitary sewer connection. Gravity system from site flowing to an existing line to east at Gooding Avenue. An 8,000 gallon holding tank will slow flow during peak times.

Public water to the site is adequate per BCWA.

RIDEM permit received for disturbance to wetland within 1.7 acre construction site.

Peer review engineer comments have been received from the Town's consultant, Fuss & O'Neill. Applicant's engineer feels all comments can and will be adequately addressed.

TRC reviewed architect renderings for hotel building. Silvestri Architects, Inc. renderings show all four sides of the building. The town's peer review architect, Brewster Thornton Architects, has reviewed the plans and submitted comments. Applicant has reviewed the comments and alternative schemes ("A" or "B"). Applicant prefers scheme "A" but will discuss further. It is more reflective of local architectural style.

Fuss & O'Neill reviewed their memo and comments for the engineer's design. If installed correctly the proposed stormwater management system should perform well and protect the ground and surface water. Some additional details are needed. Comments on grading of retaining walls and parking lots. Plans are not yet at sufficient design level for final review. Applicant should address comments in the memo.

Brewster Thornton Architects reviewed their comment letter. They recommend more of a "Bristol" type design, more traditional looking. Proposed design is cookie cutter. Should provide more traditional design. Clapboard, shingle roof design to break up massing. More landscaping & tree preservation for more of a buffer along west side to buffer neighboring residential. Applicant has since submitted a more detailed landscape plan but some comments still apply. Discussed signage – size, color, location, per zoning and comprehensive plan.

Colin O'Hara of BCWA stated that the most recent plans will be reviewed. The next step is to submit an application for water service including domestic and fire needs.

DPW Director Parella discussed the need for maintenance of the stormwater management system.

Chief DeMello commented that the design and access look fine per fire code and that they will dive in to details as the plans progress.

Director Williamson commented that a fence should be added to the west side as well as proposed arborvitae. The applicant also needs to provide an exterior photometric plan. There are no lights proposed in the parking lot, just over the doors. DEM asked for dark sky compliant lighting near the wetlands. Plans should accurately show driveway and house located to the west of the property.

PB Member Steve Katz requested pervious pavement in the parking lot and went on to state the look of the hotel is not traditional New England style and needs to change. He would prefer a two story structure with fewer rooms. A traffic study will be needed as well.

PB Alternate Member Michael Sousa discussed the dates of data for flood zones and stormwater design requirements. They seem to be old and not reflective of current conditions. The downstream high school development did a better job of lessening runoff as a safety factor. He would like to see volume and rate reduced for the site overall. Silver Creek is a big concern. The RIDEM stormwater manual is 2025, the FEMA flood map is dated 2014 but the site design meets regulations.

Applicant feels that runoff issues have been addressed. Pervious pavement, if possible, will help. Future maintenance of stormwater BMP's and an O&M document will be needed as well as a maintenance agreement. Could also potentially use an escrow fund to ensure maintenance of the stormwater management system.

Director Williamson discussed sanitary sewer concerns and that they may need an agreement for maintenance to have controls in place. Access by Town and communication with the Town during extreme weather. Applicant's engineer stated the system could be monitored off-site and these comments could be accommodated and incorporated into a maintenance agreement. Sewer fees are noted in the 8/25/25 letter from the wastewater superintendent.

Chief DeMello stated there will need to be a backup generator or a plug in for the emergency pump station. Fire department is concerned about occupants needing accommodation during a power outage event.

Director Williamson discussed remaining open space on the property. The land could be protected and donated to the town for public access. Tree removal could be offset by the applicant planting other trees in the watershed.

A review of the letters received from neighbors will be done by the applicant. The following is a summary of comments received by the public:

- Stormwater management report
- FEMA
- Modeling used for design
- Environmental impact study
- Fiscal impact study – TRC will request peer review
- H20 service
- Sanitary sewer

- Photometric plan
- Landscaping plan
- Site layout – parking
- Is there a conference center proposed? Applicant says no.
- Number of employees. Applicant says 4 to 5.

TRC members commented that the fiscal impact statement submitted by the applicant says 50 jobs will be generated. TRC will ask for review of this statement to be paid for by applicant.

TRC discussed the proposed retaining wall along Gooding Avenue: would like to know what it will look like going down Gooding which will be addressed by the applicant's architect. The wall is approximately 4 feet high to hold back grade of street area. Plantings and street trees will hide it. May need a railing. Discussing grading around the building with retaining walls (dashed line on elevation views).

There will be no kitchens in any of the rooms and no commercial kitchen in the hotel. There will be a breakfast food prep area for guests. There will be microwaves and mini fridges in many of the rooms.

Reviewed TRC member comments:

- Review lighting in rear parking lot
- Snow removal, landscape island will be labeled
- Trash enclosure

Director Williamson reviewed significant issues to be addressed by the applicant:

- Drainage based of Fuss & O'Neill's review
- O&M for drainage and maintenance agreement (escrow account)
- Generator or power hook-up
- Fiscal impact study review
- Photometric site plan
- Pervious pavement
- Reduce size to two story/40 rooms
- Architectural style – traditional NE style
- Sewer agreement with possible escrow account
- Tree preservation and offset planting
- Address F&O comments in writing
- Address TRC comments in writing
- Address Public comments in writing

September 11th is the scheduled Planning Board meeting. Applicant prefers to respond before public hearing and extend deadline for PB action to October 9th meeting, applicant will request continuance.

Applicant will extend the Planning Board's deadline to take action to December 11th.

TRC will send plans to the Conservation Commission for review and comment after receipt of applicant's revised plans. Letters to the abutters will go out for the October meeting.

Another TRC will be held after revised info has been received.

Meeting adjourned at 2:30pm.

Notes by Ed Tanner

SOLLI ENGINEERING

April 14, 2023
Revised January 10, 2024

Mr. Dennis DeGrazia
Highridge Development Co., LLC
92 Faunce Corner Road, Suite 160
North Dartmouth, MA 02747

RE: Traffic Impact Assessment
Proposed Hotel
Parcel #111-1, Gooding Avenue
Bristol, Rhode Island 02809
Project Number: 23103601

Dear Dennis,

Solli Engineering, LLC has prepared this assessment to provide an analysis of the potential traffic impacts associated with the proposed 80-room hotel located along Gooding Avenue in Bristol, Rhode Island. The evaluation has been completed in accordance with the Town of Bristol and Rhode Island Department of Transportation requirements as well as standard traffic engineering methodology. Our investigation concludes that the proposed development will not have an adverse impact on the existing roadway network.

Project Description:

The property is located along Gooding Avenue between Broadcommon Road and Metacom Avenue (Route 136). The site is currently undeveloped and bound by Gooding Avenue to the north, undeveloped land to the south and east, and residential parcels to the west. The parcel is located within the General Business (GB) zoning district in the Town of Bristol. Refer to Figure 1, Site Location Map, for additional information regarding the project location.

The project proposes to construct a 80-unit hotel with appurtenant parking, loading, landscape, utility, and drainage features. Access to the site is proposed along Gooding Avenue via one full-movement STOP-controlled site driveway. Refer to the Site Layout Plan, prepared by DiPrete Engineering and included as a supporting document to this assessment, for additional information regarding the proposed site configuration.

Existing Conditions:

Gooding Avenue is an east-west roadway classified by the Rhode Island Department of Transportation as a minor arterial roadway with a posted speed limit of 35 miles per hour. Gooding Avenue is generally a two-lane, bi-directional roadway with 12-foot lanes and 6-foot shoulders. At the intersection of Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road, Gooding Avenue forms the eastbound approach to the intersection and widens to provide dedicated left-, through, and right- turn lanes. Gooding Avenue provides access to commercial and industrial parcels. Concrete sidewalks are located along the northern edge of Gooding Avenue in its entirety.

Metacom Avenue (Route 136) is a north-south roadway classified by the Rhode Island Department of Transportation as a principal arterial roadway with a posted speed limit of 40 miles per hour. Metacom Avenue (Route 136) is generally a two-lane bi-directional roadway with a shared two-way-left-turn-lane, with various additional turn lanes at intersections. Metacom Avenue (Route 136) generally consists of 11 foot lanes and 4 foot shoulders. Metacom Avenue (Route 136) provides access to various commercial and residential parcels along the corridor. At the intersection of Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road, Metacom Avenue (Route 136) forms the northbound and southbound approached of the intersection, with dedicated left-, through, and right- turn lanes at the southbound approach and a dedicated left-turn lane at the northbound approach. Sidewalks are provided along both sides of Metacom Avenue (Route 136) in the vicinity of the project site.

Narrows Road is an east-west roadway classified by the Rhode Island Department of Transportation as a major collector roadway with a posted speed limit of 25 miles per hour. Narrows Road is generally a two-lane bi-directional roadway with 11-foot lanes and 2-foot shoulders. At the intersection of Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road, Narrows Road forms the westbound approach to the intersection and widens to provide dedicated left-, through, and right- turn lanes. Sidewalks are provided along both sides of Narrows Road in the vicinity of the project site.

The most recent three full years of accident data (January 2020 – December 2022) was obtained from the Bristol Police Department Records Division for the study area intersections and intermediate roadway segments. There was a total of forty-eight (48) crashes at the intersection of Gooding Avenue & Metacom Avenue (Route 136) over the three-year period, with an average of 16 crashes per year at this intersection. There was a total of thirteen (13) crashes identified along Gooding Avenue from its intersection with Broadcommon Road to its intersection with Metacom Avenue (Route 136) over the three-year period, with an average of 4.33 crashes per year. Overall, the quantity of crashes relative to the existing volumes on the arterial roadways in the study area network is low and does not indicate crash patterns or deficiencies in the roadway network that require mitigation. A letter from the Bristol Police Department Records Division confirming accident quantities in the study area is included as a supporting document to this assessment.

Turning movement count data was collected in April 2023 for the weekday AM and weekday PM peak hours, as these are the periods with the greatest potential impact on the adjacent roadways. The 2023 existing peak hour volumes for the weekday AM and weekday PM peak hours are illustrated in Figure 2. The raw turning movement count data is included as a supporting document to this assessment.

Volume and speed data were collected in April 2023 along Gooding Avenue in the vicinity of the proposed site driveway using an Automatic Traffic Recorder (ATR). The 2023 bi-directional ADT along Gooding Avenue was reported as 9,476 vehicles. The 85th percentile speed observed along Gooding Avenue was reported as 42.39 miles per hour eastbound and 35.96 miles per hour westbound. The raw ATR data is included as a supporting document to this assessment.

Proposed Conditions:

The project proposes to construct a 80-unit hotel with appurtenant parking, loading, landscape, utility, and drainage features. Access to the site is proposed along Gooding Avenue via one full-movement STOP-controlled site driveway.

Intersection sight distance (ISD) at the proposed site driveway was reviewed and evaluated per guidance provided in the 2008 edition of the RIDOT Highway Design Manual. The 85th percentile speed traveling westbound was recorded as 35.95 mph therefore the intersection sight distance looking right was based on a design speed of 40 mph (posted speed limit plus 5 mph) to provide a conservative analysis. The required sight distance looking right from the proposed driveway is 445 feet and the required sight distance looking left from the proposed driveway is 470 feet based on the 85th percentile speed of 42.39 miles per hour. The proposed site driveway has been designed to satisfy the required sight distances looking left

and right. Refer to the Intersection Sight Distance Figure, Figure ISD, for additional information regarding intersection sight distance.

To evaluate the potential traffic impact associated with the proposed development, the anticipated trips to be generated by the proposed land use was estimated using data from the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition. The trip generation was calculated for the weekday AM and weekday PM peak hours based on the proposed Hotel (Land Use Code 310) land use with an independent variable of hotel rooms, as these are the peak periods with the greatest potential for impact on the adjacent street traffic. The proposed development is anticipated to generate 37 (21 entering, 16 exiting) trips during the weekday AM peak hour and 48 (24 entering, 24 exiting) trips during the weekday PM peak hour. The trip generation rate sheets are provided as a supporting document to this assessment. A detailed breakdown of the proposed trip generation calculations is provided as a supporting document to this assessment. Table 1 below summarizes the anticipated trip generation for the proposed development.

TABLE 1
TRIP GENERATION SUMMARY

LAND USE	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Hotel - LUC 310 *(80 Rooms)*	21	16	37	24	24	48
Total New Trips	**21**	**16**	**37**	**24**	**24**	**48**

The anticipated distribution of new traffic entering and exiting the site was developed based on area populations, existing traffic patterns, and the layout of the adjacent roadway network. The following distributions were applied to the new site generated trips:

- 25% to/from the north via Metacom Avenue (Route 136)
- 25% to/from the south via Metacom Avenue (Route 136)
- 50% to/from the west via Gooding Avenue

The anticipated percent distribution of the new site generated trips is illustrated in Figure 3. The new site generated trips were assigned based on the anticipated percent distributions illustrated in Figure 3 and the resulting trip assignment is illustrated in Figure 4.

As the proposed development is anticipated to be opened in 2025, background traffic growth is estimated to account for any traffic increase as a result of regional population growth. Based on Census data provided y the United States Census Bureau, there has been a minor decrease in population in the Town of Bristol in recent years. The population reported in the 2010 census was 22,954 people, while the population reported in the 202 census was 22,493 people. As a result, the existing traffic volumes were projected to the 2025 design year using a conservative 1.0 percent per year growth factor to establish the 2025 background traffic volumes. The 2025 background traffic volumes are illustrated in Figure 5. Census data provided by the United States Census Bureau is included as a supporting document to this assessment.

The trip assignment volumes illustrated in Figure 4 were combined with the 2025 background volumes in Figure 5 to develop the build traffic volumes. Figure 6 illustrates the 2025 build traffic volumes.

The Town of Bristol was contacted to identify any ongoing or proposed projects within the study area which may impact the analysis. No projects were identified which may impact the analysis.

Capacity Analysis:

To determine the operating conditions of the site driveway after the development has been constructed, the study area intersections were analyzed using the Synchro 11 capacity analysis software for the existing, background, and build peak hour conditions during the weekday AM and weekday PM peak hours, as these peak periods have the greatest potential for impact by the proposed development.

The results of the Synchro analysis describe the traffic impact in terms of Level of Service (LOS). LOS describes the operational condition of the signalized intersection in terms of delay (in seconds per vehicle) and is expressed on a scale of A through F with LOS A being the best and LOS F being the worst. LOS A reflects intersection operations with little to no vehicle delay (less than 10 seconds per vehicle) and LOS F reflects intersection conditions that are over capacity and experience long delays(more than 50 seconds of delay per vehicle at unsignalized intersections or 80 seconds of delay at signalized intersections). For unsignalized intersections, only the delay on the STOP-controlled approach is reported. Table 2 below summarizes the level of service for the study area intersections during the existing, background, and build conditions of the weekday AM and weekday PM peak hours. A detailed capacity analysis summary as well as Synchro 11 capacity analysis reports are included as supporting documents to this assessment.

TABLE 2
WEEKDAY CAPACITY ANALYSIS SUMMARY
(LOS/DELAY)

INTERSECTION	2023 Existing AM/PM	2025 Background AM/PM	2025 Build AM/PM
Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road	(B/19.9) / (C/25.4)	(C/20.8) / (C/25.8)	(C/21.1) / (C/26.1)
Metacom Avenue (Route 136) – Northbound	(C/21.3) / (C/29.0)	(C/22.2) / (C/29.7)	(C/22.4) / (C/29.7)
Metacom Avenue (Route 136) – Southbound	(B/17.6) / (C/21.8)	(B/18.6) / (C/22.2)	(B/19.0) / (C/22.6)
Gooding Avenue – Eastbound	(C/23.8) / (C/28.4)	(C/23.8) / (C/28.6)	(C/24.5) / (C/29.1)
Narrows Road – Westbound	(C/20.0) / (C/20.6)	(C/20.2) / (C/20.8)	(C/20.2) / (C/20.8)
Gooding Avenue & Site Driveway*			
Site Driveway – Northbound	--	--	(B/11.3) / (B/14.2)
Gooding Avenue – Eastbound			
Gooding Avenue – Westbound			

*Unsignalized Intersection

Under the 2025 build condition, the proposed full movement STOP-controlled site driveway intersection with Gooding Avenue will operate at LOS B with 11.3 seconds of delay during the weekday AM peak hour and a LOS B with 14.2 seconds during the weekday PM peak hour. Gooding Avenue has 12-foot wide lanes and a 6-foot shoulder. It is anticipated that the existing roadway geometry will support a vehicle by-pass traveling westbound while vehicles make a left-turn into the site.

Under the 2025 build condition, the signalized intersection of Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road is anticipated to operate at a LOS C with 21.1 seconds of delay during the weekday AM peak hour and a LOS C with 26.1 seconds of delay during the weekday PM peak hour. All intersection approaches and a majority of the individual intersection movements will maintain background operating conditions with one exception. The eastbound left movement is anticipated to change in operation from a LOS C with 34.5 seconds of delay to a LOS D with 35.6 seconds of delay during the weekday AM peak hour when comparing background to build conditions, representing a minor increase in delay of 1.1 seconds at this movement. The signalized intersection of Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road will maintain acceptable operating conditions under the 2025 Build condition during the weekday AM and weekday PM peak hours.

The maximum 95th percentile queue at the site driveway onto Gooding Avenue is anticipated to be 0.1 vehicles during the weekday AM peak hour and 0.2 vehicles during the weekday PM peak hour, which can be accommodated with the proposed driveway layout. At the intersection of Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road, no 95th percentile queue lengths are anticipated to increase more than 25 feet (1 vehicle length) during the weekday AM and weekday PM peak hours when comparing 2025 background conditions to 2025 build conditions.

Conclusion:

A traffic impact analysis of the study area intersections indicates that the proposed development along Gooding Avenue can be accommodated without adverse impacts on the study area roadway network. The project proposes to construct a 80-unit hotel with appurtenant parking, loading, landscape, utility, and drainage features. Access to the site is proposed along Gooding Avenue via one full-movement STOP-controlled site driveway.

Based on the analysis, the proposed development is anticipated to generate 37 (21 entering, 16 exiting) trips during the weekday AM peak hour and 48 (24 entering, 24 exiting) trips during the weekday PM peak hour. Under the build condition in the year 2025, the site driveway is expected to operate at level of service B during the weekday AM and weekday PM peak hours.

It is the professional opinion of Solli Engineering that the traffic anticipated to be generated by the proposed development can be accommodated by the surrounding roadway network. There is no indication that the proposed development will have an adverse impact on the operations of the adjacent roadway network.

If you have any questions or require any additional information, please call at your convenience.

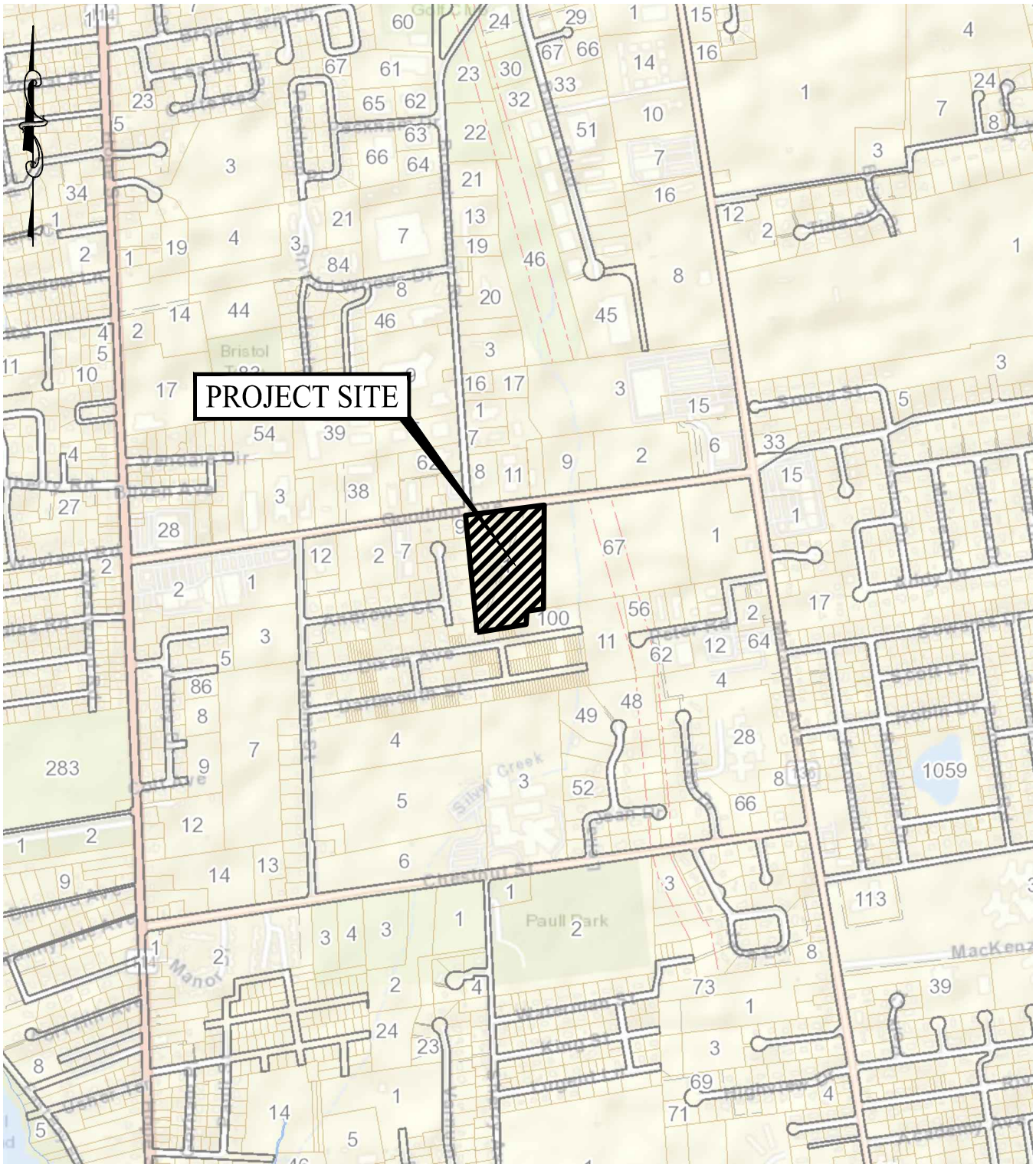
Sincerely,
Solli Engineering, LLC

Matt Baldino, P.E., PTOE
Assistant Project Manager

Kevin Solli, P.E., PTOE
Principal

Supporting Documents:

Site Location Map	(Figure 1)
2023 Existing Traffic Volumes	(Figure 2)
Trip Distribution	(Figure 3)
Trip Assignment	(Figure 4)
2025 Background Traffic Volumes	(Figure 5)
2025 Build Traffic Volumes	(Figure 6)
Site Plan	
Intersection Sight Distance	(ISD)
Trip Generation Summary	
ITE Trip Generation Rate Sheets	
Accident Summary Letter	
Capacity Analysis Summary Table	
Synchro Analysis Reports	
US Census Bureau Data	
Turning Movement Count Data	
ATR Data	



NOTE: BASE MAP INFORMATION TAKEN FROM https://www.axisgis.com/bristolri/

1,000 0 500 1,000

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

SITE LOCATION MAP

GOODING AVENUE
BRISTOL, RHODE ISLAND

Project #:	23103601
Plan Date:	04/14/23
Scale:	1" = 1,000'
Figure:	1

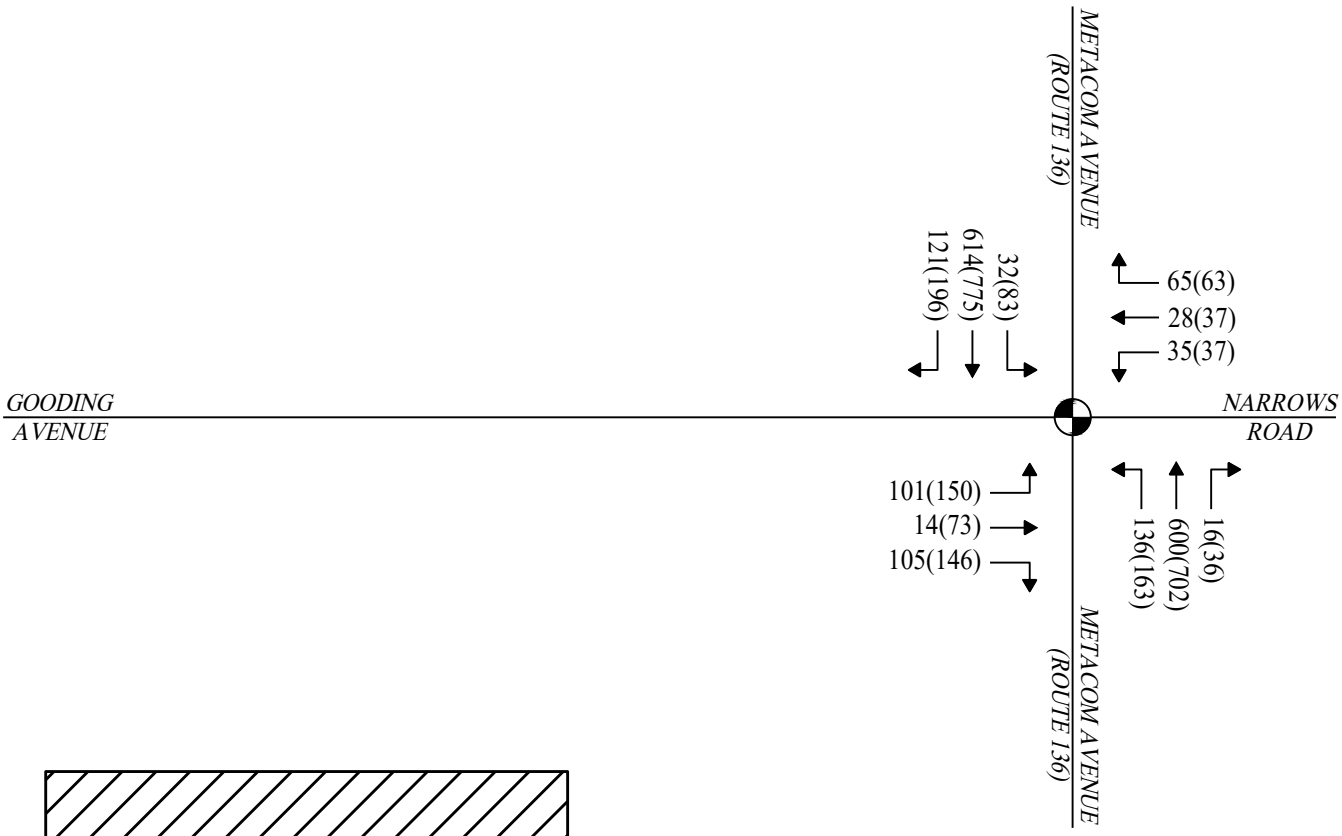
LEGEND

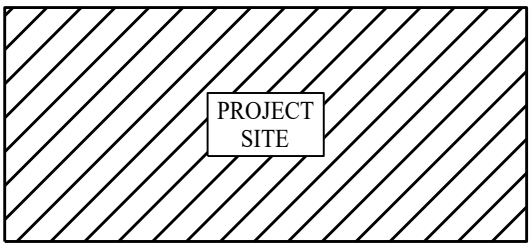
SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

EXISTING ROADWAY

AM(PM)





SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

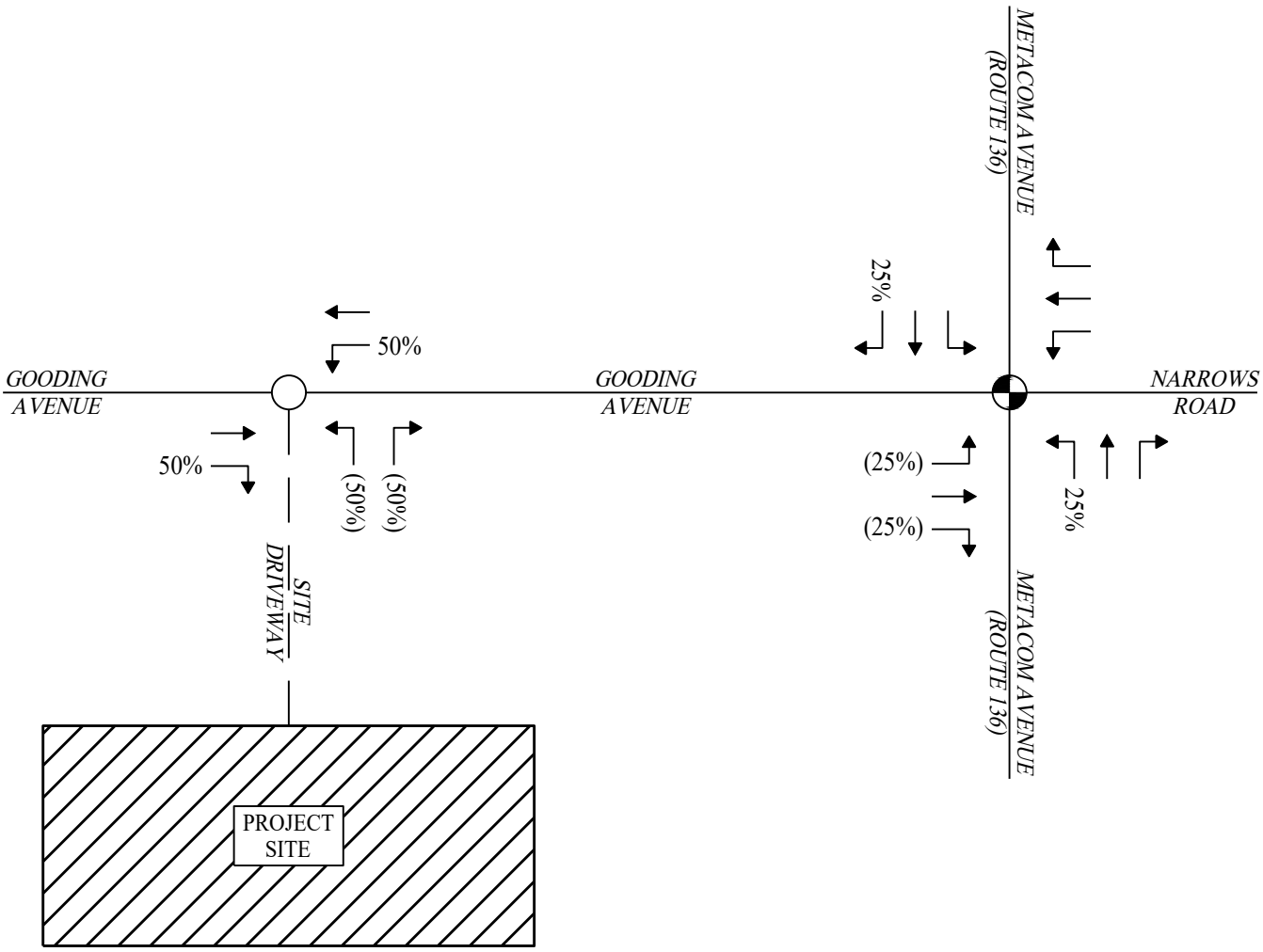
2023 EXISTING TRAFFIC VOLUMES

GOODING AVENUE
BRISTOL, RHODE ISLAND

Project #:	23103601
Plan Date:	01/10/24
Scale:	NTS
Figure:	2

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- EXISTING ROADWAY
- PROPOSED ROADWAY
- ENTER(EXIT)



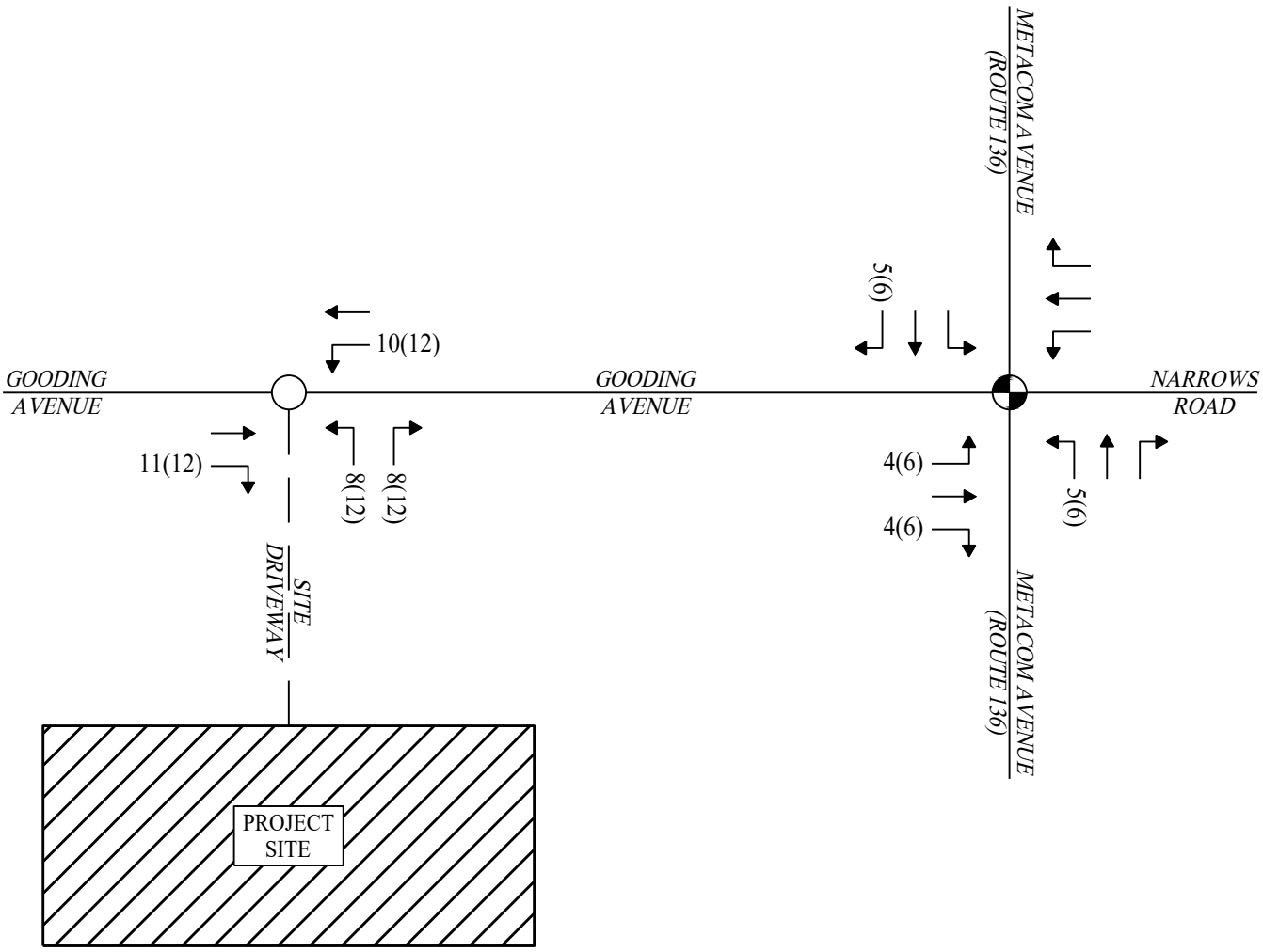
SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

TRIP DISTRIBUTION
GOODING AVENUE
BRISTOL, RHODE ISLAND

Project #:	23103601
Plan Date:	01/10/24
Scale:	NTS
Figure:	3

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- EXISTING ROADWAY
- PROPOSED ROADWAY
- AM(PM)



SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

TRIP ASSIGNMENT

GOODING AVENUE
BRISTOL, RHODE ISLAND

Project #:	23103601
Plan Date:	01/10/24
Scale:	NTS
Figure:	4

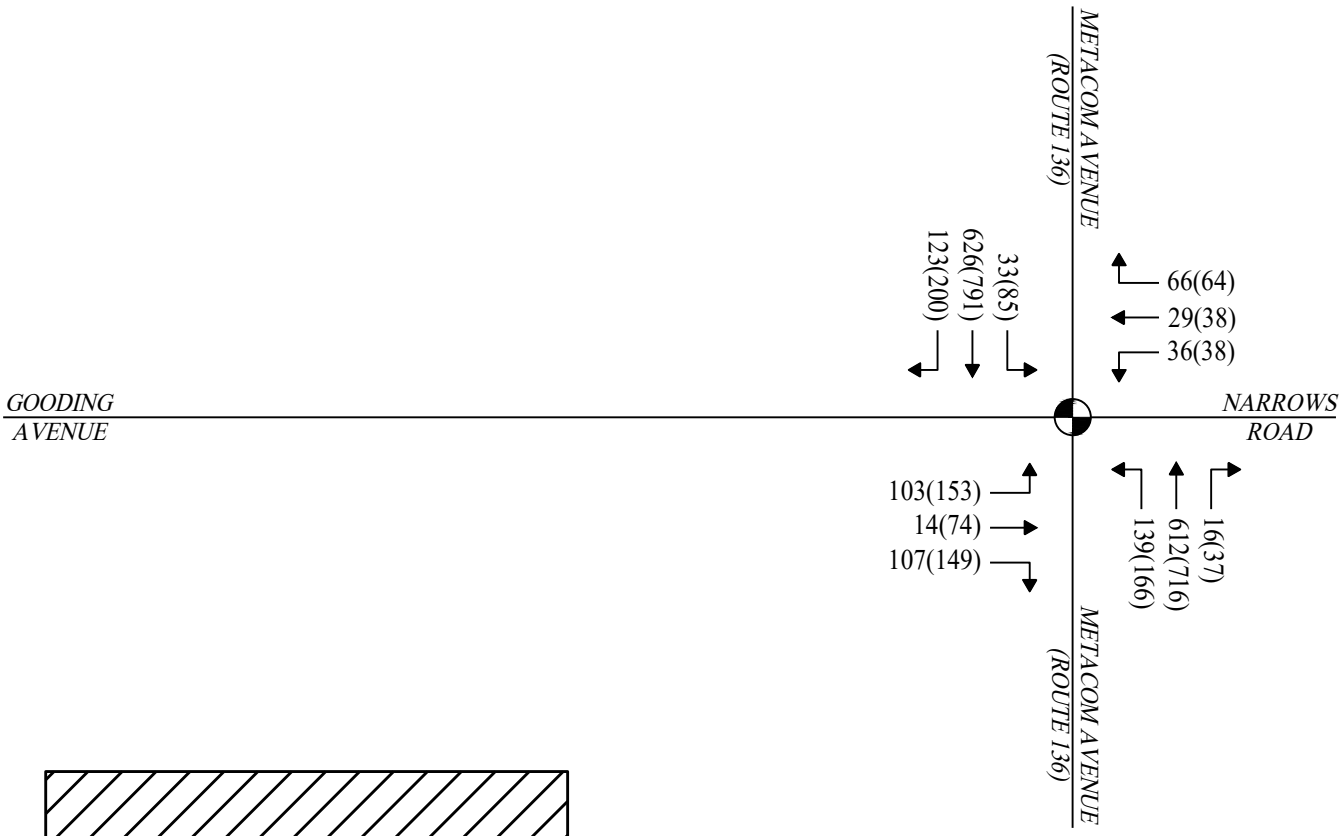
LEGEND

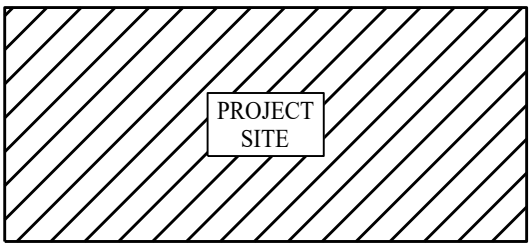
SIGNALIZED INTERSECTION

UNSIGNALIZED INTERSECTION

EXISTING ROADWAY

AM(PM)





SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

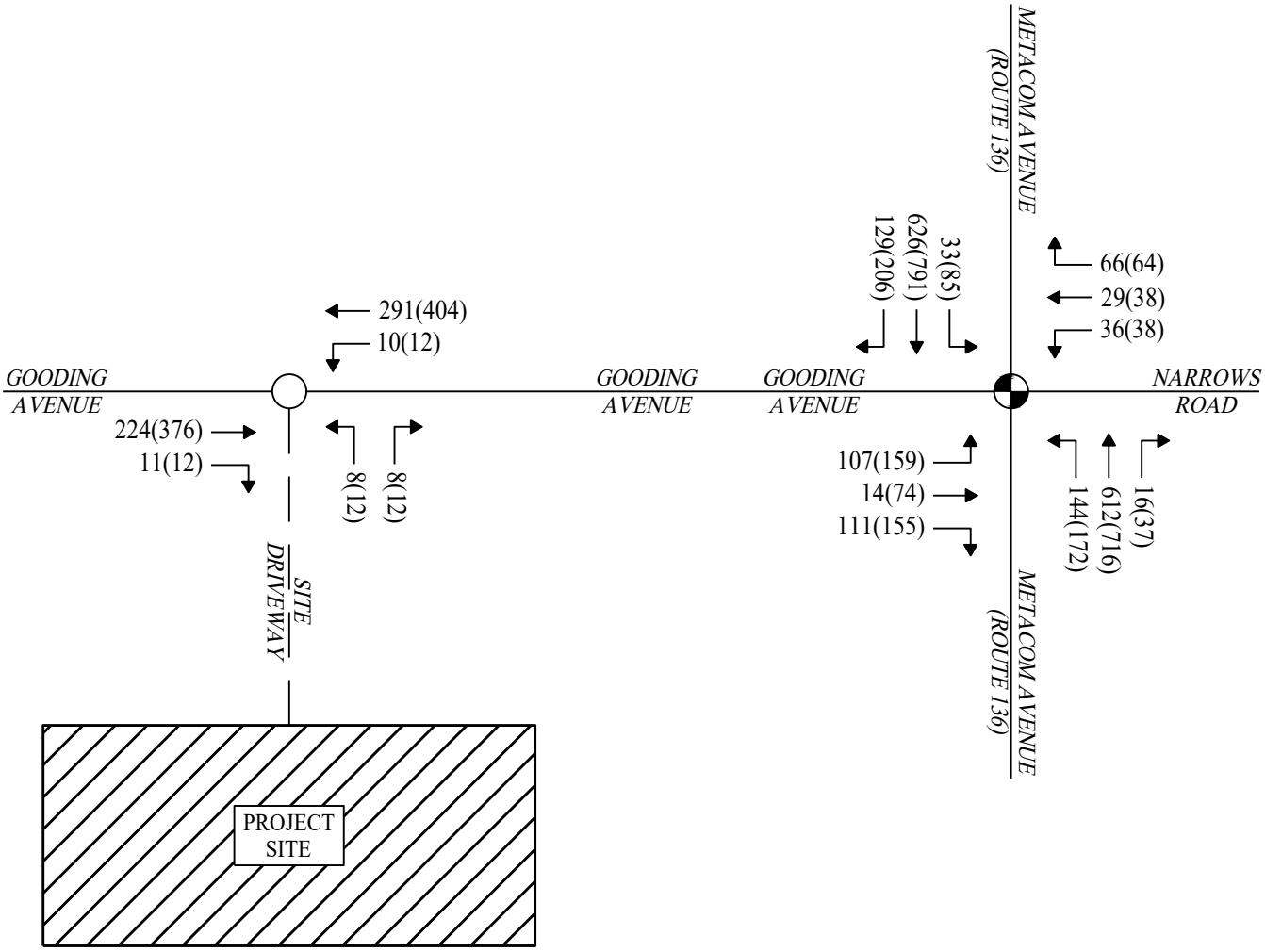
2025 BACKGROUND TRAFFIC VOLUMES

GOODING AVENUE
BRISTOL, RHODE ISLAND

Project #:	23103601
Plan Date:	01/10/24
Scale:	NTS
Figure:	5

LEGEND

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- EXISTING ROADWAY
- PROPOSED ROADWAY
- AM(PM)

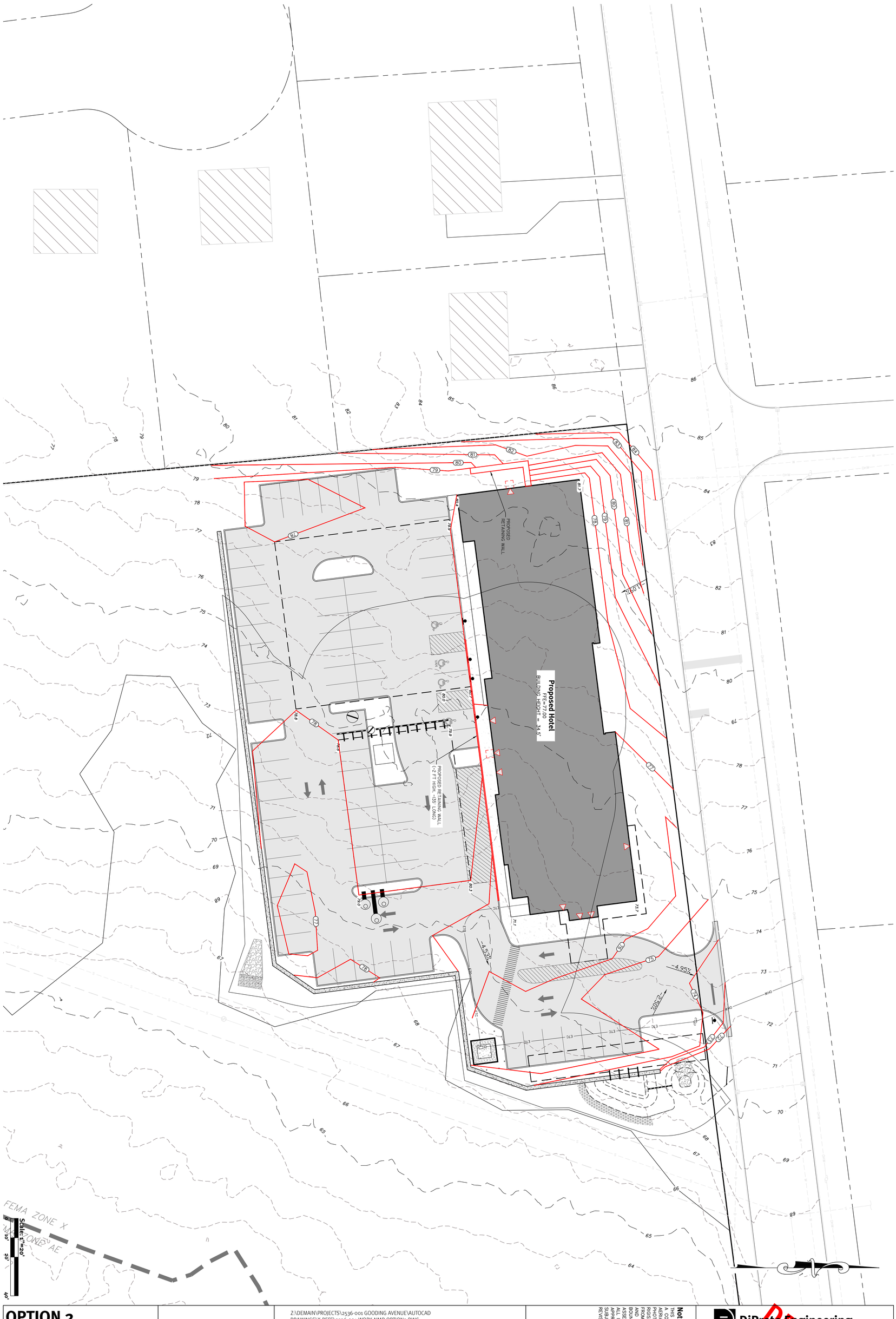


SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

2025 BUILD TRAFFIC VOLUMES

GOODING AVENUE
BRISTOL, RHODE ISLAND

Project #:	23103601
Plan Date:	01/10/24
Scale:	NTS
Figure:	6



OPTION 2

2536-001 Gooding Avenue Development

Date: 11/3/2016 10:44 AM
Plotted By: NPATTIE

This printed worksheet is an internal design aid only. It is NOT intended to be a finished product.

Z:\DEMAIN\PROJECTS\2536-001 GOODING AVENUE\AUTOCAD DRAWINGS\X-REFS\2536-001-WORK-NMP-OPTION2.DWG

Note:
THE INFORMATION SHOWN ON THESE WORKSHEETS IS A COMPILATION OF AERIAL PHOTOGRAPHY FROM RIGIS, TOPOGRAPHY FROM LIDAR DATA, ROAD RIGHT-OF-WAY AND PROPERTY BOUNDARY INFORMATION FROM ASSESSOR'S MAPS. ALL INFORMATION IS APPROXIMATE AND SUBJECT TO CHANGE AND REVISIONS.

DRAFT

DiPrete Engineering
Two Stafford Court Cranston, RI 02921
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Item C2

NOTES:

1. INTERSECTION SIGHT DISTANCE IS MEASURED 15 FEET FROM THE SHOULDER.
2. INTERSECTION SIGHT DISTANCE IS BASED ON A DESIGN SPEED SPEED OF 40 MILES PER HOUR WESTBOUND AND AN 85TH PERCENTILE SPEED OF 42.39 MILES PER HOUR EASTBOUND ALONG GOODING AVENUE.
3. INTERSECTION SIGHT DISTANCES BASED ON GUIDANCE PROVIDED IN THE 2008 EDITION OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION HIGHWAY DESIGN MANUAL.

60 0 30 60

Rev. #:	Date	Description
1	01/10/24	Revised Per Site Layout Change

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 | F: (203) 880-9695

Drawn By:	ABS
Checked By:	KMS
Project #:	23103601
Plan Date:	04/14/23
Scale:	1" = 60'

Project:
PROPOSED DEVELOPMENT
GOODING AVENUE
BRISTOL, RHODE ISLAND

Sheet Title:
INTERSECTION SIGHT DISTANCE

SHEET #:
ISD

Trip Generation Summary Proposed Hotel, Bristol, Rhode Island								
			AM Peak Hour			PM Peak Hour		
	Variable	LUC	Enter	Exit	Total	Enter	Exit	Total
Hotel	80	310	21	16	37	24	24	48
Total New Trips			**21**	**16**	**37**	**24**	**24**	**48**

Source: ITE Trip Generation, 11th Edition

Land Use	Time Period	Avg Rate	Entering	Exiting
LUC 310 - Hotel	AM	0.46	56%	44%
	PM	0.59	51%	49%

SOLLI ENGINEERING

Land Use: 310
Hotel

Description

A hotel is a place of lodging that provides sleeping accommodations and supporting facilities such as a full-service restaurant, cocktail lounge, meeting rooms, banquet room, and convention facilities. A hotel typically provides a swimming pool or another recreational facility such as a fitness room. All suites hotel (Land Use 311), business hotel (Land Use 312), motel (Land Use 320), and resort hotel (Land Use 330) are related uses.

Additional Data

Twenty-five studies provided information on occupancy rates at the time the studies were conducted. The average occupancy rate for these studies was approximately 82 percent.

Some properties in this land use provide guest transportation services (e.g., airport shuttle, limousine service, golf course shuttle service) which may have an impact on the overall trip generation rates.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, District of Columbia, Florida, Georgia, Indiana, Minnesota, New York, Ontario (CAN), Pennsylvania, South Dakota, Texas, Vermont, Virginia, and Washington.

For all lodging uses, it is important to collect data on occupied rooms as well as total rooms in order to accurately predict trip generation characteristics for the site.

Trip generation at a hotel may be related to the presence of supporting facilities such as convention facilities, restaurants, meeting/banquet space, and retail facilities. Future data submissions should specify the presence of these amenities. Reporting the level of activity at the supporting facilities such as full, empty, partially active, number of people attending a meeting/banquet during observation may also be useful in further analysis of this land use.

Source Numbers

170, 260, 262, 277, 280, 301, 306, 357, 422, 507, 577, 728, 867, 872, 925, 951, 1009, 1021, 1026, 1046

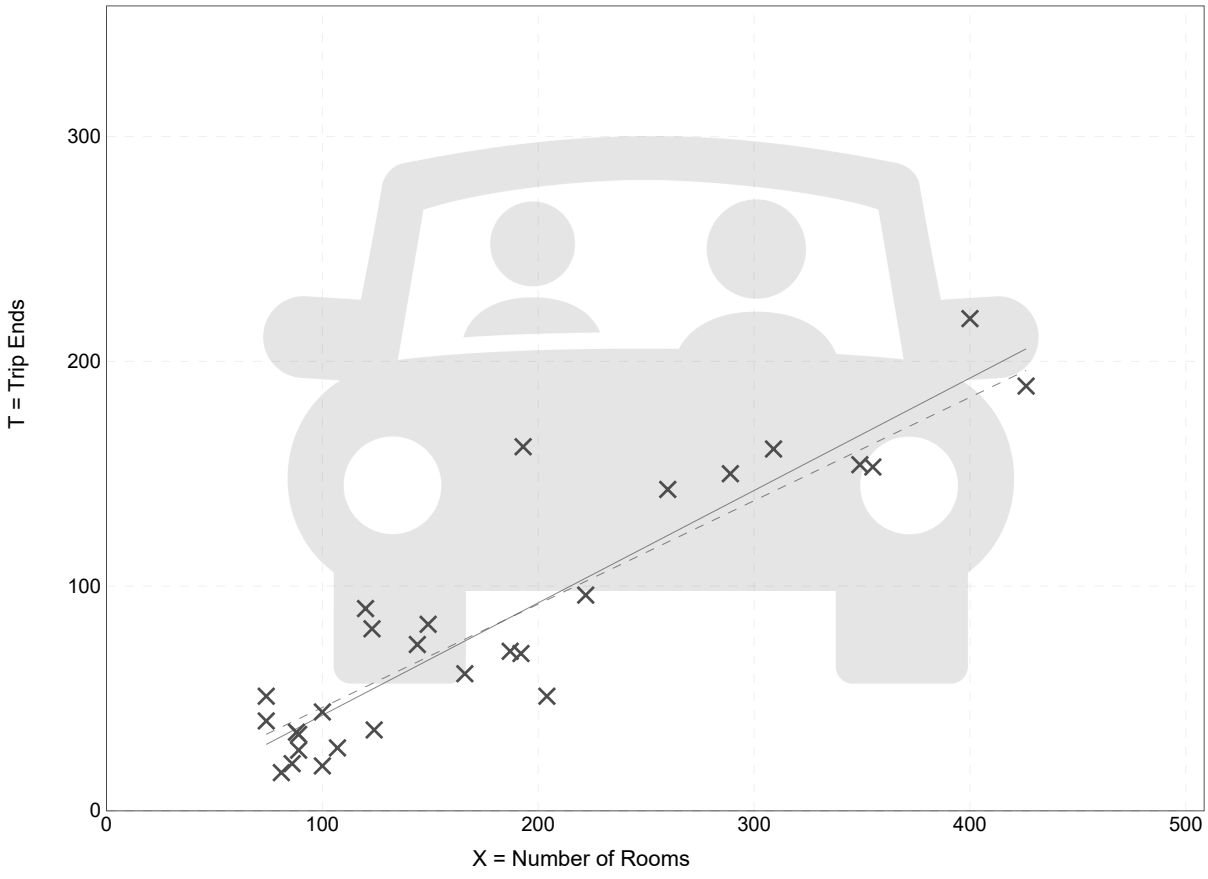
Hotel
(310)

Vehicle Trip Ends vs:	**Rooms**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	28
Avg. Num. of Rooms:	182
Directional Distribution:	56% entering, 44% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.46	0.20 - 0.84	0.14

Data Plot and Equation



Fitted Curve Equation: T = 0.50(X) - 7.45

R^2= 0.84

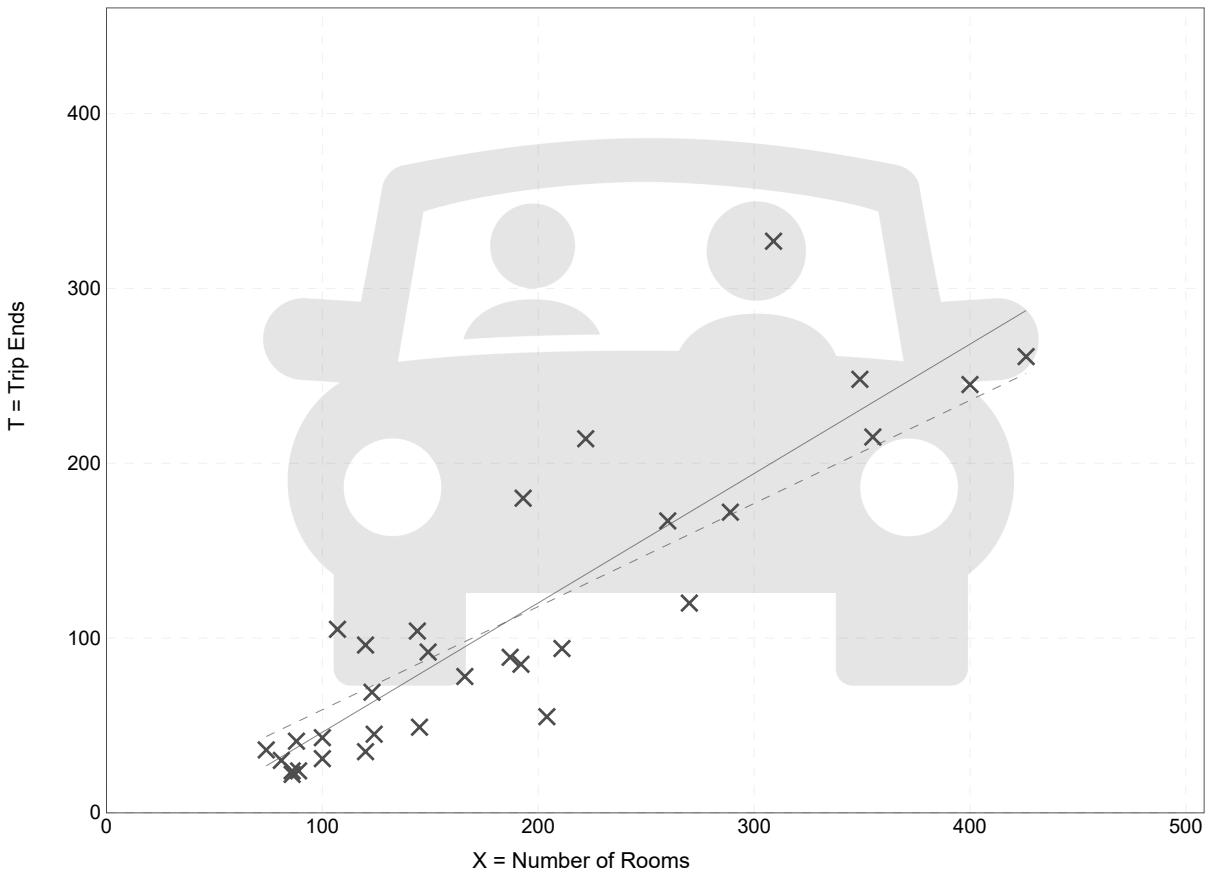
Hotel
(310)

Vehicle Trip Ends vs: **Rooms**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 31
Avg. Num. of Rooms: 186
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.59	0.26 - 1.06	0.22

Data Plot and Equation



Bristol Police Department

395 METACOM AVENUE ❖ BRISTOL, RHODE ISLAND 02809
TELEPHONE (401) 253-6900

KEVIN M. LYNCH
Chief of Police

April 3, 2023

Mr. Andrew Schroder
501 Main Street, Suite 2A
Monroe, CT 06468

Dear Mr. Schroder:

Your Public Records request for motor vehicle accident reports/data for the last three (3) years January 2020 – December 2022 from the Bristol Police Department has been received.

As per our phone conversation here are the numbers for those years:

- 2020 Gooding Ave. from Broadcommon Rd. to Metacom Ave. 6 MVA's reported with 6 at the intersection of Gooding and Metacom and 10 at Metacom and Gooding Ave.
- 2021 Gooding Ave. from Broadcommon Rd. to Metacom Avenue 3 MVA's reported with 6 reported on Gooding at Metacom and 9 at Metacom and Gooding Ave.
- 2022 Gooding Ave. from Broadcommon Rd. to Metacom Ave. 4 MVA's reported with 7 on Gooding at Metacom and 10 Metacom Ave. at Gooding Ave.

There is no cost for this information as I indicated in our phone conversation as the first hour of retrieval is free, however should you require the actual reports or further data after the first hour its $22.50 per hour and $ .15 per page. To include self-addressed postage. You may however set up a cooperate account as we discussed through LexisNexis for your convenience.

If you have any questions or should require further assistance, please contact us.

Sincerely,

Natalie Carroll
Clerk

Weekday AM Peak Hour
Capacity Analysis Summary
Proposed Development - Gooding Avenue, Bristol, RI

	Lane Use	Storage Length (ft)	2023 Existing				2025 Background				2025 Build			
			LOS/Delay(s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	LOS/Delay(s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	LOS/Delay(s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th
Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road														
Gooding Avenue														
	EB-LEFT	300	C/34.8	0.45	52	96	C/34.5	0.44	53	98	D/35.6	0.48	56	101
	EB-THRU		D/36.3	0.07	8	27	D/36.2	0.07	8	27	D/36.1	0.07	8	27
	EB-RIGHT	150	B/11.6	0.41	0	46	B/11.8	0.41	0	48	B/12.1	0.42	0	49
	Overall EB Approach		**C/23.8**				**C/23.8**				**C/24.5**			
Narrows Road														
	WB-LEFT	90	C/29.0	0.18	18	42	C/28.9	0.18	19	42	C/28.9	0.18	19	42
	WB-THRU		D/41.8	0.22	18	44	D/41.8	0.22	19	45	D/41.8	0.22	19	45
	WB-RIGHT	100	A/5.8	0.31	0	12	A/5.9	0.31	0	12	A/5.9	0.31	0	12
	Overall WB Approach		**C/20.0**				**C/20.2**				**C/20.2**			
Metacom Avenue (Route 136)														
	NB-LEFT	225	D/44.9	0.58	79	139	D/44.6	0.58	80	141	D/44.0	0.58	83	145
	NB-THRU/RIGHT		B/16.1	0.58	261	439	B/17.3	0.63	270	455	B/17.4	0.63	272	456
	Overall NB Approach		**C/21.3**				**C/22.2**				**C/22.4**			
	SB-LEFT	125	D/42.8	0.26	20	47	D/43.1	0.27	21	49	D/43.1	0.27	21	49
	SB-THRU/RIGHT		B/16.5	0.48	166	229	B/17.5	0.52	172	234	B/18.0	0.53	177	236
	Overall SB Approach		**B/17.6**				**B/18.6**				**B/19.0**			
Overall Intersection			**B/19.9**				**C/20.8**				**C/21.1**			
Gooding Avenue & Site Driveway*														
Gooding Avenue														
	EB-THRU/RIGHT													
	Overall EB Approach													
	WB-LEFT/THRU										A/7.8	0.008		0.0***
	Overall WB Approach													
Site Driveway														
	NB-LEFT/RIGHT										B/11.3	0.030		0.1***
	Overall NB Approach													
Overall Intersection														

*** = Queue length recorded in vehicles
*= Unsignalized Intersection

Weekday PM Peak Hour
Capacity Analysis Summary
Proposed Development - Gooding Avenue, Bristol, RI

Lane Use		Storage Length (ft)	2023 Existing				2025 Background				2025 Build			
			LOS/Delay(s)	V/C Ratio	Queue (ft) 50th	95th	LOS/Delay(s)	V/C Ratio	Queue (ft) 50th	95th	LOS/Delay(s)	V/C Ratio	Queue (ft) 50th	95th
Metacom Avenue (Route 136) & Gooding Avenue / Narrows Road														
Gooding Avenue														
	EB-LEFT	300	D/39.9	0.60	75	126	D/40.4	0.61	77	128	D/41.8	0.64	81	134
	EB-THRU		D/39.4	0.32	41	82	D/39.5	0.32	42	82	D/39.4	0.32	42	82
	EB-RIGHT	150	B/11.2	0.46	0	53	B/11.1	0.46	0	54	B/11.1	0.47	0	55
	Overall EB Approach		**C/28.4**				**C/28.6**				**C/29.1**			
Narrows Road														
	WB-LEFT	90	C/28.4	0.18	18	42	C/28.5	0.18	18	42	C/28.5	0.18	18	42
	WB-THRU		D/41.3	0.23	21	51	D/41.4	0.24	22	51	D/41.4	0.24	22	51
	WB-RIGHT	100	A/3.8	0.27	0	8	A/3.9	0.27	0	8	A/3.9	0.27	0	8
	Overall WB Approach		**C/20.6**				**C/20.8**				**C/20.8**			
Metacom Avenue (Route 136)														
	NB-LEFT	225	D/45.4	0.62	91	157	D/45.1	0.62	92	161	D/44.6	0.62	95	166
	NB-THRU/RIGHT		C/25.4	0.77	350	#672	C/26.3	0.79	363	#693	C/26.4	0.79	363	#693
	Overall NB Approach		**C/29.0**				**C/29.7**				**C/29.7**			
	SB-LEFT	125	D/45.5	0.47	48	90	D/45.6	0.47	49	91	D/45.6	0.47	49	91
	SB-THRU/RIGHT		B/19.7	0.62	220	310	C/20.2	0.64	228	319	C/20.7	0.65	233	321
	Overall SB Approach		**C/21.8**				**C/22.2**				**C/22.6**			
Overall Intersection			**C/25.4**				**C/25.8**				**C/26.1**			
Gooding Avenue & Site Driveway*														
Gooding Avenue														
	EB-THRU/RIGHT													
	Overall EB Approach													
	WB-LEFT/THRU										A/8.2	0.011		0.0***
	Overall WB Approach													
Site Driveway														
	NB-LEFT/RIGHT										B/14.2	0.062		0.2***
	Overall NB Approach													
Overall Intersection														

*** = Queue length recorded in vehicles
*= Unsignalized Intersection
= 95th percentile volume exceeds capacity, queue may be longer

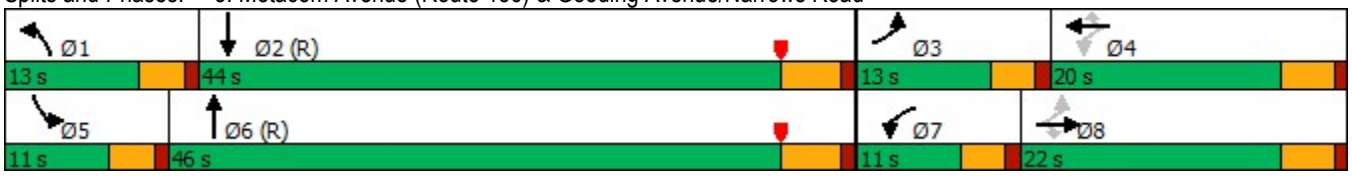
SOLLI ENGINEERING

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	14	105	35	28	65	136	600	16	32	614	121
Future Volume (vph)	101	14	105	35	28	65	136	600	16	32	614	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	300		150	90		100	225		0	125		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850			0.850		0.996			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1837	1446	1805	1827	1615	1678	1758	0	1646	3256	0
Flt Permitted	0.513			0.747			0.950			0.950		
Satd. Flow (perm)	937	1837	1446	1419	1827	1615	1678	1758	0	1646	3256	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			121		2			32	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2032			751			749			760	
Travel Time (s)		39.6			20.5			12.8			13.0	
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.92	0.92	0.92	0.88	0.88	0.88
Heavy Vehicles (%)	4%	0%	8%	0%	4%	0%	4%	4%	6%	6%	5%	2%
Adj. Flow (vph)	112	16	117	41	33	76	148	652	17	36	698	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	16	117	41	33	76	148	669	0	36	836	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		2	2	
Detector Template	Left		Right	Left		Right	Left					
Leading Detector (ft)	40	40	40	40	40	30	40	40		211	211	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	40	40	40	40	40	30	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)										205	205	
Detector 2 Size(ft)										6	6	
Detector 2 Type										Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)										0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	

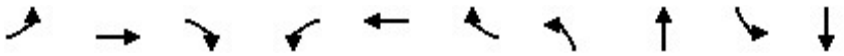
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4		4						
Detector Phase	3	8	8	7	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	9.0	11.5	11.5	9.0	11.5	11.5	11.0	12.0		11.0	12.0	
Total Split (s)	13.0	22.0	22.0	11.0	20.0	20.0	13.0	46.0		11.0	44.0	
Total Split (%)	14.4%	24.4%	24.4%	12.2%	22.2%	22.2%	14.4%	51.1%		12.2%	48.9%	
Maximum Green (s)	9.0	17.5	17.5	7.0	15.5	15.5	9.0	41.0		7.0	39.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	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	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	5.0		4.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.7	2.7	2.5	2.7	2.7	2.5	2.7		2.5	2.7	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	17.0	11.3	11.3	12.8	7.5	7.5	13.6	58.7		7.7	47.4	
Actuated g/C Ratio	0.19	0.13	0.13	0.14	0.08	0.08	0.15	0.65		0.09	0.53	
v/c Ratio	0.45	0.07	0.41	0.18	0.22	0.31	0.58	0.58		0.26	0.48	
Control Delay	34.8	36.3	11.6	29.0	41.8	5.8	44.9	16.1		42.8	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	34.8	36.3	11.6	29.0	41.8	5.8	44.9	16.1		42.8	16.5	
LOS	C	D	B	C	D	A	D	B		D	B	
Approach Delay		23.8			20.0			21.3			17.6	
Approach LOS		C			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 47 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road



Queues
Gooding Avenue - Bristol, RI
3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road
2023 Existing AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	112	16	117	41	33	76	148	669	36	836
v/c Ratio	0.45	0.07	0.41	0.18	0.22	0.31	0.58	0.58	0.26	0.48
Control Delay	34.8	36.3	11.6	29.0	41.8	5.8	44.9	16.1	42.8	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	36.3	11.6	29.0	41.8	5.8	44.9	16.1	42.8	16.5
Queue Length 50th (ft)	52	8	0	18	18	0	79	261	20	166
Queue Length 95th (ft)	96	27	46	42	44	12	139	439	47	229
Internal Link Dist (ft)		1952			671			669		680
Turn Bay Length (ft)	300		150	90		100	225		125	
Base Capacity (vph)	263	363	382	243	314	378	253	1148	140	1730
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.31	0.17	0.11	0.20	0.58	0.58	0.26	0.48

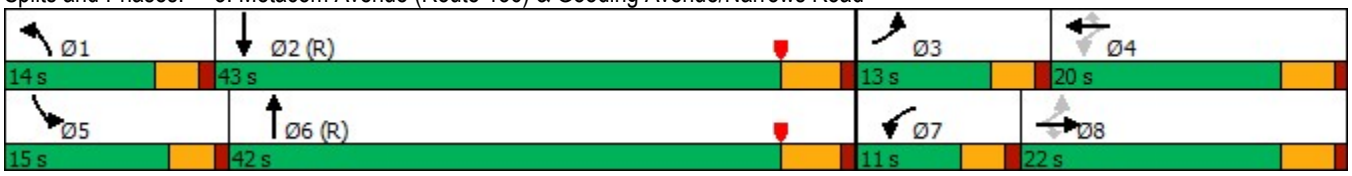
Intersection Summary

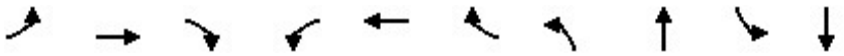
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	73	146	37	37	63	163	702	36	83	775	196
Future Volume (vph)	150	73	146	37	37	63	163	702	36	83	775	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	300		150	90		100	225		0	125		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850			0.850		0.993			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	1546	1752	1900	1583	1728	1790	0	1745	3345	0
Flt Permitted	0.470			0.708			0.950			0.950		
Satd. Flow (perm)	875	1837	1546	1306	1900	1583	1728	1790	0	1745	3345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			152			121		3			43	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2032			751			749			760	
Travel Time (s)		39.6			20.5			12.8			13.0	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	0%	1%	3%	0%	2%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	156	76	152	39	39	66	172	739	38	87	816	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	76	152	39	39	66	172	777	0	87	1022	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		2	2	
Detector Template	Left		Right	Left		Right	Left					
Leading Detector (ft)	40	40	40	40	40	30	40	40		211	211	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	40	40	40	40	40	30	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)										205	205	
Detector 2 Size(ft)										6	6	
Detector 2 Type										Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)										0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4		4						
Detector Phase	3	8	8	7	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	11.0	11.5	11.5	9.0	11.5	11.5	11.0	12.0		11.0	12.0	
Total Split (s)	13.0	22.0	22.0	11.0	20.0	20.0	14.0	42.0		15.0	43.0	
Total Split (%)	14.4%	24.4%	24.4%	12.2%	22.2%	22.2%	15.6%	46.7%		16.7%	47.8%	
Maximum Green (s)	9.0	17.5	17.5	7.0	15.5	15.5	10.0	37.0		11.0	38.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	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	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	5.0		4.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.7	2.7	2.5	2.7	2.7	2.5	2.7		2.5	2.7	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	17.7	11.8	11.8	13.1	7.9	7.9	14.4	50.8		9.6	43.8	
Actuated g/C Ratio	0.20	0.13	0.13	0.15	0.09	0.09	0.16	0.56		0.11	0.49	
v/c Ratio	0.60	0.32	0.46	0.18	0.23	0.27	0.62	0.77		0.47	0.62	
Control Delay	39.9	39.4	11.2	28.4	41.3	3.8	45.4	25.4		45.5	19.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	39.9	39.4	11.2	28.4	41.3	3.8	45.4	25.4		45.5	19.7	
LOS	D	D	B	C	D	A	D	C		D	B	
Approach Delay		28.4			20.6			29.0			21.8	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 44 (49%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 25.4		Intersection LOS: C	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	156	76	152	39	39	66	172	777	87	1022
v/c Ratio	0.60	0.32	0.46	0.18	0.23	0.27	0.62	0.77	0.47	0.62
Control Delay	39.9	39.4	11.2	28.4	41.3	3.8	45.4	25.4	45.5	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	39.4	11.2	28.4	41.3	3.8	45.4	25.4	45.5	19.7
Queue Length 50th (ft)	75	41	0	18	21	0	91	350	48	220
Queue Length 95th (ft)	126	82	53	42	51	8	157	#672	90	310
Internal Link Dist (ft)		1952			671			669		680
Turn Bay Length (ft)	300		150	90		100	225		125	
Base Capacity (vph)	264	367	431	236	327	372	276	1011	221	1649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.21	0.35	0.17	0.12	0.18	0.62	0.77	0.39	0.62

Intersection Summary

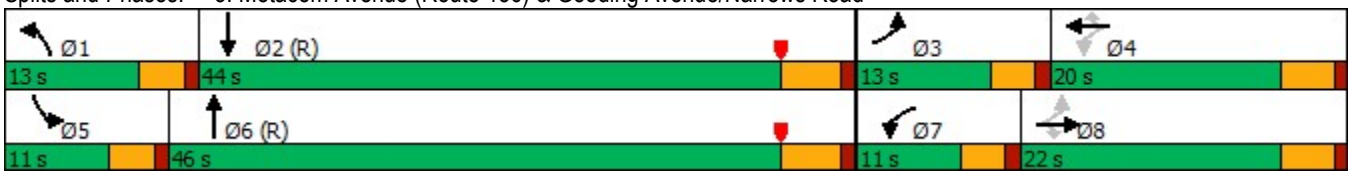
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

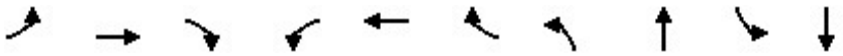
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	14	107	36	29	66	139	612	16	33	626	123
Future Volume (vph)	103	14	107	36	29	66	139	612	16	33	626	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	300		150	90		100	225		0	125		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850			0.850		0.996			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1837	1446	1805	1827	1615	1678	1758	0	1646	3256	0
Flt Permitted	0.540			0.747			0.950			0.950		
Satd. Flow (perm)	987	1837	1446	1419	1827	1615	1678	1758	0	1646	3256	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			121		2			32	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2032			751			749			760	
Travel Time (s)		39.6			20.5			12.8			13.0	
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.92	0.92	0.92	0.88	0.88	0.88
Heavy Vehicles (%)	4%	0%	8%	0%	4%	0%	4%	4%	6%	6%	5%	2%
Adj. Flow (vph)	114	16	119	42	34	77	151	665	17	38	711	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	16	119	42	34	77	151	682	0	38	851	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		2	2	
Detector Template	Left		Right	Left		Right	Left					
Leading Detector (ft)	40	40	40	40	40	30	40	40		211	211	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	40	40	40	40	40	30	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)										205	205	
Detector 2 Size(ft)										6	6	
Detector 2 Type										Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)										0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4		4						
Detector Phase	3	8	8	7	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	9.0	11.5	11.5	9.0	11.5	11.5	11.0	12.0		11.0	12.0	
Total Split (s)	13.0	22.0	22.0	11.0	20.0	20.0	13.0	46.0		11.0	44.0	
Total Split (%)	14.4%	24.4%	24.4%	12.2%	22.2%	22.2%	14.4%	51.1%		12.2%	48.9%	
Maximum Green (s)	9.0	17.5	17.5	7.0	15.5	15.5	9.0	41.0		7.0	39.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	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	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	5.0		4.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.7	2.7	2.5	2.7	2.7	2.5	2.7		2.5	2.7	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	17.3	11.3	11.3	13.3	7.5	7.5	13.9	55.4		7.7	44.8	
Actuated g/C Ratio	0.19	0.13	0.13	0.15	0.08	0.08	0.15	0.62		0.09	0.50	
v/c Ratio	0.44	0.07	0.41	0.18	0.22	0.31	0.58	0.63		0.27	0.52	
Control Delay	34.5	36.2	11.8	28.9	41.8	5.9	44.6	17.3		43.1	17.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	34.5	36.2	11.8	28.9	41.8	5.9	44.6	17.3		43.1	17.5	
LOS	C	D	B	C	D	A	D	B		D	B	
Approach Delay		23.8			20.2			22.2			18.6	
Approach LOS		C			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 47 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	114	16	119	42	34	77	151	682	38	851
v/c Ratio	0.44	0.07	0.41	0.18	0.22	0.31	0.58	0.63	0.27	0.52
Control Delay	34.5	36.2	11.8	28.9	41.8	5.9	44.6	17.3	43.1	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	36.2	11.8	28.9	41.8	5.9	44.6	17.3	43.1	17.5
Queue Length 50th (ft)	53	8	0	19	19	0	80	270	21	172
Queue Length 95th (ft)	98	27	48	42	45	12	141	455	49	234
Internal Link Dist (ft)		1952			671			669		680
Turn Bay Length (ft)	300		150	90		100	225		125	
Base Capacity (vph)	268	363	382	245	314	378	259	1082	141	1636
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.31	0.17	0.11	0.20	0.58	0.63	0.27	0.52

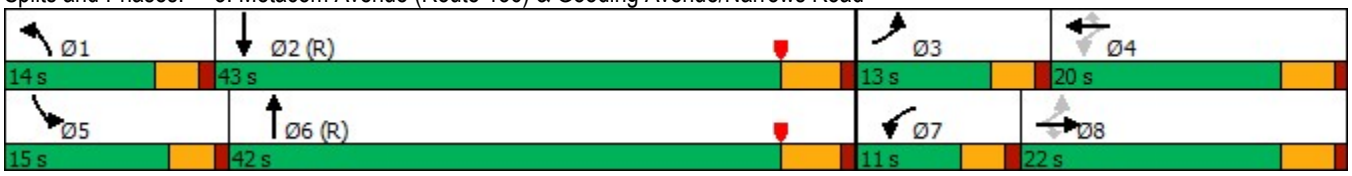
Intersection Summary

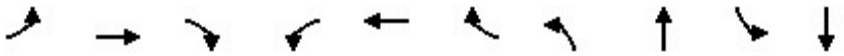
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	74	149	38	38	64	166	716	37	85	791	200
Future Volume (vph)	153	74	149	38	38	64	166	716	37	85	791	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	300		150	90		100	225		0	125		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850			0.850		0.993			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	1546	1752	1900	1583	1728	1790	0	1745	3345	0
Flt Permitted	0.470			0.707			0.950			0.950		
Satd. Flow (perm)	875	1837	1546	1304	1900	1583	1728	1790	0	1745	3345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155			121		4			43	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2032			751			749			760	
Travel Time (s)		39.6			20.5			12.8			13.0	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	0%	1%	3%	0%	2%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	159	77	155	40	40	67	175	754	39	89	833	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	77	155	40	40	67	175	793	0	89	1044	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		2	2	
Detector Template	Left		Right	Left		Right	Left					
Leading Detector (ft)	40	40	40	40	40	30	40	40		211	211	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	40	40	40	40	40	30	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)										205	205	
Detector 2 Size(ft)										6	6	
Detector 2 Type										Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)										0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4		4						
Detector Phase	3	8	8	7	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	11.0	11.5	11.5	9.0	11.5	11.5	11.0	12.0		11.0	12.0	
Total Split (s)	13.0	22.0	22.0	11.0	20.0	20.0	14.0	42.0		15.0	43.0	
Total Split (%)	14.4%	24.4%	24.4%	12.2%	22.2%	22.2%	15.6%	46.7%		16.7%	47.8%	
Maximum Green (s)	9.0	17.5	17.5	7.0	15.5	15.5	10.0	37.0		11.0	38.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	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	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	5.0		4.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.7	2.7	2.5	2.7	2.7	2.5	2.7		2.5	2.7	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	17.7	11.8	11.8	13.1	7.9	7.9	14.7	50.7		9.7	43.5	
Actuated g/C Ratio	0.20	0.13	0.13	0.15	0.09	0.09	0.16	0.56		0.11	0.48	
v/c Ratio	0.61	0.32	0.46	0.18	0.24	0.27	0.62	0.79		0.47	0.64	
Control Delay	40.4	39.5	11.1	28.5	41.4	3.9	45.1	26.3		45.6	20.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	40.4	39.5	11.1	28.5	41.4	3.9	45.1	26.3		45.6	20.2	
LOS	D	D	B	C	D	A	D	C		D	C	
Approach Delay		28.6			20.8			29.7			22.2	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 44 (49%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	159	77	155	40	40	67	175	793	89	1044
v/c Ratio	0.61	0.32	0.46	0.18	0.24	0.27	0.62	0.79	0.47	0.64
Control Delay	40.4	39.5	11.1	28.5	41.4	3.9	45.1	26.3	45.6	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	39.5	11.1	28.5	41.4	3.9	45.1	26.3	45.6	20.2
Queue Length 50th (ft)	77	42	0	18	22	0	92	363	49	228
Queue Length 95th (ft)	128	82	54	42	51	8	161	#693	91	319
Internal Link Dist (ft)		1952			671			669		680
Turn Bay Length (ft)	300		150	90		100	225		125	
Base Capacity (vph)	264	367	433	235	327	372	281	1009	221	1638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.21	0.36	0.17	0.12	0.18	0.62	0.79	0.40	0.64

Intersection Summary

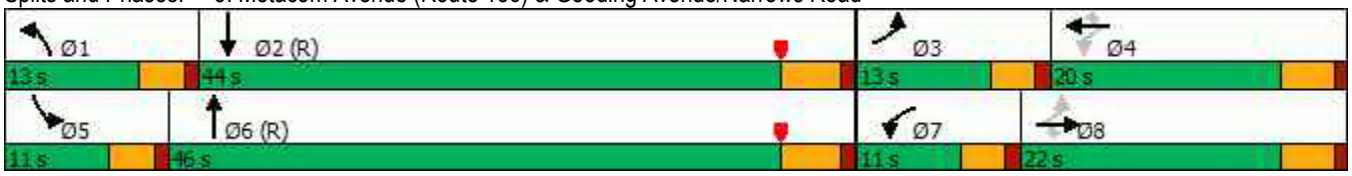
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	14	111	36	29	66	144	612	16	33	626	129
Future Volume (vph)	107	14	111	36	29	66	144	612	16	33	626	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	300		150	90		100	225		0	125		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850			0.850		0.996			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1837	1446	1805	1827	1615	1678	1758	0	1646	3253	0
Flt Permitted	0.463			0.747			0.950			0.950		
Satd. Flow (perm)	846	1837	1446	1419	1827	1615	1678	1758	0	1646	3253	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			121		2			34	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1337			751			749			760	
Travel Time (s)		26.0			20.5			12.8			13.0	
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.92	0.92	0.92	0.88	0.88	0.88
Heavy Vehicles (%)	4%	0%	8%	0%	4%	0%	4%	4%	6%	6%	5%	2%
Adj. Flow (vph)	119	16	123	42	34	77	157	665	17	38	711	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	16	123	42	34	77	157	682	0	38	858	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		2	2	
Detector Template	Left		Right	Left		Right	Left					
Leading Detector (ft)	40	40	40	40	40	30	40	40		211	211	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	40	40	40	40	40	30	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)										205	205	
Detector 2 Size(ft)										6	6	
Detector 2 Type										Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)										0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	

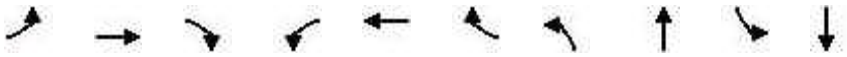
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4		4						
Detector Phase	3	8	8	7	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	9.0	11.5	11.5	9.0	11.5	11.5	11.0	12.0		11.0	12.0	
Total Split (s)	13.0	22.0	22.0	11.0	20.0	20.0	13.0	46.0		11.0	44.0	
Total Split (%)	14.4%	24.4%	24.4%	12.2%	22.2%	22.2%	14.4%	51.1%		12.2%	48.9%	
Maximum Green (s)	9.0	17.5	17.5	7.0	15.5	15.5	9.0	41.0		7.0	39.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	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	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	5.0		4.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.7	2.7	2.5	2.7	2.7	2.5	2.7		2.5	2.7	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	17.4	11.4	11.4	12.8	7.6	7.6	14.5	55.3		7.7	44.1	
Actuated g/C Ratio	0.19	0.13	0.13	0.14	0.08	0.08	0.16	0.61		0.09	0.49	
v/c Ratio	0.48	0.07	0.42	0.18	0.22	0.31	0.58	0.63		0.27	0.53	
Control Delay	35.6	36.1	12.1	28.9	41.8	5.9	44.0	17.4		43.1	18.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.6	36.1	12.1	28.9	41.8	5.9	44.0	17.4		43.1	18.0	
LOS	D	D	B	C	D	A	D	B		D	B	
Approach Delay		24.5			20.2			22.4			19.0	
Approach LOS		C			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 47 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road



Queues
Gooding Avenue - Bristol, RI
3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road
2025 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	16	123	42	34	77	157	682	38	858
v/c Ratio	0.48	0.07	0.42	0.18	0.22	0.31	0.58	0.63	0.27	0.53
Control Delay	35.6	36.1	12.1	28.9	41.8	5.9	44.0	17.4	43.1	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	36.1	12.1	28.9	41.8	5.9	44.0	17.4	43.1	18.0
Queue Length 50th (ft)	56	8	0	19	19	0	83	272	21	177
Queue Length 95th (ft)	101	27	49	42	45	12	145	456	49	236
Internal Link Dist (ft)		1257			671			669		680
Turn Bay Length (ft)	300		150	90		100	225		125	
Base Capacity (vph)	257	363	385	243	314	378	269	1080	141	1611
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.04	0.32	0.17	0.11	0.20	0.58	0.63	0.27	0.53

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	224	11	10	291	8	8
Future Volume (vph)	224	11	10	291	8	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.932	
Flt Protected				0.998	0.976	
Satd. Flow (prot)	1852	0	0	1859	1694	0
Flt Permitted				0.998	0.976	
Satd. Flow (perm)	1852	0	0	1859	1694	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	217			1337	298	
Travel Time (s)	4.2			26.0	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	12	11	316	9	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	255	0	0	327	18	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	224	11	10	291	8	8
Future Vol, veh/h	224	11	10	291	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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, %	2	2	2	2	2	2
Mvmt Flow	243	12	11	316	9	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	255	0	587	249
Stage 1	-	-	-	-	249	-
Stage 2	-	-	-	-	338	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1310	-	472	790
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1310	-	467	790
Mov Cap-2 Maneuver	-	-	-	-	467	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	715	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.3
HCM LOS			B

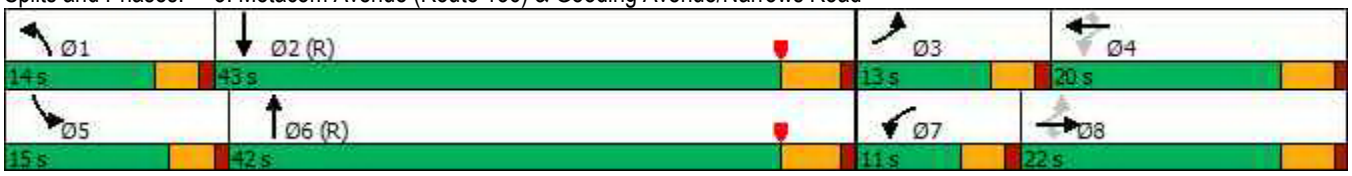
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	587	-	-	1310	-
HCM Lane V/C Ratio	0.03	-	-	0.008	-
HCM Control Delay (s)	11.3	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	74	155	38	38	64	172	716	37	85	791	206
Future Volume (vph)	159	74	155	38	38	64	172	716	37	85	791	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	300		150	90		100	225		0	125		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850			0.850		0.993			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	1546	1752	1900	1583	1728	1790	0	1745	3341	0
Flt Permitted	0.468			0.707			0.950			0.950		
Satd. Flow (perm)	872	1837	1546	1304	1900	1583	1728	1790	0	1745	3341	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			161			121		4			45	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1337			751			749			760	
Travel Time (s)		26.0			20.5			12.8			13.0	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	0%	1%	3%	0%	2%	1%	2%	0%	0%	1%	2%
Adj. Flow (vph)	166	77	161	40	40	67	181	754	39	89	833	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	166	77	161	40	40	67	181	793	0	89	1050	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		2	2	
Detector Template	Left		Right	Left		Right	Left					
Leading Detector (ft)	40	40	40	40	40	30	40	40		211	211	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	40	40	40	40	40	30	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)										205	205	
Detector 2 Size(ft)										6	6	
Detector 2 Type										Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)										0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4		4						
Detector Phase	3	8	8	7	4	4	1	6		5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	11.0	11.5	11.5	9.0	11.5	11.5	11.0	12.0		11.0	12.0	
Total Split (s)	13.0	22.0	22.0	11.0	20.0	20.0	14.0	42.0		15.0	43.0	
Total Split (%)	14.4%	24.4%	24.4%	12.2%	22.2%	22.2%	15.6%	46.7%		16.7%	47.8%	
Maximum Green (s)	9.0	17.5	17.5	7.0	15.5	15.5	10.0	37.0		11.0	38.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	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	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5	4.5	4.0	5.0		4.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.7	2.7	2.5	2.7	2.7	2.5	2.7		2.5	2.7	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)	17.7	11.8	11.8	13.1	7.9	7.9	15.2	50.6		9.7	43.0	
Actuated g/C Ratio	0.20	0.13	0.13	0.15	0.09	0.09	0.17	0.56		0.11	0.48	
v/c Ratio	0.64	0.32	0.47	0.18	0.24	0.27	0.62	0.79		0.47	0.65	
Control Delay	41.8	39.4	11.1	28.5	41.4	3.9	44.6	26.4		45.6	20.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	41.8	39.4	11.1	28.5	41.4	3.9	44.6	26.4		45.6	20.7	
LOS	D	D	B	C	D	A	D	C		D	C	
Approach Delay		29.1			20.8			29.7			22.6	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 44 (49%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Metacom Avenue (Route 136) & Gooding Avenue/Narrows Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	166	77	161	40	40	67	181	793	89	1050
v/c Ratio	0.64	0.32	0.47	0.18	0.24	0.27	0.62	0.79	0.47	0.65
Control Delay	41.8	39.4	11.1	28.5	41.4	3.9	44.6	26.4	45.6	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	39.4	11.1	28.5	41.4	3.9	44.6	26.4	45.6	20.7
Queue Length 50th (ft)	81	42	0	18	22	0	95	363	49	233
Queue Length 95th (ft)	134	82	55	42	51	8	166	#693	91	321
Internal Link Dist (ft)		1257			671			669		680
Turn Bay Length (ft)	300		150	90		100	225		125	
Base Capacity (vph)	263	367	438	235	327	372	291	1008	221	1618
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.21	0.37	0.17	0.12	0.18	0.62	0.79	0.40	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	376	12	12	404	12	12
Future Volume (vph)	376	12	12	404	12	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.932	
Flt Protected				0.999	0.976	
Satd. Flow (prot)	1855	0	0	1861	1694	0
Flt Permitted				0.999	0.976	
Satd. Flow (perm)	1855	0	0	1861	1694	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	217			1337	298	
Travel Time (s)	4.2			26.0	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	409	13	13	439	13	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	422	0	0	452	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	376	12	12	404	12	12
Future Vol, veh/h	376	12	12	404	12	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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, %	2	2	2	2	2	2
Mvmt Flow	409	13	13	439	13	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	422	0	881	416
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1137	-	317	637
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1137	-	312	637
Mov Cap-2 Maneuver	-	-	-	-	312	-
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	623	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	1137	-
HCM Lane V/C Ratio	0.062	-	-	0.011	-
HCM Control Delay (s)	14.2	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Please note that new Connecticut county level geographies are not availabe within the map.

An official website of the United States government

United States Census Bureau

QuickFacts

Bristol town, Bristol County, Rhode Island

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

All Topics	Bristol town, Bristol County, Rhode Island
Population Estimates, July 1, 2022, (V2022)	NA
PEOPLE	
Population	
Population Estimates, July 1, 2022, (V2022)	NA
Population Estimates, July 1, 2021, (V2021)	22,226
Population estimates base, April 1, 2020, (V2022)	NA
Population estimates base, April 1, 2020, (V2021)	22,224
Population, percent change - April 1, 2020 (estimates base) to July 1, 2022, (V2022)	NA
Population, percent change - April 1, 2020 (estimates base) to July 1, 2021, (V2021)	Z
Population, Census, April 1, 2020	22,493
Population, Census, April 1, 2010	22,954
Age and Sex	
Persons under 5 years, percent	2.6%
Persons under 18 years, percent	13.4%
Persons 65 years and over, percent	22.0%
Female persons, percent	50.1%
Race and Hispanic Origin	
White alone, percent	93.4%
Black or African American alone, percent (a)	1.4%
American Indian and Alaska Native alone, percent (a)	0.1%
Asian alone, percent (a)	2.0%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.0%
Two or More Races, percent	2.6%
Hispanic or Latino, percent (b)	2.1%
White alone, not Hispanic or Latino, percent	92.0%
Population Characteristics	
Veterans, 2017-2021	1,199
Foreign born persons, percent, 2017-2021	11.1%
Housing	
Housing units, July 1, 2021, (V2021)	X
Owner-occupied housing unit rate, 2017-2021	68.7%
Median value of owner-occupied housing units, 2017-2021	$363,200
Median selected monthly owner costs -with a mortgage, 2017-2021	$2,260
Median selected monthly owner costs -without a mortgage, 2017-2021	$860
Median gross rent, 2017-2021	$1,170
Building permits, 2021	X
Families & Living Arrangements	
Households, 2017-2021	8,065
Persons per household, 2017-2021	2.30
Living in same house 1 year ago, percent of persons age 1 year+, 2017-2021	85.9%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	15.1%
Computer and Internet Use	
Households with a computer, percent, 2017-2021	89.5%
Households with a broadband Internet subscription, percent, 2017-2021	

Is this page helpful?
Yes No

Education	
High school graduate or higher, percent of persons age 25 years+, 2017-2021	88.5%
Bachelor's degree or higher, percent of persons age 25 years+, 2017-2021	41.0%
Health	
With a disability, under age 65 years, percent, 2017-2021	7.5%
Persons without health insurance, under age 65 years, percent	⚠ 2.1%
Economy	
In civilian labor force, total, percent of population age 16 years+, 2017-2021	57.5%
In civilian labor force, female, percent of population age 16 years+, 2017-2021	53.2%
Total accommodation and food services sales, 2017 ($1,000) (c)	51,040
Total health care and social assistance receipts/revenue, 2017 ($1,000) (c)	55,921
Total transportation and warehousing receipts/revenue, 2017 ($1,000) (c)	D
Total retail sales, 2017 ($1,000) (c)	160,436
Total retail sales per capita, 2017 (c)	$7,224
Transportation	
Mean travel time to work (minutes), workers age 16 years+, 2017-2021	25.5
Income & Poverty	
Median household income (in 2021 dollars), 2017-2021	$80,727
Per capita income in past 12 months (in 2021 dollars), 2017-2021	$42,658
Persons in poverty, percent	⚠ 6.4%

BUSINESSES

Businesses	
Total employer establishments, 2020	X
Total employment, 2020	X
Total annual payroll, 2020 ($1,000)	X
Total employment, percent change, 2019-2020	X
Total nonemployer establishments, 2019	X
All employer firms, Reference year 2017	530
Men-owned employer firms, Reference year 2017	404
Women-owned employer firms, Reference year 2017	59
Minority-owned employer firms, Reference year 2017	S
Nonminority-owned employer firms, Reference year 2017	476
Veteran-owned employer firms, Reference year 2017	32
Nonveteran-owned employer firms, Reference year 2017	454

GEOGRAPHY

Geography	
Population per square mile, 2020	2,297.8
Population per square mile, 2010	2,336.4
Land area in square miles, 2020	9.79
Land area in square miles, 2010	9.82
FIPS Code	4400109280

Is this page helpful?
Yes No

About datasets used in this table

Value Notes

⚠ Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable.] Click the Quick Info ⓘ icon to the left of each row in T learn about sampling error.

In Vintage 2022, as a result of the formal request from the state, Connecticut transitioned from eight counties to nine planning regions. For more details, please see the Vintage 2022 release notes available here: Release Notes.

The vintage year (e.g., V2022) refers to the final year of the series (2020 thru 2022). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2017-2021 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2021 5-year ACS Comparison Guidance page.

Fact Notes

- **(a)** Includes persons reporting only one race
- **(b)** Hispanics may be of any race, so also are included in applicable race categories
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- **D** Suppressed to avoid disclosure of confidential information
- **F** Fewer than 25 firms
- **FN** Footnote on this item in place of data
- **NA** Not available
- **S** Suppressed; does not meet publication standards
- **X** Not applicable
- **Z** Value greater than zero but less than half unit of measure shown
- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ende
- **N** Data for this geographic area cannot be displayed because the number of sample cases is too small.

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, Sta Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

CONNECT WITH US

Information Quality | Data Linkage Infrastructure | Data Protection and Privacy Policy | Accessibility | FOIA | Inspector General | No FEAR Act | U.S. Department of Commerce | USA.gov

Measuring America's People, Places, and Economy

Is this page helpful?

Yes No

Client:	Matt Baldino, PE
Project #:	1220_1_Solli
BTD #:	Location 1
Location:	Bristol, RI
Street 1:	Metacom Avenue (Route 136)
Street 2:	Gooding Avenue/Narrows Road
Count Date:	4/5/2023
Day of Week:	Wednesday
Weather:	Cloudy, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	23	163	0	0	7	132	21	0	25	2	11	0	6	8	18
7:15 AM	0	22	150	2	0	4	146	21	0	19	2	18	0	15	8	14
7:30 AM	0	26	153	4	0	9	172	37	0	23	6	25	0	5	7	18
7:45 AM	0	35	166	4	0	10	171	35	0	25	3	33	0	7	5	25
8:00 AM	0	40	145	4	0	5	133	25	0	31	1	18	0	8	7	14
8:15 AM	0	35	136	4	0	8	138	24	0	22	4	29	0	15	9	8
8:30 AM	0	26	123	5	0	4	159	29	0	26	5	20	0	7	8	14
8:45 AM	0	39	153	3	0	6	146	30	0	36	7	34	0	9	13	17

	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	29	202	5	0	21	181	34	0	35	10	42	0	12	11	19
4:15 PM	0	38	190	4	0	17	203	56	0	43	19	34	0	6	7	18
4:30 PM	0	47	155	12	0	25	176	43	0	34	25	37	0	11	7	18
4:45 PM	0	34	177	8	0	18	194	51	0	36	16	29	0	10	11	15
5:00 PM	0	44	180	12	0	23	202	46	0	37	13	46	0	10	12	12
5:15 PM	0	33	145	9	0	17	172	27	0	32	16	46	0	6	9	13
5:30 PM	0	38	152	10	0	15	168	40	0	29	6	48	0	6	14	11
5:45 PM	0	31	140	6	0	9	164	26	0	33	10	42	0	7	14	9

AM PEAK HOUR 7:30 AM to 8:30 AM	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**136**	**600**	**16**	**0**	**32**	**614**	**121**	**0**	**101**	**14**	**105**	**0**	**35**	**28**	**65**
PHF	**0.92**				**0.88**				**0.90**				**0.86**			
HV %	**0.0%**	**3.7%**	**4.5%**	**6.3%**	**0.0%**	**6.3%**	**5.0%**	**2.5%**	**0.0%**	**4.0%**	**0.0%**	**7.6%**	**0.0%**	**0.0%**	**3.6%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**163**	**702**	**36**	**0**	**83**	**775**	**196**	**0**	**150**	**73**	**146**	**0**	**37**	**37**	**63**
PHF	**0.95**				**0.95**				**0.96**				**0.95**			
HV %	**0.0%**	**0.6%**	**2.3%**	**0.0%**	**0.0%**	**0.0%**	**0.8%**	**1.5%**	**0.0%**	**2.0%**	**0.0%**	**0.7%**	**0.0%**	**2.7%**	**0.0%**	**1.6%**

Client:	Matt Baldino, PE
Project #:	1220_1_Solli
BTD #:	Location 1
Location:	Bristol, RI
Street 1:	Metacom Avenue (Route 136)
Street 2:	Gooding Avenue/Narrows Road
Count Date:	4/5/2023
Day of Week:	Wednesday
Weather:	Cloudy, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	2	7	0	0	1	6	0	0	0	0	1	0	0	0	2
7:15 AM	0	1	5	0	0	0	6	0	0	2	0	2	0	0	0	0
7:30 AM	0	0	6	0	0	1	7	2	0	0	0	4	0	0	0	0
7:45 AM	0	2	12	1	0	0	8	1	0	0	0	0	0	0	1	0
8:00 AM	0	2	6	0	0	0	11	0	0	1	0	1	0	0	0	0
8:15 AM	0	1	3	0	0	1	5	0	0	3	0	3	0	0	0	0
8:30 AM	0	0	2	1	0	1	2	0	0	2	0	2	0	0	1	0
8:45 AM	0	2	5	0	0	0	4	2	0	2	0	2	0	0	0	0

	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	1	3	0	0	0	1	0	0	1	1	0	0	0	0	2
4:15 PM	0	0	7	0	0	0	2	1	0	2	0	1	0	0	0	1
4:30 PM	0	0	4	0	0	0	1	1	0	0	0	0	0	1	0	0
4:45 PM	0	0	4	0	0	0	2	1	0	1	0	0	0	0	0	0
5:00 PM	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**5**	**29**	**1**	**0**	**1**	**32**	**3**	**0**	**3**	**0**	**7**	**0**	**0**	**1**	**0**
PHF	**0.58**				**0.82**				**0.63**				**0.25**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**1**	**18**	**0**	**0**	**0**	**6**	**3**	**0**	**4**	**1**	**1**	**0**	**1**	**0**	**3**
PHF	**0.68**				**0.75**				**0.50**				**0.50**			

Client:	Matt Baldino, PE
Project #:	1220_1_Solli
BTD #:	Location 1
Location:	Bristol, RI
Street 1:	Metacom Avenue (Route 136)
Street 2:	Gooding Avenue/Narrows Road
Count Date:	4/5/2023
Day of Week:	Wednesday
Weather:	Cloudy, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PEDESTRIANS & BICYCLES

	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
8:45 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0

	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1] 7:30 AM to 8:30 AM	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1

PM PEAK HOUR[1] 4:15 PM to 5:15 PM	Metacom Avenue (Route 136) Northbound				Metacom Avenue (Route 136) Southbound				Gooding Avenue Eastbound				Narrows Road Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Volume Report

Job 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Tuesday, April 4, 2023

Time	Total		EB		WB		Time	Total		EB		WB	
0000	9		5		4		1200	218		110		108	
0015	7		4		3		1215	192		81		111	
0030	6		3		3		1230	199		89		110	
0045	3	25	2	14	1	11	1245	180	789	92	372	88	417
0100	1		0		1		1300	198		106		92	
0115	3		2		1		1315	157		77		80	
0130	6		3		3		1330	161		73		88	
0145	3	13	1	6	2	7	1345	165	681	84	340	81	341
0200	1		1		0		1400	154		80		74	
0215	2		1		1		1415	166		94		72	
0230	2		0		2		1430	190		86		104	
0245	2	7	2	4	0	3	1445	233	743	132	392	101	351
0300	3		2		1		1500	207		103		104	
0315	0		0		0		1515	194		110		84	
0330	0		0		0		1530	190		103		87	
0345	1	4	0	2	1	2	1545	200	791	111	427	89	364
0400	4		1		3		1600	247		123		124	
0415	6		3		3		1615	219		106		113	
0430	6		2		4		1630	235		123		112	
0445	12	28	6	12	6	16	1645	204	905	102	454	102	451
0500	11		5		6		1700	220		105		115	
0515	12		7		5		1715	188		106		82	
0530	15		6		9		1730	240		116		124	
0545	14	52	8	26	6	26	1745	208	856	96	423	112	433
0600	19		11		8		1800	204		112		92	
0615	40		15		25		1815	169		86		83	
0630	55		21		34		1830	140		80		60	
0645	73	187	31	78	42	109	1845	140	653	64	342	76	311
0700	87		43		44		1900	121		69		52	
0715	85		33		52		1915	98		50		48	
0730	122		53		69		1930	125		77		48	
0745	136	430	56	185	80	245	1945	96	440	49	245	47	195
0800	130		59		71		2000	80		39		41	
0815	120		55		65		2015	67		33		34	
0830	132		52		80		2030	53		31		22	
0845	133	515	69	235	64	280	2045	38	238	20	123	18	115
0900	139		64		75		2100	43		23		20	
0915	137		64		73		2115	41		19		22	
0930	152		70		82		2130	35		17		18	
0945	134	562	67	265	67	297	2145	33	152	18	77	15	75
1000	143		65		78		2200	19		9		10	
1015	148		71		77		2215	10		5		5	
1030	166		83		83		2230	6		4		2	
1045	195	652	104	323	91	329	2245	6	41	5	23	1	18
1100	152		77		75		2300	8		6		2	
1115	181		93		88		2315	12		5		7	
1130	171		93		78		2330	7		5		2	
1145	173	677	75	338	98	339	2345	8	35	4	20	4	15
							Total	**9476**		**4726**		**4750**	

Volume Report

Job 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Wednesday, April 5, 2023

Time	Total		EB		WB		Time	Total		EB		WB	
0000	6		4		2		1200	185		106		79	
0015	6		5		1		1215	201		90		111	
0030	6		3		3		1230	163		78		85	
0045	6	24	3	15	3	9	1245	166	715	86	360	80	355
0100	1		1		0		1300	172		82		90	
0115	6		4		2		1315	149		73		76	
0130	0		0		0		1330	145		77		68	
0145	1	8	0	5	1	3	1345	187	653	99	331	88	322
0200	1		1		0		1400	181		93		88	
0215	2		2		0		1415	168		90		78	
0230	1		1		0		1430	180		76		104	
0245	0	4	0	4	0	0	1445	203	732	113	372	90	360
0300	0		0		0		1500	199		99		100	
0315	1		1		0		1515	202		103		99	
0330	1		1		0		1530	217		120		97	
0345	4	6	1	3	3	3	1545	205	823	107	429	98	394
0400	2		1		1		1600	207		108		99	
0415	5		2		3		1615	223		112		111	
0430	5		1		4		1630	220		109		111	
0445	9	21	6	10	3	11	1645	211	861	86	415	125	446
0500	10		5		5		1700	248		125		123	
0515	8		5		3		1715	184		96		88	
0530	12		8		4		1730	180		87		93	
0545	20	50	9	27	11	23	1745	171	783	88	396	83	387
0600	10		5		5		1800	154		68		86	
0615	38		15		23		1815	157		74		83	
0630	49		22		27		1830	142		81		61	
0645	78	175	32	74	46	101	1845	136	589	72	295	64	294
0700	88		35		53		1900	122		57		65	
0715	94		39		55		1915	90		55		35	
0730	144		70		74		1930	78		42		36	
0745	138	464	62	206	76	258	1945	67	357	35	189	32	168
0800	135		55		80		2000	54		34		20	
0815	139		66		73		2015	43		24		19	
0830	130		60		70		2030	61		33		28	
0845	156	560	74	255	82	305	2045	48	206	29	120	19	86
0900	135		76		59		2100	34		16		18	
0915	118		60		58		2115	39		23		16	
0930	126		63		63		2130	29		12		17	
0945	177	556	87	286	90	270	2145	32	134	20	71	12	63
1000	172		96		76		2200	18		13		5	
1015	143		71		72		2215	14		9		5	
1030	153		75		78		2230	8		6		2	
1045	158	626	67	309	91	317	2245	11	51	8	36	3	15
1100	156		78		78		2300	7		3		4	
1115	151		75		76		2315	12		9		3	
1130	183		90		93		2330	9		3		6	
1145	146	636	72	315	74	321	2345	9	37	4	19	5	18
							Total	**9071**		**4542**		**4529**	

Classification Report

Job # 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Direction Eastbound
Tuesday, April 4, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	14	0	13	1	0	0	0	0	0	0	0	0	0	0
0100	6	0	5	1	0	0	0	0	0	0	0	0	0	0
0200	4	0	3	0	0	0	0	0	0	1	0	0	0	0
0300	2	0	1	1	0	0	0	0	0	0	0	0	0	0
0400	12	0	8	4	0	0	0	0	0	0	0	0	0	0
0500	26	0	17	6	2	1	0	0	0	0	0	0	0	0
0600	78	0	54	16	3	3	2	0	0	0	0	0	0	0
0700	185	0	141	36	3	2	1	0	0	2	0	0	0	0
0800	235	0	177	45	5	6	1	0	0	1	0	0	0	0
0900	265	2	202	53	5	2	0	0	0	1	0	0	0	0
1000	323	0	254	57	3	7	1	0	0	1	0	0	0	0
1100	338	2	283	50	2	0	0	0	0	1	0	0	0	0
1200	372	2	302	59	2	5	0	0	0	2	0	0	0	0
1300	340	1	274	60	0	4	0	0	0	1	0	0	0	0
1400	392	4	313	65	3	6	0	0	0	1	0	0	0	0
1500	427	4	351	63	3	4	1	0	0	1	0	0	0	0
1600	454	1	375	72	4	2	0	0	0	0	0	0	0	0
1700	423	4	374	41	1	2	1	0	0	0	0	0	0	0
1800	342	4	294	39	1	4	0	0	0	0	0	0	0	0
1900	245	0	214	30	0	1	0	0	0	0	0	0	0	0
2000	123	0	108	13	0	2	0	0	0	0	0	0	0	0
2100	77	0	72	4	0	1	0	0	0	0	0	0	0	0
2200	23	0	21	2	0	0	0	0	0	0	0	0	0	0
2300	20	0	17	3	0	0	0	0	0	0	0	0	0	0
Total	**4726**	**24**	**3873**	**721**	**37**	**52**	**7**	**0**	**0**	**12**	**0**	**0**	**0**	**0**
	100.00%	**0.51%**	**81.95%**	**15.26%**	**0.78%**	**1.10%**	**0.15%**	**0.00%**	**0.00%**	**0.25%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Classification Report

Job # 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Direction Eastbound
Wednesday, April 5, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	15	0	12	2	0	1	0	0	0	0	0	0	0	0
0100	5	0	4	1	0	0	0	0	0	0	0	0	0	0
0200	4	0	3	0	0	1	0	0	0	0	0	0	0	0
0300	3	0	3	0	0	0	0	0	0	0	0	0	0	0
0400	10	0	7	2	1	0	0	0	0	0	0	0	0	0
0500	27	0	20	6	0	1	0	0	0	0	0	0	0	0
0600	74	0	53	13	4	3	1	0	0	0	0	0	0	0
0700	206	0	155	43	1	7	0	0	0	0	0	0	0	0
0800	255	0	204	35	5	8	2	0	0	1	0	0	0	0
0900	286	0	223	51	3	5	1	0	1	2	0	0	0	0
1000	309	2	249	47	2	6	2	0	0	1	0	0	0	0
1100	315	1	248	59	5	2	0	0	0	0	0	0	0	0
1200	360	1	294	57	1	6	1	0	0	0	0	0	0	0
1300	331	0	275	47	3	6	0	0	0	0	0	0	0	0
1400	372	0	328	39	1	4	0	0	0	0	0	0	0	0
1500	429	0	349	69	5	6	0	0	0	0	0	0	0	0
1600	415	0	344	58	3	9	0	0	0	1	0	0	0	0
1700	396	0	337	52	1	6	0	0	0	0	0	0	0	0
1800	295	0	263	28	2	2	0	0	0	0	0	0	0	0
1900	189	0	162	25	0	2	0	0	0	0	0	0	0	0
2000	120	0	102	18	0	0	0	0	0	0	0	0	0	0
2100	71	0	64	6	0	1	0	0	0	0	0	0	0	0
2200	36	1	26	9	0	0	0	0	0	0	0	0	0	0
2300	19	0	16	3	0	0	0	0	0	0	0	0	0	0
Total	**4542**	**5**	**3741**	**670**	**37**	**76**	**7**	**0**	**1**	**5**	**0**	**0**	**0**	**0**
	100.00%	**0.11%**	**82.36%**	**14.75%**	**0.81%**	**1.67%**	**0.15%**	**0.00%**	**0.02%**	**0.11%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Classification Report

Job # 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Direction Westbound
Tuesday, April 4, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	11	0	10	1	0	0	0	0	0	0	0	0	0	0
0100	7	0	6	0	0	0	0	0	0	1	0	0	0	0
0200	3	0	2	1	0	0	0	0	0	0	0	0	0	0
0300	2	0	2	0	0	0	0	0	0	0	0	0	0	0
0400	16	0	16	0	0	0	0	0	0	0	0	0	0	0
0500	26	1	24	0	0	0	0	0	0	1	0	0	0	0
0600	109	2	96	9	0	0	2	0	0	0	0	0	0	0
0700	245	0	223	16	2	1	1	0	0	2	0	0	0	0
0800	280	1	259	16	2	2	0	0	0	0	0	0	0	0
0900	297	1	277	17	1	0	1	0	0	0	0	0	0	0
1000	329	2	299	24	0	4	0	0	0	0	0	0	0	0
1100	339	1	318	17	1	0	1	0	0	1	0	0	0	0
1200	417	2	396	15	0	2	0	0	0	2	0	0	0	0
1300	341	3	323	10	3	1	1	0	0	0	0	0	0	0
1400	351	2	331	13	1	0	1	0	0	3	0	0	0	0
1500	364	4	343	14	3	0	0	0	0	0	0	0	0	0
1600	451	2	416	31	0	1	1	0	0	0	0	0	0	0
1700	433	7	411	15	0	0	0	0	0	0	0	0	0	0
1800	311	3	296	12	0	0	0	0	0	0	0	0	0	0
1900	195	0	187	8	0	0	0	0	0	0	0	0	0	0
2000	115	0	110	5	0	0	0	0	0	0	0	0	0	0
2100	75	0	74	1	0	0	0	0	0	0	0	0	0	0
2200	18	0	18	0	0	0	0	0	0	0	0	0	0	0
2300	15	0	14	1	0	0	0	0	0	0	0	0	0	0
Total	**4750**	**31**	**4451**	**226**	**13**	**11**	**8**	**0**	**0**	**10**	**0**	**0**	**0**	**0**
	100.00%	**0.65%**	**93.71%**	**4.76%**	**0.27%**	**0.23%**	**0.17%**	**0.00%**	**0.00%**	**0.21%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Classification Report

Job # 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Direction Westbound
Wednesday, April 5, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	9	0	9	0	0	0	0	0	0	0	0	0	0	0
0100	3	1	2	0	0	0	0	0	0	0	0	0	0	0
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0300	3	0	3	0	0	0	0	0	0	0	0	0	0	0
0400	11	0	11	0	0	0	0	0	0	0	0	0	0	0
0500	23	0	20	2	0	0	1	0	0	0	0	0	0	0
0600	101	1	89	9	1	0	1	0	0	0	0	0	0	0
0700	258	0	232	22	1	1	1	0	0	1	0	0	0	0
0800	305	0	275	22	3	1	3	0	0	1	0	0	0	0
0900	270	1	255	12	0	2	0	0	0	0	0	0	0	0
1000	317	1	301	14	0	0	0	0	0	1	0	0	0	0
1100	321	0	294	18	3	5	1	0	0	0	0	0	0	0
1200	355	0	328	23	3	1	0	0	0	0	0	0	0	0
1300	322	0	308	14	0	0	0	0	0	0	0	0	0	0
1400	360	0	348	8	1	2	0	1	0	0	0	0	0	0
1500	394	0	372	19	2	0	0	0	0	1	0	0	0	0
1600	446	0	429	15	1	0	0	0	0	1	0	0	0	0
1700	387	0	370	16	0	1	0	0	0	0	0	0	0	0
1800	294	0	282	10	1	1	0	0	0	0	0	0	0	0
1900	168	0	164	4	0	0	0	0	0	0	0	0	0	0
2000	86	0	84	2	0	0	0	0	0	0	0	0	0	0
2100	63	0	61	2	0	0	0	0	0	0	0	0	0	0
2200	15	0	14	1	0	0	0	0	0	0	0	0	0	0
2300	18	0	18	0	0	0	0	0	0	0	0	0	0	0
Total	**4529**	**4**	**4269**	**213**	**16**	**14**	**7**	**1**	**0**	**5**	**0**	**0**	**0**	**0**
	100.00%	**0.09%**	**94.26%**	**4.70%**	**0.35%**	**0.31%**	**0.15%**	**0.02%**	**0.00%**	**0.11%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Speed Report

Job 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Dir Eastbound
Tuesday, April 4, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	14	0	0	0	0	0	1	5	6	2	0	0	0	0	0	0	0
0100	6	0	0	0	0	0	0	2	2	1	1	0	0	0	0	0	0
0200	4	0	0	0	0	0	0	2	0	1	1	0	0	0	0	0	0
0300	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
0400	12	0	0	0	0	0	1	3	3	3	2	0	0	0	0	0	0
0500	26	0	0	0	0	0	1	3	9	10	1	2	0	0	0	0	0
0600	78	0	0	0	0	0	3	15	27	23	9	1	0	0	0	0	0
0700	185	0	0	0	0	0	3	41	68	57	16	0	0	0	0	0	0
0800	235	0	0	0	0	1	3	42	107	75	7	0	0	0	0	0	0
0900	265	0	0	0	1	2	8	55	116	67	14	2	0	0	0	0	0
1000	323	0	0	0	1	3	20	69	140	78	10	2	0	0	0	0	0
1100	338	0	0	0	0	0	15	92	139	77	13	2	0	0	0	0	0
1200	372	0	0	0	0	1	6	87	184	84	7	3	0	0	0	0	0
1300	340	0	0	0	0	2	14	79	147	81	14	3	0	0	0	0	0
1400	392	0	0	0	0	0	25	107	148	97	13	2	0	0	0	0	0
1500	427	0	0	0	0	0	24	118	182	93	7	3	0	0	0	0	0
1600	454	0	0	0	0	0	16	124	206	91	16	1	0	0	0	0	0
1700	423	0	0	0	0	0	4	75	227	101	14	1	0	0	0	0	0
1800	342	0	0	0	0	3	10	94	149	69	16	1	0	0	0	0	0
1900	245	0	0	0	0	0	13	63	109	50	10	0	0	0	0	0	0
2000	123	0	0	0	0	0	6	31	53	24	7	2	0	0	0	0	0
2100	77	0	0	0	0	0	3	19	35	15	4	1	0	0	0	0	0
2200	23	0	0	0	0	0	3	2	7	9	2	0	0	0	0	0	0
2300	20	0	0	0	0	0	0	2	13	4	1	0	0	0	0	0	0
Total	**4726**	**0**	**0**	**0**	**2**	**12**	**179**	**1130**	**2078**	**1113**	**185**	**26**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.00%**	**0.00%**	**0.04%**	**0.25%**	**3.79%**	**23.91%**	**43.97%**	**23.55%**	**3.91%**	**0.55%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 53.7 mph, Minimum = 16.1 mph, Mean = 37.7 mph
85% Speed = 42.39 mph, 95% Speed = 45.52 mph, Median = 37.52 mph
10 mph Pace = 32 - 42, Number in Pace = 3484 (73.91%)
Variance = 22.65, Standard Deviation = 4.76 mph

Speed Report

Job 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Dir Eastbound
Wednesday, April 5, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	15	0	0	0	0	0	1	3	6	3	2	0	0	0	0	0	0
0100	5	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0
0200	4	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0
0300	3	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0
0400	10	0	0	0	0	0	2	2	1	3	1	1	0	0	0	0	0
0500	27	0	0	0	0	0	1	7	8	10	1	0	0	0	0	0	0
0600	74	0	0	0	0	0	5	11	25	19	10	4	0	0	0	0	0
0700	206	0	0	0	0	0	9	46	98	44	9	0	0	0	0	0	0
0800	255	0	0	0	2	2	14	66	104	56	11	0	0	0	0	0	0
0900	286	0	0	0	0	0	15	76	141	43	10	1	0	0	0	0	0
1000	309	0	1	1	0	0	17	79	145	53	12	1	0	0	0	0	0
1100	315	0	0	0	0	3	19	75	129	77	10	2	0	0	0	0	0
1200	360	0	0	0	0	0	17	95	168	65	13	2	0	0	0	0	0
1300	331	0	0	0	0	0	10	84	156	73	6	2	0	0	0	0	0
1400	372	0	0	0	0	1	17	106	159	74	11	4	0	0	0	0	0
1500	429	0	0	0	0	7	29	151	164	66	9	3	0	0	0	0	0
1600	415	0	0	0	0	3	21	132	181	63	13	2	0	0	0	0	0
1700	396	0	0	0	0	4	17	105	174	78	15	3	0	0	0	0	0
1800	295	0	0	0	0	1	7	91	123	60	12	1	0	0	0	0	0
1900	189	0	0	0	0	0	5	37	92	43	10	2	0	0	0	0	0
2000	120	0	0	0	0	0	7	32	43	29	7	2	0	0	0	0	0
2100	71	0	0	0	0	0	2	11	30	21	7	0	0	0	0	0	0
2200	36	0	0	1	0	0	3	6	11	9	5	1	0	0	0	0	0
2300	19	0	0	0	0	0	0	4	8	6	1	0	0	0	0	0	0
Total	**4542**	**0**	**1**	**2**	**2**	**21**	**218**	**1221**	**1968**	**901**	**176**	**32**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.02%**	**0.04%**	**0.04%**	**0.46%**	**4.80%**	**26.88%**	**43.33%**	**19.84%**	**3.87%**	**0.70%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 53.6 mph, Minimum = 9.2 mph, Mean = 37.3 mph
85% Speed = 41.94 mph, 95% Speed = 45.63 mph, Median = 37.02 mph
10 mph Pace = 32 - 42, Number in Pace = 3359 (73.95%)
Variance = 23.63, Standard Deviation = 4.86 mph

Speed Report

Job 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Dir Westbound
Tuesday, April 4, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	11	0	0	0	0	0	1	6	4	0	0	0	0	0	0	0	0
0100	7	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
0200	3	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0
0300	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
0400	16	0	0	0	0	1	6	7	2	0	0	0	0	0	0	0	0
0500	26	0	0	0	0	0	7	11	6	2	0	0	0	0	0	0	0
0600	109	0	0	0	0	1	12	57	33	6	0	0	0	0	0	0	0
0700	245	0	0	0	0	3	36	134	65	7	0	0	0	0	0	0	0
0800	280	0	0	0	1	1	55	142	75	5	1	0	0	0	0	0	0
0900	297	0	0	1	7	3	65	160	50	10	1	0	0	0	0	0	0
1000	329	0	0	1	0	11	76	174	66	1	0	0	0	0	0	0	0
1100	339	0	0	0	1	3	77	183	68	7	0	0	0	0	0	0	0
1200	417	0	0	0	0	14	85	239	72	6	1	0	0	0	0	0	0
1300	341	0	0	0	1	2	74	201	54	8	1	0	0	0	0	0	0
1400	351	0	0	0	0	6	69	200	70	6	0	0	0	0	0	0	0
1500	364	0	0	0	0	3	89	202	63	6	1	0	0	0	0	0	0
1600	451	0	0	1	1	11	108	252	70	7	1	0	0	0	0	0	0
1700	433	0	0	0	0	4	66	268	85	9	0	0	0	0	0	0	0
1800	311	0	0	1	4	7	61	156	79	3	0	0	0	0	0	0	0
1900	195	0	0	0	0	0	49	104	37	4	1	0	0	0	0	0	0
2000	115	0	0	0	0	1	25	59	24	6	0	0	0	0	0	0	0
2100	75	0	0	1	0	1	16	36	16	5	0	0	0	0	0	0	0
2200	18	0	0	0	0	0	8	6	4	0	0	0	0	0	0	0	0
2300	15	0	0	0	1	1	3	5	5	0	0	0	0	0	0	0	0
Total	**4750**	**0**	**0**	**5**	**16**	**73**	**989**	**2613**	**948**	**98**	**7**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.00%**	**0.11%**	**0.34%**	**1.54%**	**20.82%**	**55.01%**	**19.96%**	**2.06%**	**0.15%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 48.7 mph, Minimum = 10.9 mph, Mean = 32.5 mph
85% Speed = 35.96 mph, 95% Speed = 38.42 mph, Median = 32.38 mph
10 mph Pace = 28 - 38, Number in Pace = 4033 (85.08%)
Variance = 14.32, Standard Deviation = 3.78 mph

Speed Report

Job 1220_1_Solli_ATR
Area Bristol, RI
Location Gooding Avenue, west of Metacom Ave
Dir Westbound
Wednesday, April 5, 2023

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	9	0	0	0	0	0	2	3	4	0	0	0	0	0	0	0	0
0100	3	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0300	3	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
0400	11	0	0	0	0	1	2	7	1	0	0	0	0	0	0	0	0
0500	23	0	0	0	0	0	8	10	4	1	0	0	0	0	0	0	0
0600	101	0	0	0	0	1	8	52	34	5	1	0	0	0	0	0	0
0700	258	0	0	0	0	3	42	143	59	10	1	0	0	0	0	0	0
0800	305	0	0	0	0	4	57	178	62	3	1	0	0	0	0	0	0
0900	270	0	0	0	0	5	86	132	43	4	0	0	0	0	0	0	0
1000	317	0	1	0	0	5	96	157	55	3	0	0	0	0	0	0	0
1100	321	0	0	0	0	10	101	168	39	3	0	0	0	0	0	0	0
1200	355	0	0	0	0	6	122	186	39	2	0	0	0	0	0	0	0
1300	322	0	0	0	0	10	69	168	71	4	0	0	0	0	0	0	0
1400	360	0	0	0	0	9	97	203	45	5	1	0	0	0	0	0	0
1500	394	0	0	0	0	5	111	220	53	5	0	0	0	0	0	0	0
1600	446	0	0	0	0	11	111	230	87	7	0	0	0	0	0	0	0
1700	387	0	0	0	0	3	61	225	85	11	2	0	0	0	0	0	0
1800	294	0	0	0	0	2	36	172	80	4	0	0	0	0	0	0	0
1900	168	0	0	0	0	1	26	98	37	6	0	0	0	0	0	0	0
2000	86	0	0	0	0	5	15	39	22	5	0	0	0	0	0	0	0
2100	63	0	0	0	0	0	14	30	15	3	1	0	0	0	0	0	0
2200	15	0	0	0	0	0	3	8	4	0	0	0	0	0	0	0	0
2300	18	0	0	0	0	1	2	9	5	1	0	0	0	0	0	0	0
Total	**4529**	**0**	**2**	**0**	**0**	**82**	**1070**	**2441**	**845**	**82**	**7**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.00%**	**0.04%**	**0.00%**	**0.00%**	**1.81%**	**23.63%**	**53.90%**	**18.66%**	**1.81%**	**0.15%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 47.8 mph, Minimum = 9.3 mph, Mean = 32.3 mph
85% Speed = 35.82 mph, 95% Speed = 38.20 mph, Median = 32.21 mph
10 mph Pace = 27 - 37, Number in Pace = 3855 (85.12%)
Variance = 12.88, Standard Deviation = 3.59 mph

PREPARED FOR: LAFRANCE HOSPITALITY

GEOTECHNICAL DESIGN BASIS REPORT

PROPOSED HOTEL
GOODING AVENUE PLAT 111 LOT 1
BRISTOL, RHODE ISLAND

PREPARED BY:

PARE CORPORATION
10 LINCOLN ROAD, SUITE 103
FOXBORO, MASSACHUSETTS 02035

PARE PROJECT NUMBER 15088.00

SUBMITTED AUGUST 2015

PARE
CORPORATION

GEOTECHNICAL DESIGN BASIS REPORT

TABLE OF CONTENTS

SECTION PAGE

1.0 BACKGROUND/SITE LOCATION 1
- 1.1 Purpose and Scope 1
- 1.2 Background 1
- 1.3 Surface Conditions 1
- 1.4 USGS Surficial/Bedrock Geology 1
- 1.5 Previous Site Development 2
- 1.6 Previous Site Investigations 2
- 1.7 Proposed Grading 2

2.0 SUBSURFACE EXPLORATIONS 3
- 2.1 Sampling Methodology 3
- 2.2 Field Measurement and Methodology 3
- 2.3 Locations 3

3.0 SUBSURFACE CONDITIONS 4
- 3.1 Soil Strata 4
- 3.2 Groundwater 5

4.0 LABORATORY TESTING 7
- 4.1 Procedures 7
- 4.2 Grain Size Analysis 7

5.0 IMPLICATIONS OF SUBSURFACE CONDITIONS 8
- 5.1 General 8
- 5.2 Seismic Design Category and Liquefaction Evaluations 8

6.0 CONCLUSIONS AND RECOMMENDATIONS 10
- 6.1 Foundations and Slabs 10
  - 6.1.1 Shallow Foundations 10
- 6.2 Ground Modifications 11
- 6.3 Lateral Earth Pressures and Retaining Wall Design 11
- 6.4 Frost Depth Recommendations 12
- 6.5 Drainage 13
- 6.6 Underground Utilities 13
- 6.7 Construction Materials 13
- 6.8 Flexible and Rigid Pavement Recommendations 13
- 6.9 Reuse of On-Site Soils 15
- 6.10 Soils Prone to Disturbance from Rain and Frost 15

6.11 Compaction 16
7.0 CONSTRUCTION CONSIDERATIONS 18
7.1 Excavation 18
7.2 Backfilling 18
7.3 Utility Installation 19
7.4 Dewatering 19
7.5 Lateral Support 19
7.6 Construction Monitoring 20

REFERENCES

TABLES *(Included in the Report)*
Table 3-1: Subsurface Exploration Summary
Table 3-2: Well Readings
Table 4-1: Results of Grain Size Analyses
Table 6-1: Recommended Earth Pressure and Friction Coefficients
Table 6-2: Recommended Standard and Heavy Duty Flexible Pavement Layer Thickness
Table 6-3: Recommended Minimum Compaction Requirements

FIGURES
Figure 6-1: Typical Profile Below Footings *(Included in the Report)*
Figure 1: Locus Plan
Figure 2: Aerial Plan
Figure 3: Boring Location Plan

APPENDICES
Appendix A: Boring Logs
Appendix B: Laboratory Testing Data
Appendix C: Geotechnical Limitations
Appendix D: General Investigation Notes

1.0 BACKGROUND/SITE LOCATION

This Geotechnical Design Basis Report presents the results of the geotechnical investigations and evaluations performed by Pare Corporation (PARE) at the site of the proposed LaFrance Hospitality Hotel in Bristol, Rhode Island. The project site is depicted on Figure 1: Locus Plan. This report has been prepared in general accordance with our proposal and is subject to the Geotechnical Limitations presented in Appendix C.

1.1 Purpose and Scope

The purpose of this study was to identify the existing subsurface conditions within the area of the proposed work; evaluate potential implications the observed conditions may have upon the proposed structure; and provide geotechnical parameters and recommendations for use during the design of the foundations, buildings, and other site improvements associated with the proposed project. The scope of work was performed in general accordance with PARE's proposal.

Please note that this scope of work does not include an assessment for the presence of oil or hazardous materials at the site. This scope of work does not include the characterization of the excavated soil or groundwater that may be generated as a result of the planned construction or site work.

1.2 Background

PARE understands that the proposed project consists of the construction of a new three story hotel with associated parking and site improvements. The building is proposed to be situated at the northern end of the site along Gooding Avenue in Bristol, RI on an undeveloped, wooded site that abuts a wetlands. The scope of services has been developed based upon the understanding that the layout as shown on the Grading and Utility Plan prepared by SITEC, dated February 11, 2015 is the preferred approach for the site development.

1.3 Surface Conditions

Within the proposed building footprint, existing grades are generally gentle-sloping (3-5%) and wooded with hard wood trees and low lying brush. The land is undeveloped and generally slopes from the west to the east. Residential developments are present to the west of the site, and Gooding Avenue runs along the north side of the site. Commercial developments are present on the opposite side of Gooding Avenue. An underground sewer pipe and an abandoned-in-place Verizon conduit are understood to exist near the east side of the property. No bedrock outcrops were observed during the site operations. Wetlands are present to the east and southeast of the site.

1.4 USGS Surficial/Bedrock Geology

The 1955 United States Geological Survey (USGS) surficial geology map of the area indicates that the site is underlain by ground moraine. The deposit is described as "unstratified and poorly

sorted sand, gravel, boulders and a minor amount of clay deposited by the glacial ice. Locally contains small lenses or masses of stratified sand and gravel."[1]

The 1954 USGS bedrock map of this area indicates that the surficial deposits are underlain by the Rhode Island formation. In this area, the Rhode Island formation is described as "fine grained, greenish-grey phyllite; has well-developed schistosity, but the bedding is obscure or invisible; consists chiefly of quartz, muscovite, and chlorite, with minor amounts of magnetite as octahedral crystals, rutile needles, and tourmaline."[2]

1.5 Previous Site Development

Available historical aerial imagery of the site was reviewed. A historical image dated 1938 shows a plowed field at the proposed site. Imagery from 1963 to present day shows that the field has become overgrown with vegetation.

1.6 Previous Site Investigations

The proposed site plan made available to PARE at the time of this report writing indicated test pits were performed by others across the site. The details of these test pits were not made available to PARE.

1.7 Proposed Grading

The proposed grades that were available for review at the time of writing this report appear to indicate that the grading will generally slope away from the proposed structure to the northwest and to the south. Proposed grades generally appear to be raised by approximately 10 feet at the eastern portion of the site, and approximately 1 foot at the western portion of the site. Raising the grade across the site will require the placement of fill to achieve final grade.

[1] USGS, *"Geologic Map of the Bristol Quadrangle and Vicinity, Rhode Island-Massachusetts Surficial Geology"* Compiled by Smith, J. Harim, 1955.

[2] USGS. *"Geologic Map of the Bristol Quadrangle and Vicinity, Rhode Island-Massachusetts Bedrock Geology"*. By Quinn, Alonzo W., Springer, George H. 1954.

2.0 SUBSURFACE EXPLORATIONS

A subsurface exploration program consisting of 5 soil borings was performed to determine the subsurface conditions at the site in order to provide geotechnical guidelines for the design of foundations for the proposed structure and other site features. Logs of the soil borings were completed and are included in Appendix A. Their locations are shown on Figure 3: Boring Location Plan.

The soil borings were performed by New England Boring Contractors of Brockton, Massachusetts and observed by PARE personnel on July 13, 2015 through July 18, 2015. Soil borings were performed using a track-mounted drill-rig; utilizing 4-inch casing with wash and drive techniques, as noted on the boring logs. PARE personnel provided coordination and field observation of the soil borings performed. Field personnel observed the drilling conditions, visually identified the recovered soil samples during the advancement of the explorations, and took groundwater measurements.

2.1 Sampling Methodology

The sampling methodology for the soil borings consisted of obtaining disturbed samples of the deposits continuously to a depth of approximately 10 feet, and at 5 foot intervals thereafter. The samples were obtained by advancing a 2-inch diameter, thick-walled split-spoon sampler during the performance of the Standard Penetration Test (SPT) in general accordance with ASTM D-1586. The SPT is used to obtain an indication of the characteristics, relative density, and consistency of the underlying soils. The test consists of driving a 1 3/8-inch inside diameter standard split spoon sampler 24 inches with a 140-pound hammer dropping from a height of 30 inches. The SPT value used in analysis is the number of blows (N) required to drive the sampler from 6 to 18 inches of penetration.

During the explorations, subsurface soils were visually classified utilizing the Burmister Classification System. This system describes soil composition based upon the percentage of soil particle size present by weight in the sample with the major soil particle size listed first followed by other soil components described as "trace" indicating 0-10% by weight, "little" indicating 10-20% by weight, "some" indicating 20-35% by weight, or "and" indicating 35-50% by weight.

2.2 Field Measurement and Methodology

The locations of the soil borings were recorded in the field using measurements from the staked building corners installed by others. The surface elevation at each boring was estimated from topographic information presented on the Sitec Grading and Utility Plan dated February 11, 2015 by Sitec.

2.3 Locations

The subsurface exploration program completed at the site included five soil borings (B15-1 through B15-5). Each of the borings were advanced to a depth of approximately 40 feet below the existing ground surface. Actual depths of each of the borings are noted in Table 3-1: Subsurface Exploration Summary. All borings were performed within the footprint of the proposed building.

3.0 SUBSURFACE CONDITIONS

The surface of the site generally consists of a surficial root mat, and topsoil, overlying sand, above glacial till, overlying weathered mudstone.

TABLE 3-1: SUBSURFACE EXPLORATION SUMMARY

Boring ID	General Location	Approx. Ground Surface Elevation (Feet)[1]	Approximate Depth to Top of Stratum (Feet)					
			(Stratum 1) Root Mat/Topsoil	(Stratum 2) Sand	(Stratum 3) Glacial Till	(Stratum 4) Weathered Mudstone	Depth of Exploration	Groundwater (Elevation)
B15-1	Northeast Building Corner	72	0	0.5	3.5	15	35.5	65
B15-2	Southeast Building Corner	70	0	0.5	4	14	39.5	64
B15-3	Southwest Building Corner	79	0	1	4	21	39.8	74.5
B15-4	Northwest Building Corner	80	0	0.5	4	19	39.8	74.5
B15-5	Approximate Center of Building Footprint	78	0	0.75	4	14	39.8	73.5

1. Vertical datum references the Sitec Grading and Utility Plan dated February 11, 2015.

3.1 Soil Strata

The various soil strata encountered in the borings are described as follows. It should be noted that the depths to, and thickness of the various soil and mudstone strata will vary between and away from the exploration locations. Similarly, the nature of the various deposits will also vary between and away from the exploration locations.

Stratum 1 – ROOT MAT/ TOPSOIL

ROOT MAT/ TOPSOIL was encountered at the site and within the proposed building location. The topsoil can generally be described as a tan to brown, fine SAND, with "some" silt, "trace" amounts of medium to coarse sand, "trace" amounts of fine gravel, and "trace" amounts of roots. Classifying the topsoil utilizing United States Department of Agriculture procedures, the TOPSOIL would be designated as a SANDY LOAM.

SPTs performed in Stratum 1 generally indicate a relative density of loose. *ROOT MAT/TOPSOIL is not considered a suitable bearing stratum for foundations or site improvements.*

Stratum 2 – SAND

The SAND encountered at the site underlying the ROOT MAT/TOPSOIL is generally described as brown to tan to gray, fine to coarse SAND, with "trace" to "and" amounts of silt, and "trace" amounts of fine gravel.

SPTs performed in Stratum 2 generally indicate a relative density of dense to very dense. *Stratum 2 – SAND is considered a suitable bearing stratum for foundations.*

Stratum 3 – GLACIAL TILL

The GLACIAL TILL at the site underlying the SAND is generally described as dark gray to gray to tan, fine to coarse GRAVEL, or fine to coarse SAND, with "little" to "some" amounts of silt. The relative amounts of gravel, sand, and silt vary across the borings. For additional information and detail, please refer to the boring logs in Appendix A.

SPTs performed in Stratum 3 generally indicate a relative density of medium dense to very dense. *Stratum 3 – GLACIAL TILL is considered a suitable bearing stratum for foundations.*

Stratum 4 – WEATHERED MUDSTONE (Rhode Island Formation)

The recovered samples of the WEATHERED MUDSTONE at the site underlying the GLACIAL TILL are generally described as black to gray, fine to coarse GRAVEL or fine to coarse SAND with "trace" to "and" amounts of silt. The WEATHERED MUDSTONE was observed to be highly to completely weathered.

SPTs performed in Stratum 4 generally indicate a relative density of dense to very dense. *Stratum 4 – WEATHERED MUDSTONE is considered a suitable bearing stratum for foundations.*

3.2 Groundwater

Based on observations taken during the subsurface investigation program, groundwater was encountered at approximately 4.5 feet below the existing ground surface (elevation 74.5±) in Boring B15-3, and as deep as 7 feet below existing ground surface (elevation 65±) in Boring B15-1.

A groundwater monitoring well was installed within Boring B15-1. The well consists of 25 feet of 2-inch diameter PVC screen pipe starting near 35.5 feet below existing ground, and 13 feet of riser pipe. A bentonite seal was installed at the depth of 3 to 8 feet. A steel standpipe and cap was installed over the well to prevent unwanted access. The well readings are summarized in Table 3-2 below.

It is important to note that as part of the boring activities, water was introduced to each borehole and may not have dissipated at the time that the initial or subsequent measurements were taken. Please see the boring logs within Appendix A of this report for details on groundwater depths and stabilization times.

It should be noted that groundwater levels are known to fluctuate due to local and regional factors including, but not limited to, precipitation events, seasonal changes, and periods of wet or dry weather. It was noted by the field engineer that it rained at the site overnight from July 15, 2015 to July 16, 2015.

TABLE 3-2: WELL READINGS

Date	Time	Depth to Water	Elevation (ft.)	Stabilization Time
7/14/15	AM	6'	66	1 DAY
7/15/15	AM	7'	65	2 DAY
7/16/15	AM	6'	66	3 DAY
7/17/15	AM	5'	67	4 DAY

4.0 LABORATORY TESTING

The laboratory testing program included mechanical grain size determinations performed upon samples from the strata encountered during the investigation. The results of the laboratory testing are summarized below. The data sheets are included in Appendix B.

4.1 Procedures

Grain Size Analysis

Two (2) grain size analyses were completed by PARE on materials recovered during the subsurface investigation with descriptions and results presented as follows:

TEST No. 1 (SAND strata) – SILT and fine to medium SAND, little fine gravel, trace coarse sand

- Sample S-2 taken from a depth of 2 to 4 feet at soil boring B15-3.
- Wet and dry mechanical sieve method.

TEST No. 2 (GLACIAL TILL strata) – SILT and fine to coarse SAND, some fine gravel, trace coarse gravel

- Sample S-4 taken from a depth of 6 to 8 feet at soil boring B15-5.
- Wet and dry mechanical sieve method.

4.2 Grain Size Analysis

Two grain size determinations by combined wet and dry methods were performed on materials recovered during the subsurface investigation with descriptions and results presented as follows:

Table 4-1: Results of Grain Size Analyses

Test No.	Boring No.	Sample No.	Depth (Ft.)	Representative Soil Strata	% Gravel	% Sand	% Fines
1	B15-3	S-2	2-4	SAND	16	46	38
2	B15-5	S-4	6-8	GLACIAL TILL	28	37	35

5.0 IMPLICATIONS OF SUBSURFACE CONDITIONS

5.1 General

Based on the subsurface investigation program and observations made during the explorations, the following are the geotechnical issues identified that could potentially impact the development of the site as proposed:

- ROOT MAT/TOPSOIL (Stratum 1) was observed across the site, and is not a suitable bearing stratum for foundations or for reuse as backfill materials in the building areas. This stratum should be removed and replaced with suitable material as stated herein.

- It may be possible to reuse the SAND (Stratum 2) material as fill. The high silt content will make the material susceptible to frost heave and sensitive to moisture content control during compaction, hence difficult to work with if the material becomes wet.

  It is noted that not all on-site materials will be suitable for reuse, nor will all required material gradations be present on-site. *Imported materials or blending of on-site material with imported material is anticipated for this project.*

- Due to the high fine sand and silt makeup present below the site, crushed stone used on-site under foundations, slabs, or around utilities should be wrapped with geotextile filter fabric to prevent the migration of the fine sand particles into the voids within the crushed stone.

- Due to the high fine sand and silt makeup present below the site, stormwater infiltration rates could be low. Construction activities may be impacted by flooding from storm events that occur if proper precautions are not made to manage runoff.

- Groundwater was encountered between 4.5 and 7 feet below the existing site grade. At these depths, groundwater is not likely to impact the construction due to the proposed grading. *Temporary dewatering to control stormwater runoff is anticipated.*

5.2 Seismic Design Category and Liquefaction Evaluations

SITE CRITERIA

In general accordance with the 2012 International Building Code and the 11th Edition of the Rhode Island Building Code, based on the boring information the soil profile of the project site is characterized as Site Class Profile C, "Very Dense Soil and Soil Rock" (i.e. Nbar>50)[3]

Based on the Rhode Island State building code, Table 1608.1, the maximum considered earthquake spectral response acceleration at short periods, S_s, and at 1-second periods, S_1, are 0.174 g and 0.06 g respectively.

[3] "Nbar" denotes the average Standard Penetration Test N-value for the first 100 feet of soil.

Correcting the accelerations for the observed site profile based upon average Standard Penetrations Test N values, the following parameters are recommended by the general procedure:

- Adjusted maximum considered earthquake spectral response acceleration parameters:
  - $S_{MS} = 0.208$
  - $S_{M1} = 0.102$
- For calculating the design spectral response accelerations, utilize:
  - $S_{DS} = 0.139$
  - $S_{D1} = 0.068$

LIQUEFACTION EVALUATION

Liquefaction is the tendency for a soil type, particularly fine sands, to lose a significant amount of strength and behave similar to a liquid in the event of an earthquake, or sufficient vibrations. Liquefaction analyses generally relate SPT N values, corrected for overburden, fines content, and measured groundwater levels to the liquefaction potential of the materials in question. In general, in order for liquefaction to occur three conditions have to be met simultaneously. These are: 1.) loose sandy soils susceptible to liquefaction, 2.) saturated soil conditions, and 3.) vibration.

The liquefaction analyses completed during the preparation of this report takes into account the soil and groundwater conditions encountered during the subsurface exploration program. It should be noted that fluctuations in groundwater levels can have a significant effect in the liquefaction potential of soils. If the groundwater is observed to change during the construction process or future explorations, PARE should be contacted as it may be necessary to re-analyze the soil for liquefaction potential.

Based upon the observed relative densities, groundwater elevation and material composition, it appears that the in-situ soils are NOT susceptible to liquefaction at this time.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Foundations and Slabs

Prior to the placement of fill to support foundations and ground bearing slabs, the ROOT MAT/TOPSOIL (Stratum 1) should be removed from the influence zone[4] of the proposed building footprint and replaced with compacted materials as discussed herein in Sections 6.2 and 6.7. The SAND (Stratum 2) should be improved as discussed within Section 6.2. If the SAND is not improved, this stratum should also be removed from the influence zone of the proposed building footprint and replaced with compacted materials as discussed in Sections 6.2 and 6.7.

It should be noted that the recommendations presented herein are based upon an anticipated finished floor elevation near 80.5 feet. Changes within the finished floor elevation should be reviewed with the geotechnical engineer for potential impacts to these recommendations.

6.1.1 Shallow Foundations

A shallow foundation system composed of column (i.e., square) and wall (i.e., continuous) footings bearing on a minimum 12-inch thick layer of compacted "Sand Gravel Fill" or 6-inches of crushed stone (in wet areas) wrapped in a layer of geotextile filter fabric placed on compacted structural "Granular Fill", improved on-site SAND, or undisturbed GLACIAL TILL appears suitable for effectively transferring building loads to the ground. ***A maximum net allowable soil bearing pressure[5] of 4,000 pounds per square foot for exterior footings and interior footings is recommended in the design of footings bearing on this material.***

A maximum total settlement of 1 inch, and a maximum differential settlement of ½ inch between foundation elements was also determined. In no case should a continuous footing be less than 18 inches wide or should a column footing be less than 2 feet wide.

SLABS

A modulus of vertical subgrade reaction (K_v) of 150 pounds per cubic inch is recommended for design of a slab on grade placed over 12 inches of compacted "Sand Gravel Fill". The structural engineer will need to design the floor slab for anticipated live and dead loads in accordance with applicable building codes. Should any of the building, mechanical, electrical, or other equipment require independent foundations, additional foundations and/or modifications to the floor slab may be required depending upon the actual load requirements.

[4] "Influence Zone" is defined as the area below foundations and slabs bound by a plane extending from 2 feet outside of their outer edges, down 1 vertical, and out 1 horizontal as shown on Figure 6-1.

[5] Net allowable bearing pressure is the pressure in excess of the existing overburden pressure that can be safely carried at the footing depth, D (based on presumptive bearing capacities).

6.2 Ground Modifications

Based upon the observed subsurface conditions, ground modifications should be used to improve the in-situ SAND (Stratum 2) within the influence zone of the proposed building and pavement areas.

The design of the ground modification program should be coordinated with the structural engineer in discussion with the geotechnical engineer and the site/civil engineer. Given our current understanding of the project, PARE recommends the ground modification program to consist of Proof Compaction, and excavation and replacement of high silt content soils in areas where high silt content soils would exist within the proposed frost zone. The ground improvement program should be designed to provide a uniform bearing stratum meeting the capacity presented in Section 6.1, in addition to considering the effects of differential settlement across the building.

The following summarizes the ground improvement approach to provide suitable bearing for spread footings/foundations.

1. Unsuitable in-situ soils and materials (e.g. organic soil, roots) shall be over excavated within the influence zone of the proposed shallow foundation and slabs-on-grade to the top of the soil determined to be an acceptable bearing stratum as determined by a geotechnical engineer.
2. SAND and GLACIAL TILL material exposed during excavations shall be proof compacted in accordance with Section 6.11 prior to the placement of backfill.
3. The excavation shall then be backfilled with approved material, compacted in lifts, to the bearing elevation of the proposed footing or slabs-on-grade.
4. Site elevations shall be raised as required using approved material and compacted in lifts.
5. All fill shall be compacted under the observation of the geotechnical engineer to the minimum compaction requirements as presented in Table 6-3.

This approach, which is the recommended approach in the building area, will address the potential for excessive differential settlement. The reuse of the in-situ SAND material as backfill may be permissible with confirmatory grain size distribution analyses as discussed in Section 6.9. All organic material encountered should be stripped from within the influence zone of the proposed building, and pavement areas and stockpiled for potential on-site reuse. If on-site reuse in not feasible, the organic material should be properly disposed of off-site. The reuse of any organic material as fill material within the influence zone of the proposed building and pavements areas should not be permitted.

6.3 Lateral Earth Pressures and Retaining Wall Design

For the design of retaining walls with level backfill, recommended lateral earth pressure coefficients are indicated in Table 6-1. A unit weight of 125 pounds per cubic foot (pcf) and a minimum internal friction angle (ϕ) of 35° for imported free draining "Granular Fill" is recommended. The lateral earth pressure coefficient should be increased where the ground surface slopes up behind the wall. The retaining walls should be designed to withstand surcharge loading which may be present over the life of the structure. These would include traffic loads, as well as loads from storage, fill or construction equipment which may be placed adjacent to the

wall. The influence zone behind the wall can be defined by a 1.5 horizontal to 1 vertical line extending upward from the bottom outside edge of the wall footing.

The magnitude of lateral earth pressure against retaining walls is dependent upon the type of backfill, method of fill placement, drainage provisions, and the amount of displacement the wall is permitted to undergo after the placement of the backfill. PARE recommends that the retaining walls be backfilled with a free draining compacted "Granular Fill", as defined herein.

The lateral earth pressure distribution against the retaining wall should be computed using the appropriate value of K, the coefficient of lateral earth pressure. Recommended values of K are presented in the table below. Friction factors are also presented for use in checking resistance to unbalanced forces on the walls.

TABLE 6-1: RECOMMENDED EARTH PRESSURE AND FRICTION COEFFICIENTS

Material	At-Rest Coefficient (K_o)	Active Coefficient (K_a)	Passive Coefficient (K_p)
Compacted Granular Fill	0.43	0.27	3.69
Sand	0.47	0.31	3.25
Glacial Till	0.38	.24	4.0
FRICTION COEFFICIENTS			
Concrete Poured on Imported Sand Gravel Fill			tan δ = 0.45
Precast Concrete on Imported Sand Gravel Fill			tan δ = 0.30

In order to attain either the active or passive condition, displacement of the wall is necessary. To attain the active condition in a sand material, the horizontal movement required ranges from 0.001H to 0.004H depending on the density of the material. The horizontal movement required to attain the passive condition in a sand material ranges from 0.02H to 0.06H, where H is the wall height.

Traffic loads and other anticipated loadings that could occur behind the walls should be considered. In addition, the effect of adjacent footings on lateral walls should be accounted for during design. A minimum of 250 psf should be used to account for compaction equipment with 5 feet of the wall.

6.4 Frost Depth Recommendations

In conformance with Rhode Island State Building Code, exterior footings founded over soils should be placed at a minimum depth of 40 inches below the finished grade in order to provide for frost protection. Preparation for slabs and paved areas should consider the frost heave susceptibility of subgrade soils.

6.5 Drainage

Based on observations taken during the subsurface investigation, groundwater was encountered at the site at depths ranging from 4.5 to 7 feet below the existing ground surface which is expected to be below the bottom of footing in some areas. Also note that as part of the boring activities, water was introduced to the noted boreholes and may not have dissipated at the time that the measurement was taken.

In accordance with IBC (2012), given the level of the groundwater observed during the boring activities, and the understanding of the proposed building geometry (i.e. no basement) perimeter drains to control groundwater are not required.

Note that shallow foundations should be prepared in the dry. Roof drainage and surface water runoff should be directed away from the structures. As water levels are anticipated to fluctuate with the seasons and precipitation events, positive drainage is also recommended in order to carry water away from the building foundation.

6.6 Underground Utilities

Underground pipes and utilities should be placed on bedding in accordance with the manufacturer's specifications and recommendations. "Granular Fill" should be placed in lifts on the sides and above the utilities. The lift thickness should be sized appropriately for the hand operated compaction equipment used; vibratory plate compactor, 6-inch lift; vibratory drum roller or sheepsfoot trench roller, 12-inch lift.

6.7 Construction Materials

Fill materials should be friable soil, free from trash, ice, snow, frozen soils, tree stumps, roots, and other organic matter and deleterious materials. PARE recommends the following soil gradations for imported fill, conforming to the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction Amended 2013 (State Standards).

- Gravel Borrow utilized as "Sand Gravel Fill" below structures and under pavement should conform to M.01.01.1 of the State Standards.
- All other Gravel Borrow material utilized as "Granular Fill" below structures and for material utilized in regrading areas, trench backfill, backfill against below-grade walls as "Granular Fill" should conform to M.01.01 of the State Standards.
- Crushed Stone Bedding Material should be imported material conforming to M.01.09 of the State Standards.

6.8 Flexible and Rigid Pavement Recommendations

All topsoil, including the root mat, should be stripped prior to filling. The subgrade should be proof rolled with a minimum 4-6 passes of a vibratory roller with a static weight of 10,000 pounds and a dynamic weight of 20,000 pounds. Caution should be used when compacting the subgrade, if wet, to avoid weaving and disturbance from vibrations.

Table 6-2 presents recommended pavement layer thickness based upon standard AASHTO design procedures for both "Standard Duty" and "Heavy Duty" pavement. "Standard Duty" pavement is applicable for up to 50,000 Equivalent Single 18-kip Axle Loads (ESAL's) while "Heavy Duty" pavement is applicable up to 350,000 EAL's. The recommended base and subbase courses for both "Standard Duty" and "Heavy Duty" areas are as listed below:

TABLE 6-2: RECOMMENDED STANDARD AND HEAVY DUTY FLEXIBLE PAVEMENT LAYER THICKNESS

Pavement Section	STD. DUTY	HEAVY DUTY
Finish Course	1-1/2 inches	1-1/2 inches
Binder Course	1-1/2 inches	2 inches
Base Course	6 inches	6 inches
Subbase Course	8 inches	12 inches

Should the actual loading conditions be greater than those assumed, the pavement sections will need to be re-analyzed for the actual conditions. This may result in a thicker pavement section being required.

In areas where concrete and asphalt paving meet, it would be advantageous to provide a strip of free draining soil below the concrete and bituminous interface. The free draining strip should consist of a twenty-four (24) inch thick layer of "Sand Gravel Fill" extending a minimum of 3 feet laterally below the concrete apron. This should control any minor frost heaving that may occur if water enters the subgrade through this joint.

Base and Subbase course materials should meet the criteria for "Sand Gravel Fill" and "Granular Fill", respectively, as listed above. Subbase and base courses should be compacted in 1-foot (maximum loose lift thickness) lifts to 95% of the maximum dry density as determined in accordance with ASTM D1557 (modified Proctor test). Fill below the subbase should be compacted to at least 92% of the maximum dry density as determined in accordance with ASTM D1557 (modified Proctor test).

PARE understands that fill is to be placed on the site up to a thickness of about 10 feet, and the thickest fill will be on the eastern part of the site. Heave of silty material is possible unless all silty material is removed from the pavement footprint for the full-recommended frost depth. To reduce the risk of pavement damage due to potential frost heaving, subgrade soils founded below the pavement section to frost depth (i.e., 40 inches) should ideally be free draining and free of organics. However, in lieu of removing and replacing the existing subgrade soils with free-draining and organic free material, the client may choose to accept a reduced pavement service life. Laboratory testing on selected samples of onsite soils indicated silt and clay contents ranging from 35 to 38 percent. The contractor shall not assume that all onsite fill material is free draining. Free draining material is considered to have less than 10% silt and clay content.

For areas to be paved with Portland cement-based concrete, a 6-inch thick slab on grade is recommended. The concrete should have a minimum unconfined compressive strength of 4,000

pounds per square inch, with air entrainment of 4 to 6 percent. The thickness is based upon the AASHTO Low Volume Road Design procedure and a modulus of subgrade reaction of 150 pounds per cubic inch. Welded wire fabric reinforcement (6x6W2.0xW2.0) is recommended to minimize crack opening.

The concrete paving should be graded to induce runoff. All joints and cracks should be sealed and/or filled on a regular basis as part of a routine maintenance item. If the joints and cracks are not kept sealed, significant frost heaving can be expected during the winter months.

Concrete pavement should have expansion joints at a spacing of 80 feet with a joint filler thickness based on the thermal expansion. All expansion joints should be sealed with an AASHTO-approved elastomeric joint sealer. Contraction (crack control) joints should be constructed at a spacing of 15 feet. Load transfer between slabs should be provided by epoxy coated #6 dowels, 18-inches long at a spacing of 12-inches. Concrete pavement base and subbase courses should consist of 6-inches of "Sand Gravel Fill", each.

6.9 Reuse of On-Site Soils

Based on the visual classifications and limited laboratory testing, the reuse of all of the onsite ROOT MAT/TOPSOIL (Stratum 1) and SAND (Stratum 2) as backfill below pavement or under the buildings is not anticipated at this site. Removal of boulders and cobbles will likely be required during excavation and/or screening. Fill materials shall not contain oil and/or hazardous materials.

Due to the high silt content, the reuse of excavated SAND is not anticipated without modification. It may be possible to reuse the on-site SAND if it is blended with coarser materials; however, confirmatory grain size analyses will need to be completed after blending to confirm that the blending methodology achieves the desired results and can be reproduced onsite.

It should be noted that not all required soil gradations will be available on-site. Imported materials or blending with on-site materials is anticipated for this project.

6.10 Soils Prone to Disturbance from Rain and Frost

Silty or fine sandy soils are prone to disturbance when saturated from rainfall events, will be easily disturbed by construction equipment traversing the site, are difficult to compact, and prone to frost heaves during freeze thaw cycles. If the construction is performed during the late fall, winter, or spring months, wet conditions and freeze thaw cycles should be expected to prevail. Soils becoming saturated or allowed to freeze will require re-compaction and retesting prior to placing additional fill material or structural components. Delays caused by wet/freezing soil conditions may be a factor that affects the construction schedule. Should the subgrade become disturbed, the disturbed material should be over-excavated and replaced with compacted "Granular Fill" as recommended in Section 7.

Soils with a silt content of greater than about 8% have the potential to heave when subjected to freezing conditions. The risk of heaving increases with increasing silt content, although soils

with a silt content of less than about 15% silt is considered within the construction industry to be an acceptable risk. High silt content soils are not recommended for use in frost zones below structures, pavements, or within the influence zone of foundation walls due to their susceptibility to frost heave. Prior to reusing these materials, confirmatory sieve analyses for each type of on-site material proposed for reuse should be completed by the Contractor and submitted to the Engineer for approval.

6.11 Compaction

The approved subgrade to accept backfill, footings, slabs, and foundations, should be compacted by proof compaction with at least six (6) passes of a 10-ton vibratory roller performed in perpendicular directions.

Lift thicknesses of placed material should be limited to 12 inches thick (loose lift thickness). Compaction of this material should be performed with adequately-sized equipment to yield the recommended amount of relative compaction.

A schematic drawing presenting influence zones beneath interior and exterior footings, recommended base and sub-base materials, and recommended fill materials for varying areas of the site development is included as Figure 6-1 on the following page.

The fill materials should be compacted as outlined below.

TABLE 6-3: RECOMMENDED MINIMUM COMPACTION REQUIREMENTS

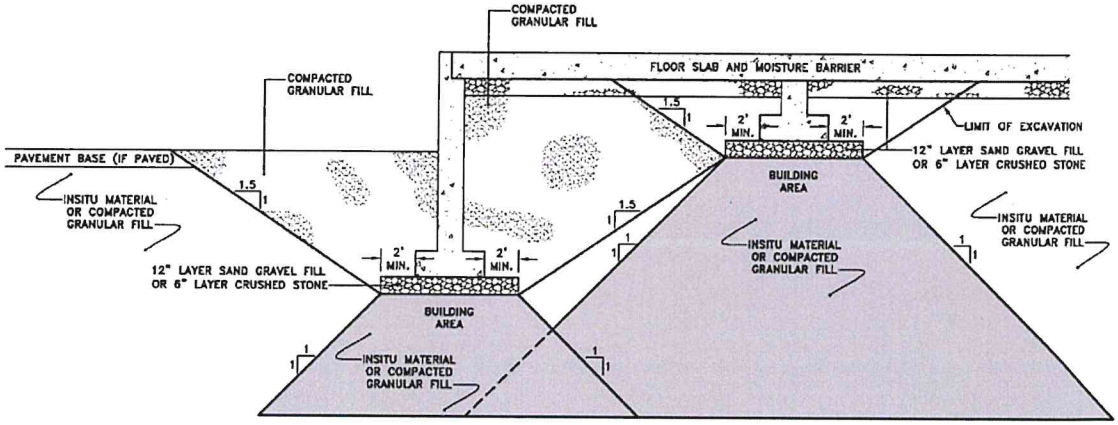
Location	Percent of Maximum Dry Density [1]
Backfill below footings, within the building area and below slabs [2]	95
Backfill for foundation walls	95
Backfill within pavement base and sub base layers	95
Backfill below pavement sub base layers	92
Around and above utilities within the building area	95
Around and above utilities in paved areas	92
Backfill behind retaining walls	95 [3]
Backfill within landscaped areas	85

[1] Maximum dry density as determined by the Modified Proctor test (ASTM D 1557)

[2] Building area is described as an area extending downward and outward from 2 feet outside of the outside edge of the footing at a 1H:1V slope.

[3] During compaction of fill placed behind retaining walls, care shall be taken so as to maintain uniform elevation along both sides within the embedded areas, and to not overstress the wall by applying excessive compactive energy at the top of the wall.

Figure 6-1: Typical Profile Below Footings



7.0 CONSTRUCTION CONSIDERATIONS

This section presents construction considerations and recommendations including excavation, backfilling, utility installation, dewatering, lateral earth support, protection of adjacent structures, and construction monitoring.

7.1 Excavation

SITE PREPARATION

Building Areas: After rough grades have been established, but before placement of compacted "Granular Fill", exposed surfaces should be visually inspected and probed. Frozen, wet, or loose soils and other undesirable materials should be removed. The exposed subgrade should be further tested by proof rolling with a minimum 10,000-pound static weight roller to identify loose or soft pockets that may be present.

The area of the proposed structures will need to be stripped of all trees and grubbed of all stumps, vegetation, topsoil, and root mat. Debris from grubbing and stripping activities should be removed and properly disposed of in accordance with current regulations. Should the material contain solid wastes, such material should be segregated and disposed of in a manner consistent with local, state, and federal regulations.

Should the subgrade become disturbed during excavation and/or construction, all disturbed material should be over-excavated to firm or native soil and replaced with a minimum of one foot of compacted "Granular Fill" or "Crushed Stone" wrapped in a Geotextile Fabric.

Parking and Paved Roadway Surfaces: All topsoil including the root mat should be stripped prior to filling. The subgrade should be proof rolled with a minimum 4-6 passes of a vibratory roller with a static weight of 10,000 pounds and a dynamic weight of 20,000 pounds. Caution should be used when compacting the subgrade, if wet, to avoid weaving and disturbance from vibrations.

7.2 Backfilling

GRAVEL BORROW

PARE recommends that footings, foundation walls, and areas requiring fill below the floor slab be backfilled to within 12 inches of the footings and slabs with compacted "Granular Fill". Compacted "Granular Fill" should be free draining friable soil free from trash, ice, snow, tree stumps, roots, other organic matter, deleterious materials, and conform to the specified requirements.

In general, compaction should be accomplished by placing fill in 8 to 12 inch loose horizontal lifts and mechanically compacting each lift to the specified dry density. Thinner lifts may be required in certain instances depending on the type of mechanical compaction equipment utilized. Recommended minimum compaction requirements are described in Section 6.10.

SAND GRAVEL FILL / CRUSHED STONE

"Sand Gravel Fill" should be placed for the final 12 inches below footings, slabs and as pavement base course layers. This material should be placed in 8 to 12 inch loose horizontal lifts and mechanically compacted to the specified dry density. In areas where wet conditions are encountered, "Crushed Stone" (wrapped in Geotextile Fabric) could be used under footings instead of the "Sand Gravel Fill". The "Crushed Stone" should be proof compacted with 1 pass in each direction with a vibratory compactor.

7.3 Utility Installation

Excavations for installation of underground utilities should be made to comply with all OSHA, federal, state, and local regulations. At a minimum, excavations should be wide enough to accommodate the utility to be installed with clearance on each side of the utility to provide space for operating compaction equipment for backfilling of the utility in lifts without damaging the utility. The base of the excavation and bedding layer should be formed to properly support all components of the utility, including pipe bells, and manholes to prevent damage during installation. During backfilling operations, care should be taken to provide properly compacted fill along the length of the utility being installed. All fill material (cobbles and boulders within the native deposits) in excess of 3 inches should be removed from the fill within 12 inches of the utility to prevent damage to the utility during compaction.

7.4 Dewatering

During construction, temporary dewatering may be required to control ponded water resulting from rain and surface runoff. Based on measurements taken during the subsurface investigation, groundwater is anticipated to be encountered within the proposed excavation depths. The Contractor should provide for proper drainage of surface water away from any excavations. All excavations should be conducted in the dry.

It should be noted that groundwater levels may fluctuate over time due to variations in rainfall and other factors different from those prevailing at the time the explorations were performed.

7.5 Lateral Support

Excavation support is solely the Contractor's responsibility. Several excavations are expected within the footprint of the proposed structure for installation of footings, utilities and below-grade walls. Temporary support systems may be required at some locations to retain the surrounding soil and maintain a near-vertical excavation face where it will be necessary to protect the adjacent building walls, pavement, or underground utilities. Design of cantilever and braced support systems is beyond the scope of this report, and should be performed for the Contractor through the services of a registered professional engineer licensed in the State of Rhode Island.

In areas where an open cut is possible without a temporary support system, the final side slopes should conform to local, state, and federal safety requirements.

7.6 Construction Monitoring

The site preparation, excavation and backfill, compaction, and foundation installations should be observed by our geotechnical field engineer(s) under the direction of one of our registered professional engineers experienced in geotechnical engineering. While onsite, our engineer(s) could provide field density testing, verification of bearing layers, and assistance in general interpretation of the geotechnical requirements during construction. This would provide an accurate record of construction, alert the designer to changed conditions, and make useful data available for upcoming construction.

Foundation excavations should be observed to confirm that all loose, soft, and undesirable material (i.e. organic matter, roots, and other deleterious materials) is removed and that the foundations will bear on a satisfactory material. Excavation subgrade observations should include hand auger borings or hand probing.

As mentioned, compaction criteria for the various imported materials should be developed and included in the specifications. Field density testing should be performed using a nuclear density gauge to confirm that adequate compaction is being achieved. During construction, representative samples of all materials to be used as backfill should also be tested for conformance with the specified material properties.

REFERENCES

1. SBC-1. "*Rhode Island State Building Code*", 11th Edition, Effective July 1, 2013.

2. IBC 2012. International Code Council. *"International Building Code 2012"*, 2012.

3. RIDOT 2004. "*Rhode Island Department of Transportation Standard Specifications for Highway and Bridge Construction*", 2004.

4. NAVY 1986. Naval Facilities Engineering Command. *"Foundation and Earth Structures, Design Manual 7.1 and 7.2"*. 1982. Revalidated by change 9/1/1986.

5. AASHTO, "*AASHTO Guide for Design of Pavement Structures*", 1993.

6. DAS 1990. *"Principles of Foundation Engineering, 7th Edition"*, 1990.

7. LAMB and WHITMAN 1969. *"Soil Mechanics"*, 1969.

8. RIDOT Standard Specifications for Road and Bridge Construction Amended 2013.

9. USGS, "*Geologic Map of the Bristol Quadrangle and Vicinity, Rhode Island-Massachusetts Surficial Geology"* Compiled by Smith, J. Harim, 1955.

10. USGS. *"Geologic Map of the Bristol Quadrangle and Vicinity, Rhode Island-Massachusetts Bedrock Geology"*. By Quinn, Alonzo W., Springer, George H. 1954.

11. FEMA P-749 December 2010 *Earthquake-Resistant Design Concepts An Introduction to the NEHRP Recommended Seismic Provisions for New Buildings and Other Structure.*

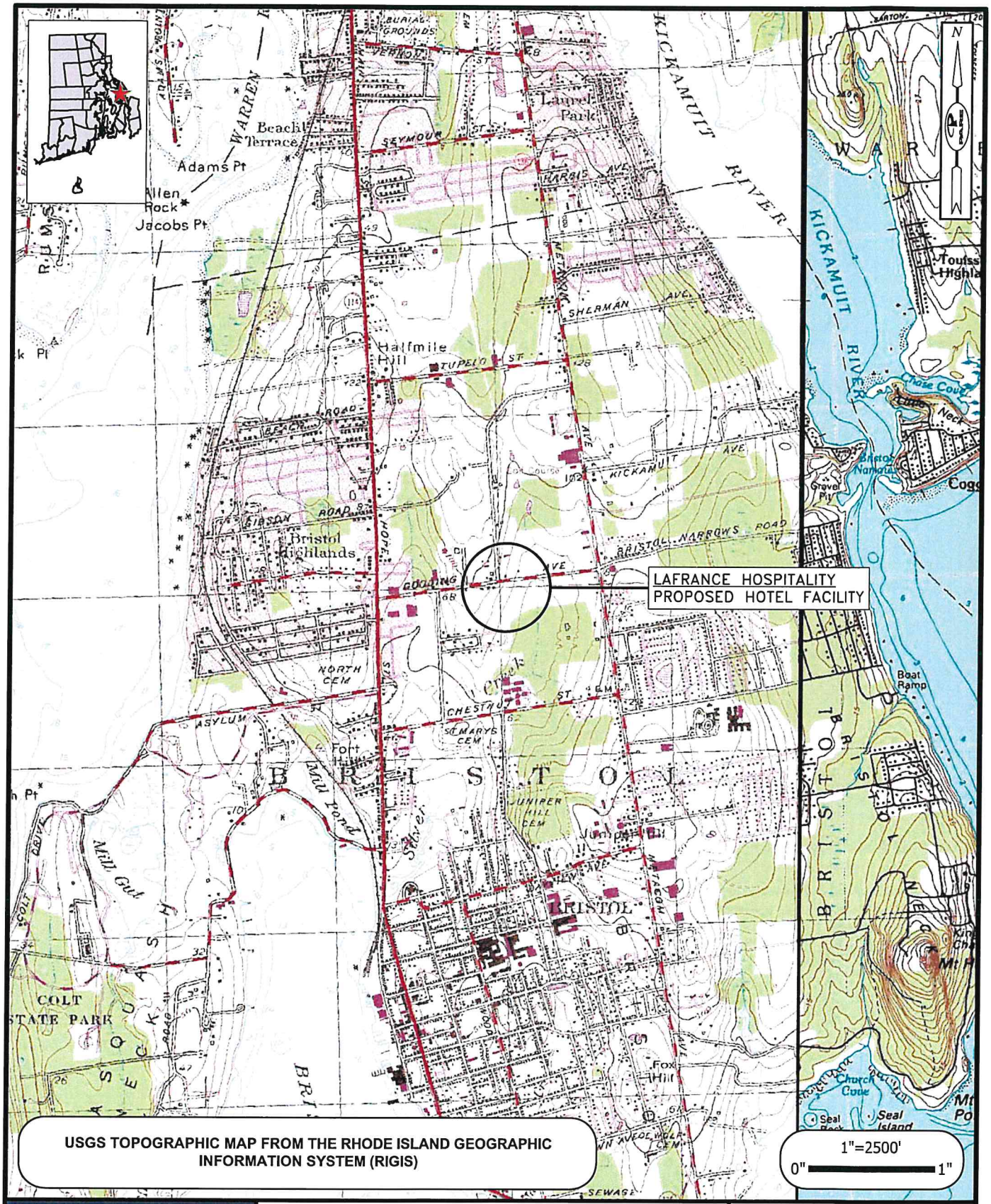
12. www.historicalaerials.com

13. Foundation Design Principles and Practices, 2nd edition, Coduto, Donald P.

14. Sitec Grading and Utility Plan, dated February 11, 2015, File # 14-5631.

15. *Foundation Design Principles and Practices*, Coduto, second edition.

FIGURES



USGS TOPOGRAPHIC MAP FROM THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS)

PARE CORPORATION

PROPOSED HOTEL

GOODING AVENUE / PLAT 111 LOT 1

BRISTOL, RHODE ISLAND

LAFRANCE HOSPITALITY

LOCUS PLAN

August, 2015 FIGURE 1

PARE CORPORATION

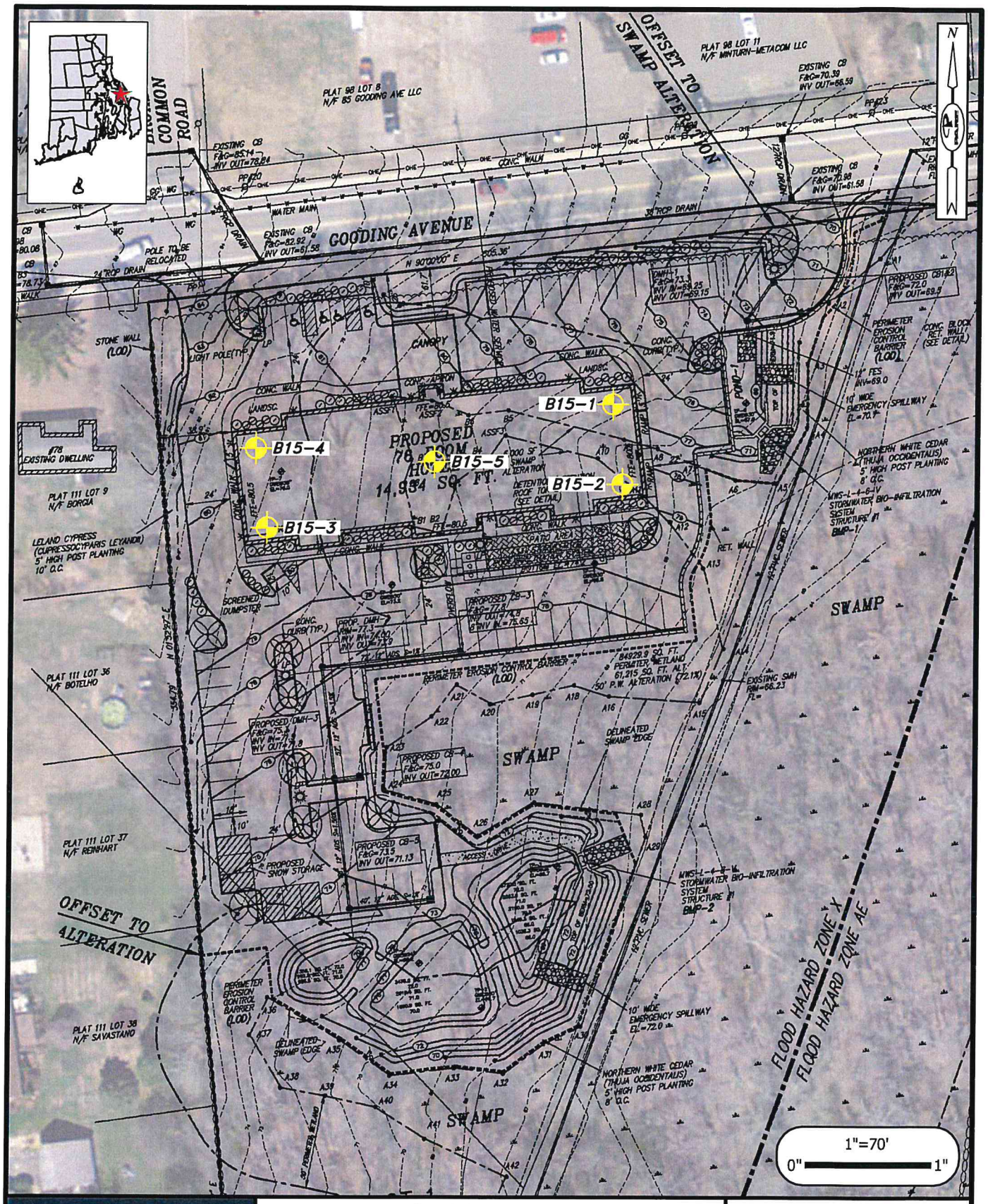
PROPOSED HOTEL

GOODING AVENUE / PLAT 111 LOT 1
BRISTOL, RHODE ISLAND

LAFRANCE HOSPITALITY

AERIAL PLAN

August, 2015 FIGURE 2



PARE CORPORATION

PROPOSED HOTEL

GOODING AVENUE / PLAT 111 LOT 1
BRISTOL, RHODE ISLAND

LAFRANCE HOSPITALITY

BORING LOCATION PLAN

August, 2015 FIGURE 3

APPENDIX A
Boring Logs

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS
ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-1
SHEET 1 OF 2

PROJECT: LaFrance Hospitality, Bristol, Rhode Island
PROJECT NO.: 15088.00
CHKD. BY: SJM

BORING CO.: New England Boring Contractors
FOREMAN: John Galvin
INSPECTOR: J. Costa
BORING LOCATION: SEE EXPLORATION LOCATION PLAN
GROUND SURFACE ELEVATION: 72 feet ± DATUM: Unknown
DATE START: 7/13/2015 DATE END: 7/13/2015

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. SAFETY HAMMER FALLING 30 in.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 IN.

CASING SIZE: 4" OTHER: Wash and Drive

GROUNDWATER READINGS[2]

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7-14-15	AM	6'	0	1 Day
7-15-15	AM	7'	0	2 Days
7-16-15	AM	6'**	0	3 Days

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT² OR KG/CM²	SAMPLE DESCRIPTION (Burmister CLASSIFICATION)	REMARKS	STRATUM DESCRIPTION[1]
		S-1	24/16	0-2	3 5		Moist, loose, tan to brown, fine SAND some silt, trace medium to coarse sand, trace fine gravel, trace roots.	1	6" TOPSOIL
					4 5				
	22/6"	S-2A	20/14	2-3.5	4 9 22		2A: Moist, dense, tan to brown, fine SAND and SILT, trace medium to coarse sand, trace fine gravel, trace roots.*	2	SAND & SILT
	66	S-2B	4/3	3.5-4	47				
5	32	S-3	24/12	4-6	26 27		Wet, very dense, blue to gray, fine to coarse SAND, some silt, some fine to coarse gravel.		
	70				67 15				
	78	S-4	24/14	6-8	20 24		Wet, dense, tan to gray, fine to medium SAND, some silt, trace fine to medium gravel, trace clay, trace organics.		
	42				22 34				
	30	S-5	24/16	8-10	16 15		Wet, dense, tan to light gray, fine to medium SAND, some silt, trace fine to coarse gravel, trace clay.		GLACIAL TILL
10					16 19				
15		S-6A	12/9	14-15	33 42		6A: Wet, very dense, blue to light gray, fine to medium SAND and SILT, trace clay.	3	
		S-6B	11/9	15-16	85 101/5"		6B: Wet, very dense, black to dark gray, WEATHERED MUDSTONE recovered as fine to medium sand and silt, some fine gravel, little coarse sand, trace clay.		
20		S-7	18/17	19-20.5	33 92		Wet, very dense, black to dark gray, WEATHERED MUDSTONE recovered as fine to medium sand and silt, litle fine gravel, trace clay.	3	WEATHERED MUDSTONE
					100/5"				
25		S-8	24/19	24-26	24 33		Wet, very dense, black to dark gray, WEATHERED MUDSTONE recovered as fine to coarse gravel and fine to coarse sand, some silt, trace clay.	3	
					32 45				
30		S-9	24/24	29-31	23 28		Wet, very dense, black to dark gray, WEATHERED MUDSTONE recovered as silt and fine to medium sand, little clay, little fine gravel.		
					16 71				

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:
1. Topsoil incldued in description.
2. Soil mottling observed in sample
3. Took sample with open hole, casing @ 8'.
** Rained overnight from 7-15-15 to 7-16-15.

*S-2B: Moist, dense, blue to gray, fine SAND and SILT, little medium to coarse sand, trace fine gravel.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS

ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. **B15-1**

SHEET 2 OF 2

PROJECT: LaFrance Hospitality, Bristol, Rhode Island

PROJECT NO. 15088.00

CHKD. BY SJM

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	SAMPLE PEN. (in.)/ REC.	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE TONS/FT^2 OR KG/CM^2	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
35		S-10	17/17	34-35.5	56 100		Wet, very dense, dark gray to black, WEATHERED MUDSTONE recovered as fine to coarse sand, some fine gravel, little silt, trace clay		WEATHERED MUDSTONE
					100/5"				
							BOTTOM OF EXPLORATION 35.5 ± FEET		
40									
45									
50									
55									
60									
65									
70									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:

6. Well 25' screen, 13' riser, backfill with 3, 50 lb. bags of sand, 25 lbs. of bentonite chips. Benotnite chips are from 3'-8'.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS
ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-2
SHEET(S) 1 of 2

PROJECT: LaFrance Hospitality, Bristol, Rhode Island
PROJECT NO. 15088.00
CHKD. BY SJM

BORING CO. New England Boring Contractors
FOREMAN John Galvin
INSPECTOR M. Georgian
BORING LOCATION SEE EXPLORATION LOCATION PLAN
GROUND SURFACE ELEVATION 70 feet ± DATUM Unknown
DATE START 7/13/2015 DATE END 7/14/2015

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 in.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 IN.

CASING SIZE: 4" OTHER: Safety Hammer

GROUNDWATER READINGS[2]

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7-14-15	7:30	6'	0	18 Minutes

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT² OR KG/CM²	SAMPLE DESCRIPTION (Burmister CLASSIFICATION)	REMARKS	STRATUM DESCRIPTION[1]
		S-1	24/14	0-2	3 7		Moist, dense, tan to gray to orange, fine to medium SAND, little silt, little coarse sand, trace fine gravel.	1.	2" ROOTMAT, 4" TOPSOIL
	27				10 22			2.	
	50	S-2	24/21	2-4	25 29		Wet, very dense, tan to gray, fine to medium SAND, little medium to coarse SAND, trace fine gravel, trace silt.		SAND
	78				30 29				
5	32	S-3	24/17	4-6	25 29		Wet, very dense, gray, fine to coarse GRAVEL and fine to coarse SAND, little silt, trace clay.		
	40				30 24				
	41	S-4	24/16	6-8	24 39		Wet, very dense, gray to tan, fine to coarse GRAVEL and fine to coarse SAND, little silt, trace clay.	3.	
	50				40 31				
		S-5	24/16	8-10	13 12		Wet, medium dense, gray to tan, fine to coarse SAND, some silt, little fine to coarse gravel, trace clay.		GLACIAL TILL
10					15 14				
15		S-6	24/18	14-16	28 33		Wet, very dense, black, WEATHERED MUDSTONE recovered as fine to coarse sand, some fine to coarse gravel, some silt, trace clay.	4.	
					32 41				
20		S-7	24/18	19-21	34 22		Wet, dense, black, WEATHERED MUDSTONE recovered as medium to coarse sand, trace silt, trace sand.		WEATHERED MUDSTONE
					25 52				
25		S-8	24/17	24-26	38 53		Wet, very dense, black WEATHERED MUDSTONE recovered as fine to coarse gravel, little fine to medium sand, little silt, trace coarse sand.		
					68 92				
30		S-9	9/7	29-29.75	81 105/3"		Wet, very dense, black WEATHERED MUDSTONE recovered as fine to coarse gravel, little fine to medium sand, little silt, trace coarse sand.		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:
1. Soil mottling in sample.
2. Top soil not included in description.
3. Sampled with open hole, casing @ 8'.
4. Sampled with open hole, casing @ 8'.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS

ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-2

SHEET 2 OF 2

PROJECT LaFrance Hospitality
Bristol, Rhode Island

PROJECT NO. 15088.00

CHKD. BY SJM

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	SAMPLE PEN. (in.)/ REC.	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE TONS/FT^2 OR KG/CM^2	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
35		S-10	8/4	34-34.7	100 100		Wet, very dense, black WEATHERED MUDSTONE recovered as fine to coarse sand, some silt.	5.	WEATHERED MUDSTONE
40		S-11	5/5	39-39.5	100		Wet, very dense, black WEATHERED MUDSTONE recovered as fine to coarse sand, some silt.		
							BOTTOM OF EXPLORATION ± 39.5 FEET		

GRANULAR SOILS	
BLOWS/FT	DENSITY
0 - 4	V. LOOSE
4 - 10	LOOSE
10 - 30	M.DENSE
30 - 50	DENSE
>50	V.DENSE

COHESIVE SOILS	
BLOWS/FT	DENSITY
<2	V.SOFT
2 - 4	SOFT
4 - 8	M.STIFF
8 - 15	STIFF
15 - 30	V.STIFF
>30	HARD

REMARKS:

5. Occassional brown patches in sample.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

BORING NO. B15-2

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS
ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-3
SHEET(S) 1 of 2

PROJECT: LaFrance Hospitality, Bristol, Rhode Island
PROJECT NO.: 15088.00
CHKD. BY: SJM

BORING CO.: New England Boring Contractors
FOREMAN: John Galvin
INSPECTOR: M. Georgian
BORING LOCATION: SEE EXPLORATION LOCATION PLAN
GROUND SURFACE ELEVATION: 79 feet ± DATUM: Unknown
DATE START: 7/15/2015 DATE END: 7/16/2015

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 in.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 IN.

CASING SIZE: 4" OTHER: Safety Hammer

GROUNDWATER READINGS[2]

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7/16/15	1:30	6'	0	8 Hours
7/17/15	12:00	4.5'	0	1 Day

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT² OR KG/CM²	SAMPLE DESCRIPTION (Burmister CLASSIFICATION)	REMARKS	STRATUM DESCRIPTION[1]
		S-1A	10/18	0-1	3 9		1A: Wet, dense, brown fine to medium SAND and SILT. 1B: Moist, dense, gray, fine SAND and SILT.		TOPSOIL
		S-1B	14/14	1-2	22 29				
		S-2	24/18	2-4	12 40		Moist, dense, gray and tan and orange, SILT and fine to medium SAND, little fine gravel, trace coarse sand.		SAND
					21 20				
5		S-3	24/14	4-6	20 63		Wet, very dense, gray to tan, fine to coarse GRAVEL, trace fine sand, trace silt.		
					49 30				
		S-4	24/15	6-8	18 14		Wet, dense, gray to tan, fine to coarse GRAVEL, trace fine to coarse sand, trace silt.		
					22 24				
		S-5	24/13	8-10	18 31		Wet, very dense, gray to brown, fine to coarse GRAVEL, fine to coarse sand, little silt.		
10					40 33				GLACIAL TILL
15		S-6	24/1	14-16	33 87		Wet, very dense, gray, coarse GRAVEL, trace fine to coarse sand, trace silt, trace clay.	1.	
					80 60				
20		S-7	24/15	19-21	23 27		Wet, very dense, gray, fine SAND, trace silt.	2.	
					35 32				
25		S-8	24/12	24-26	86 56		Wet, very dense, dark gray WEATHERED MUDSTONE recovered as fine to coarse sand and fine gravel, trace silt.	3.	WEATHERED MUDSTONE
					82 30				
30		S-9	21/20	29-30.3	33 77		Wet, very dense, black WEATHERED MUDSTONE recovered as silt, trace fine to coarse sand, trace gravel.	4.	
					78 106/5"				

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:
1. Coarse gravel appeared to plug the tip of the spoon.
2. The top half of the spoon recovered gradual fades from brown to gray.
3. Hole collapsed, installed casing.
4. Black is specked with occassional white.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS

ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. **B15-3**

SHEET 2 OF 2

PROJECT: LaFrance Hospitality, Bristol, Rhode Island

PROJECT NO. 15088.00

CHKD. BY SJM

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	SAMPLE PEN. (in.)/ REC.	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE TONS/FT² OR KG/CM²	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
35		S-10	17/14	34-35.5	57 60 100/3"		Wet, very dense, black WEATHERED MUDSTONE recovered as fine to coarse sand and silt.		WEATHERED MUDSTONE
40		S-11	9/9	39-39.75	98 100/3"		Wet, very dense, gray, fine SAND, some silt.	5.	
							BOTTOM OF EXPLORATION ± 39.75 FEET		
45									
50									
55									
60									
65									
70									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:

5. Contains white streaks.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS
ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-4
SHEET(S) 1 of 2

PROJECT: LaFrance Hospitality
PROJECT NO.: 15088.00
CHKD. BY: SJM

BORING CO.: New England Boring Contractors
FOREMAN: John Galvin
INSPECTOR: M. Georgian
BORING LOCATION: SEE EXPLORATION LOCATION PLAN
GROUND SURFACE ELEVATION: 80 feet ± DATUM: Unknown
DATE START: 7/15/2015 DATE END: 7/16/2015

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 in.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 IN.

CASING SIZE: 4" OTHER: Safety Hammer

GROUNDWATER READINGS[2]

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7-16-15	AM	5.5'	0	1 Day

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	PEN. (in.)/ REC.	DEPTH (FT)	BLOWS/6"	TONS/FT² OR KG/CM²	SAMPLE DESCRIPTION (Burmister CLASSIFICATION)	REMARKS	STRATUM DESCRIPTION[1]
		S-1A	6/3	0-2	2 5		1A: Moist, medium dense, brown, fine SAND and SILT. 1B: Moist, medium dense, gray to orange, fine SAND and SILT.		6" TOPSOIL
		S-1B	18/15		6 11				
		S-2	24/24	2-4	16 26		Moist, very dense, brown and orange, fine to coarse SAND, trace silt, trace gravel.		SAND
					32 19				
5	30	S-3	24/18	4-6	18 22		Wet, dense, gray, fine to coarse SAND and GRAVEL, trace silt.		
	41				25 39				
	33	S-4	24/21	6-8	35 24		Wet, dense, dark gray, fine to coarse SAND, little silt.		
	30				18 20				
	27	S-5	24/13	8-10	14 15		Wet, dense, gray, fine to coarse SAND and SILT, trace fine gravel.		
10					21 16				GLACIAL TILL
15		S-6	24/17	14-16	18 29		Wet, very dense, dark gray, fine to coarse GRAVEL, little fine to coarse sand, little silt.		
					34 33				
20		S-7	24/20	19-21	23 33		Wet, very dense, dark gray, WEATHERED MUDSTONE, recovered as fine sand, little silt, trace medium to coarse sand, trace fine gravel.	1.	
					41 50				
25		S-8	24/9	24-24.75	88 100/4"		Wet, very dense, gray, WEATHERED MUDSTONE, recovered as fine to coarse sand, some silt.		WEATHERED MUDSTONE
30		S-9	24/22	29-31	21 22		Wet, very dense, WEATHERED MUDSTONE, recovered as dark gray, fine to coarse sand, some silt, trace gravel.		
					83 75				

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:
1. 0.5 inch thick brown to orange streaks.

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS

ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. **B15-4**

SHEET 2 OF 2

PROJECT: LaFrance Hospitality

0

PROJECT NO.: 15088.00

CHKD. BY: SJM

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	PEN. (in.)/ REC.	SAMPLE DEPTH (FT)	BLOWS/6"	TONS/FT^2 OR KG/CM^2	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
35		S-10	20/16	34-35.8	20 17		Wet, very dense, WEATHERED MUDSTONE, recovered as black, fine to coarse sand, trace silt, trace gravel.		WEATHERED MUDSTONE
					87 100/2"				
40		S-11	4/9	39-39.75	83 100/3"		Wet, very dense, WEATHERED MUDSTONE, recovered as black, fine to coarse SAND, some silt.		
							BOTTOM OF EXPLORATION ± 39.75 FEET		
45									
50									
55									
60									
65									
70									

GRANULAR SOILS	
BLOWS/FT	DENSITY
0 - 4	V. LOOSE
4 - 10	LOOSE
10 - 30	M.DENSE
30 - 50	DENSE
>50	V.DENSE

COHESIVE SOILS	
BLOWS/FT	DENSITY
<2	V.SOFT
2 - 4	SOFT
4 - 8	M.STIFF
8 - 15	STIFF
15 - 30	V.STIFF
>30	HARD

REMARKS:

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

BORING NO. **B15-4**

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS
ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-5
SHEET(S) 1 of 2

PROJECT: LaFrance Hospitality, Bristol, Rhode Island
PROJECT NO. 15088.00
CHKD. BY SJM

BORING CO. New England Boring Contractors
FOREMAN John Galvin
INSPECTOR M. Georgian
BORING LOCATION SEE EXPLORATION LOCATION PLAN
GROUND SURFACE ELEVATION 78 feet ± DATUM Unknown
DATE START 7/17/2015 DATE END 7/17/2015

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 in.

CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING 300 lb. HAMMER FALLING 24 IN.

CASING SIZE: 4" OTHER: Safety Hammer

GROUNDWATER READINGS[2]

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7/17/15	11:00	4.5'	0	30 Minutes

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	PEN. (in.)/ REC.	SAMPLE DEPTH (FT)	BLOWS/6"	TONS/FT² OR KG/CM²	SAMPLE DESCRIPTION (Burmister CLASSIFICATION)	REMARKS	STRATUM DESCRIPTION[1]
	4	S-1A	9/6	0-.75	2 4		1A: Moist, dense, brown SILT, little fine sand. 1B: Moist, dense, brown/tan, fine SAND, trace silt.		9" TOPSOIL
	10	S-1B	15/10	.75-2	17 19				
	33	S-2	24/10	2-4	14 20		Moist, dense, orange and tan, coarse GRAVEL, some fine to medium sand, little silt, trace coarse sand.		SAND
	42				25 23				
5	18	S-3	24/12	4-6	13 13		Wet, medium dense, gray, fine to coarse GRAVEL, some silt, little fine to coarse sand.		
	39				19 25				
	21	S-4	24/9	6-8	21 21		Wet, dense, gray, SILT and fine to coarse SAND, some fine gravel, trace coarse gravel.		GLACIAL TILL
	32				24 47				
	30	S-5	24/10	8-10	19 17		Wet, dense, gray, fine GRAVEL, some fine to coarse sand, trace silt.		
10					21 19				
15		S-6	24/13	14-16	8 9		Wet, medium dense, dark gray, fine SAND and SILT, some gravel, little coarse sand.		
					10 13				
20		S-7	24/16	19-21	14 18		Wet, dense, dark gray WEATHERED MUDSTONE, recovered as fine to coarse sand, trace gravel, trace silt.		WEATHERED MUDSTONE
					25 25				
25		S-8	24/21	24-26	17 30		Wet, very dense, dark gray, WEATHERED MUDSTONE, recovered as fine to coarse sand, trace silt.		
					31 37				
30		S-9	20/14	29-30.3	40 70		Wet, very dense, gray, WEATHERED MUDSTONE, recovered as fine to coarse sand, little gravel, trace silt.		
					100/4"				

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

BORING NO. B15-5

PARE CORPORATION

10 LINCOLN ROAD, SUITE 103, FOXBORO, MASSACHUSETTS

ENGINEERS *** PLANNERS *** CONSULTANTS

BORING NO. B15-5

SHEET 2 OF 2

PROJECT LaFrance Hospitality
Bristol, Rhode Island

PROJECT NO. 15088.00

CHKD. BY SJM

DEPTH (ft)	CASING (bl/ft)	SAMPLE NO.	SAMPLE PEN. (in.)/ REC.	SAMPLE DEPTH (FT)	SAMPLE BLOWS/6"	SAMPLE TONS/FT^2 OR KG/CM^2	SAMPLE DESCRIPTION Burmister CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
35		S-10	10/10	34-34.8	91 100/4"		Wet, very dense, dark gray, WEATHERED MUDSTONE, recovered as fine to coarse sand, trace silt, trace gravel.		WEATHERED MUDSTONE
40		S-11	10/10	39-39.8	43 100/4"		Wet, very dense, dark gray, WEATHERED MUDSTONE, recovered as fine to coarse sand, some silt, trace medium to coarse sand.		
							BOTTOM OF EXPLORATION ± 39.8 FEET		
45									
50									
55									
60									
65									
70									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0 - 4	V. LOOSE	<2	V.SOFT
4 - 10	LOOSE	2 - 4	SOFT
10 - 30	M.DENSE	4 - 8	M.STIFF
30 - 50	DENSE	8 - 15	STIFF
>50	V.DENSE	15 - 30	V.STIFF
		>30	HARD

REMARKS:

BURMISTER CLASSIFICATION	
TRACE	0 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
AND	35 - 50%
PERCENT BY WEIGHT	

NOTES:
1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THE BORING LOGS. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

BORING NO. B15-5

APPENDIX B
Laboratory Testing Data

PARE CORPORATION

SIEVE ANALYSIS

SOIL SAMPLE

Location: Bristol,RI
Boring No.: B15-3
Depth: 2'-4'
Sample No.: S-2
Specific Gravity, Gs: 2.65

WATER CONTENT

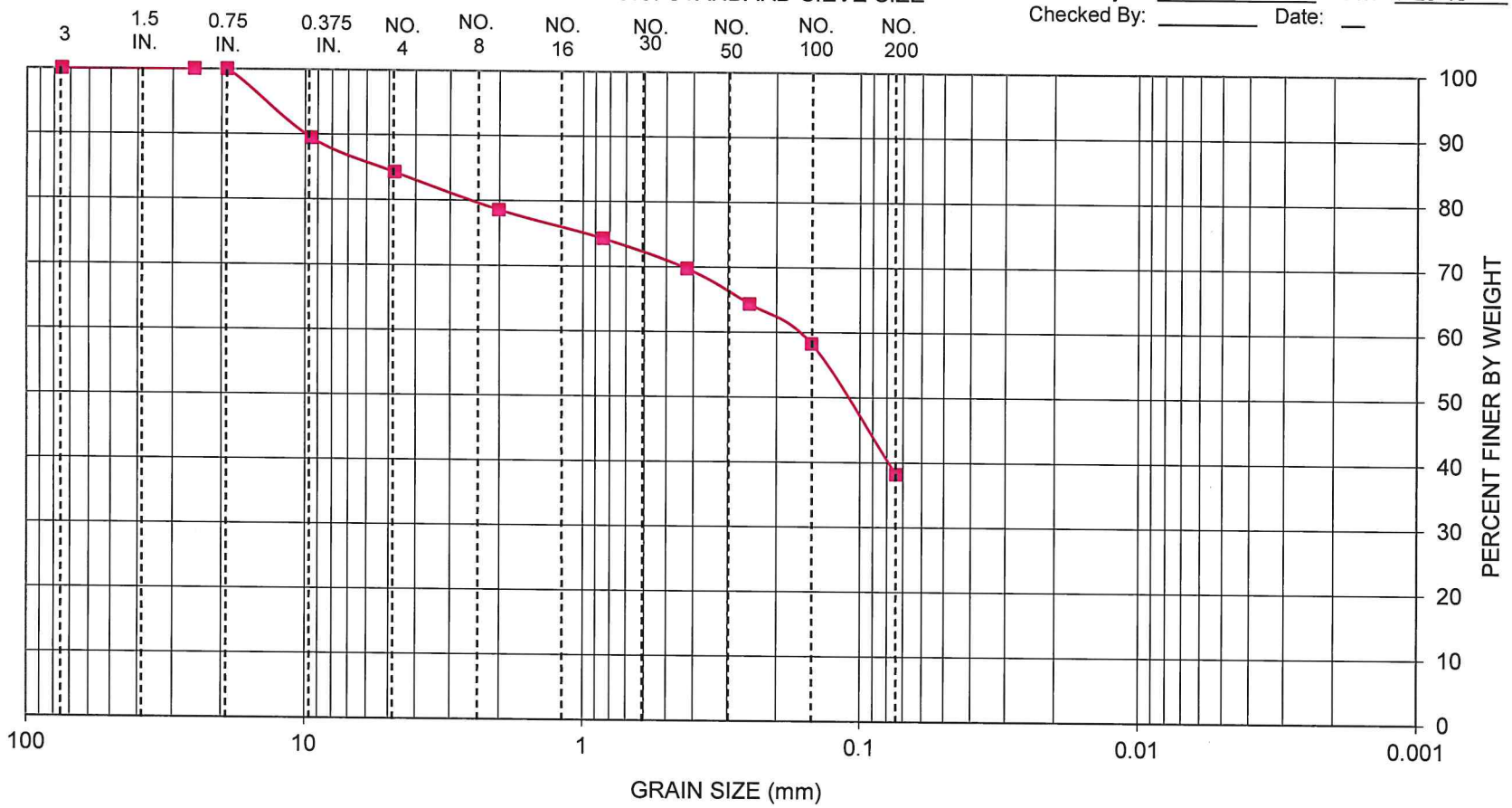
Container No.	3
Wt. Container (g)	189.4
Wt. Container, Wet Soil (g)	353.6
Wt. Container, Dry Soil (g)	335.2
Wt. Water (g)	18.4
Wt. Dry Soil (g)	145.8
Natural Water Content (%)	12.62%
Wt. Con, Washed Dry Soil (g)	
Wt. Washed Dry Soil (g)	

File No.	15088.00
Test No.	1
Date	7/29/2015
Tested By:	JMC
Checked By	SJM
Dry Sieve	
Wash Sieve	
Combined	X

TOTAL SAMPLE

U.S. Standard Sieve No.	Sieve Opening (mm)	Sieve Wt. (g)	Sieve + Soil Wt. (g)	Wt. of Soil Retained (g)	Cumulative Percent Retained	Total Sample Percent Finer By Wt.
3"	75	546.4	546.4	0.0	0.00	100.00
1"	25	546.4	546.4	0.0	0.00	100.00
0.75"	19.1	553.9	553.9	0.0	0.00	100.00
0.375"	9.5	537.4	552.7	15.3	10.53	89.47
4	4.76	498.6	506.1	7.5	15.69	84.31
10	2	482.3	490.6	8.3	21.40	78.60
20	0.841	434.2	440.5	6.3	25.74	74.26
40	0.420	378.2	384.8	6.6	30.28	69.72
60	0.250	349.3	357.1	7.8	35.65	64.35
100	0.149	361.5	370.4	8.9	41.78	58.22
200	0.074	332.5	361.6	29.1	61.80	38.20
Pan		371	426.5	55.5	100.00	0.00
Total				145.3	100.00	

Tested By: JMC Date: 7-29-15
Checked By: _____ Date: __



GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST	MATERIAL SOURCE	REMARKS
1	LaFrance Hospitality Bristol, RI B15-3 S-2 2'-4' SAND	Burmister - (SILT and fine to medium SAND, little fine gravel, trace coarse sand) Unified Soil Classification System - (SM Silty sand with gravel)

PARE CORPORATION

Item C1.

PARE CORPORATION

SIEVE ANALYSIS

SOIL SAMPLE

Location: Bristol,RI
Boring No.: B15-5
Depth: 6'-8'
Sample No.: S-4
Specific Gravity, Gs: 2.65

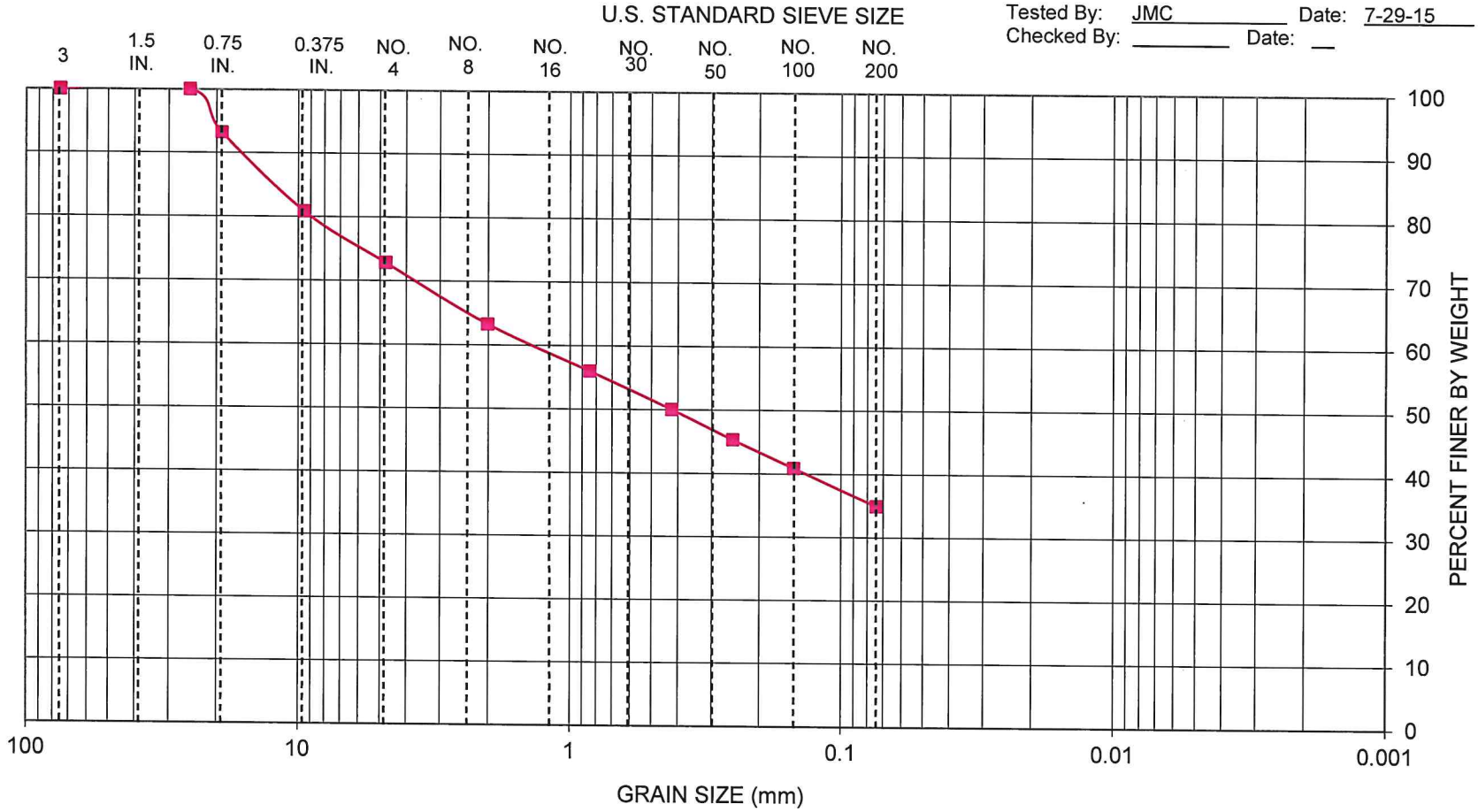
WATER CONTENT

Container No.	4
Wt. Container (g)	185.2
Wt. Container, Wet Soil (g)	396.2
Wt. Container, Dry Soil (g)	374.3
Wt. Water (g)	21.9
Wt. Dry Soil (g)	189.1
Natural Water Content (%)	11.58%
Wt. Con, Washed Dry Soil (g)	
Wt. Washed Dry Soil (g)	

File No.	15088.00
Test No.	2
Date	7/29/2015
Tested By:	JMC
Checked By	SJM
Dry Sieve	
Wash Sieve	
Combined	X

TOTAL SAMPLE

U.S. Standard Sieve No.	Sieve Opening (mm)	Sieve Wt. (g)	Sieve + Soil Wt. (g)	Wt. of Soil Retained (g)	Cumulative Percent Retained	Total Sample Percent Finer By Wt.
3"	75	546.4	546.4	0.0	0.00	100.00
1"	25	546.4	546.4	0.0	0.00	100.00
0.75"	19.1	553.9	566.9	13.0	6.78	93.22
0.375"	9.5	537.4	561	23.6	19.10	80.90
4	4.76	498.6	514	15.4	27.14	72.86
10	2	482.3	500.6	18.3	36.69	63.31
20	0.841	434.2	448.2	14.0	44.00	56.00
40	0.420	378.2	389.6	11.4	49.95	50.05
60	0.250	349.3	358.4	9.1	54.70	45.30
100	0.149	361.5	370	8.5	59.13	40.87
200	0.074	332.5	343.9	11.4	65.08	34.92
Pan		371	437.9	66.9	100.00	0.00
Total				191.6	100.00	



Tested By: JMC Date: 7-29-15
Checked By: _____ Date: —

GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

TEST	MATERIAL SOURCE	REMARKS
2	LaFrance Hospitality Bristol, RI B15-5 S-4 6'-8' GLACIAL TILL	Burmister - (SILT and fine to coarse SAND, some fine gravel, trace coarse gravel) Unified Soil Classification System - (SM Silty sand with gravel)

PARE CORPORATION

Item C1.

APPENDIX C
Geotechnical Limitations

GEOTECHNICAL LIMITATIONS

Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, Pare Corporation (PARE) should be asked to reevaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in the subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

3. Water level readings have been made in the drill holes at the times and under the conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors occurring since the time the measurements were made.

Review

4. In the event that any changes in the nature or location of the proposed structure are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are verified in writing by PARE. PARE should also be provided with the opportunity for a general review of the final design and specifications in order that the earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

Construction

5. PARE should be retained to provide soil engineering services during construction of the excavation and foundation phases of work in order to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those indicated prior to the start of construction.

Use of Report

6. This report has been prepared for the exclusive use of Sean LaFrance, LaFrance Hospitality for specific application to the proposed hotel in Bristol, RI in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

7. This engineering report has been prepared for this project by PARE. This report is for design purposes only and is not necessarily sufficient to prepare an accurate bid. Contractors wishing a copy of this report may secure it with the understanding that its scope is limited to design considerations only.

APPENDIX D
General Investigation Notes

GENERAL INVESTIGATION NOTES

GENERAL

1. All depths are given in feet measured from the ground surface unless otherwise noted. Depth of angled borings is measured along the axis of the boring.
2. The identification and description of soils is based on visual inspection of the retrieved samples using the Burmister Classification System. Descriptions of boring logs apply only at the specific boring locations and at the time the borings were made. They are not warranted to be representative of subsurface conditions at other locations or times.
3. Water levels are observed at the end of boring (E.O.B.) or/and on a long-term basis through the use of strategically placed observation wells. The indicated levels may not reflect the actual groundwater levels. Fluctuations in groundwater levels can occur due to variations in precipitation, season, tidal fluctuation, adjacent construction activity and construction dewatering systems, and other factors.

SOIL DESCRIPTION

1. The Standard Penetration (SPT) test is performed in general accordance with ASTM D-1586. The standard penetration resistance (N) is defined as the number of blows required to drive a 2-inch O.D., 1 3/8-inch I.D. split-spoon sampler by 12 inches by dropping a 140-lb hammer through a vertical distance of 30 inches. The sampler is normally driven 3 (for 18-inch long sampler) or 4 (for 24-inch long sampler) successive 6-inch increments. The first 6-inch is considered to be a seating drive, therefore the sum of the second and third increments are used in determining the N value.

2. Consistency/Condition

Coarse-Grained Soils	Relative Density (%)	N (blows per foot)
Very loose	0-15	0-4
Loose	15-35	4-10
Medium dense	35-65	10-30
Dense	65-85	30-50
Very dense	85-100	>50

Fine-Grained Soils	Unconfined Compressive Strength, q_u (tsf)	N (blows per foot)	Field Identification
Very Soft	<0.25	0-2	Exudes between fingers when squeezed in hand
Soft	0.25-0.50	2-4	Molded by light finger pressure
Medium	0.50-1.00	4-8	Molded by strong finger pressure
Stiff	1.00-2.00	8-15	Indented by thumb
Very Stiff	2.00-4.00	15-30	Indented by thumbnail
Hard	>4.00	>30	Difficult to indent by thumbnail

Grain Size
Boulders – >12 in.
Cobbles – 3 in. - 12 in.
Gravel – Coarse, ¾ in. - 3 in.
– Fine, 0.19 in. (#4) to ¾ in.
Sand – Coarse, 0.079 in. (#10) to 0.19 in. (#4)
– Medium, 0.017 in. (#40) to 0.079 in. (#10)
– Fine, 0.0029 in. (#200) to 0.017 in. (#40)
Silt – 0.0002 in. to 0.0029 in. (#200)
Clay - <0.0002 in.

Descriptive Adjective	
Trace	0-10%
Little	10-20%
Some	20-35%
And	35-50%

Percent by Weight

ROCK DESCRIPTION

1. Core recovery is the total length of rock core recovered from a core run divided by the length of the run, expressed as a percentage.

2. Rock Quality Designation (RQD) is the total length of hard, sound pieces of rock core greater than 4-inches from a core run divided by the length of the run, expressed as a percentage.

RQD (%)	Description	Approximate Equivalent Fracture Spacing (feet)	
0-25	Very Poor	Very close	(<0.2)
25-50	Poor	Close	(0.2-1)
50-75	Fair	Moderately wide	(1-3)
75-90	Good	Wide	(3-10)
90-100	Excellent	Very wide	(>10)

3. "Weathering" refers to the degree of alteration observed in the rock core, which is produced by chemical and/or mechanical processes.

Grade	Symbol	Recognition
Fresh	F	No visible sign of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	WS	Slight discoloration inwards from open fractures, otherwise similar to F.
Moderately Weathered	WM	Discoloration throughout. Weaker minerals such as feldspar decomposed. Strength somewhat

GENERAL INVESTIGATION NOTES

		less than fresh rock but cores cannot be broken by hand or scraped by knife. Texture preserved.
Highly Weathered	WH	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric preserved.
Completely Weathered	WC	Minerals decomposed to soil but fabric and structure preserved (Saprolite). Specimens easily crumbled or penetrated.
Residual Soil	RS	Advance state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.

4. "Hardness" is an estimate of the rock strength that is a function of lithology and the degree of weathering.

Class	Hardness	Field Test	Approximate Range of Uniaxial Compression Strength kg/cm^2 (tons/ft^2)
I	Extremely Hard	Many blows with geologic hammer required to break intact specimen.	>2,000
II	Very Hard	Hand held specimen breaks with hammer end of pick under more than one blow.	2,000 – 1,000
III	Hard	Cannot be scraped or peeled with knife, hand held specimen can be broken with single moderate blow with pick.	1,000 – 500
IV	Soft	Can just be scraped or peeled with knife. Indentation 1 mm to 3 mm show in specimen with moderate blow with pick.	500 – 250
V	Very Soft	Material crumbles under moderate blow with sharp end of pick and can be peeled with a knife, but is too hard to hand-trim for triaxial test specimen.	250 – 10

5. Discontinuity Descriptions

Rock Continuity: Any break in a rock whether or not it has undergone relative displacement.

Extremely Fractured – Drill core stem less than 1 in.
Moderately Fractured – Drill core stem 1 in. to 4 in.
Slightly Fractured – Drill core stem 4 in. to 8 in.
Sound – Drill core stem greater than 8 in.

Texture: Terminology used to identify size, shape and arrangement of constituent elements.

Amorphous – Too small to be seen with naked eye.
Fine Grained – Barely seen with naked eye.
Medium Grained – Barely seen with naked eye to 1/8 in.
Coarse Grained – $^1/_8$ in to ¼ in.
Very Coarse Grained > ¼ in.

Discontinuities: Surface representing breaks or fractures separating the rock moss into discrete units.

Crack – A partial or incomplete fracture.
Joint – A simple fracture along which no shear displacement has occurred. May form joint sets.
Shear – A fracture along which differential movement has taken place parallel to the surface sufficient to produce slickendsides or polishing. May be accompanied by a zone of fractured rock up to a few inches wide.
Fault – A major fracture along which there has been appreciable displacement and accompanied by gouge and/or a severely fractured adjacent zone.
Shear or Fault Zone – A band or zone of parallel, closely spaced shears or faults.

Fractures, Bedding, and Foliation, Spacing and Attitude:

Fractures	Bedding and Foliation	Spacing	Attitude	Dip Angle
Very Close	Very Thin	Less than 2 in.	Horizontal	0 – 5
Close	Thin	2 in. – 1 ft.	Shallow or low angle	5 – 35
Moderate	Medium	1 ft. – 3 ft.	Moderately dipping	35 – 55
Wide	Thick	3 ft. – 10 ft.	Steep or high angle	55 – 85
Very Wide	Very Thick	More than 10 ft.	Vertical	85 – 90

DRILLING CODES

HSA	Hollow Stem Auger	SS	Split Spoon Sample
C/A	Casing Advancement	AS	Auger Sample
BX	Rock Cored with BX Core Barrel (Produces 1 $^5/_8$"-diameter core)	ST	Shelby Tube Sample
		WS	Washed Sample
NX	Rock Cored with NX Core Barrel (Produces 2 $^1/_8$"-diameter core)	NR	No Recovery

December 14, 2025

To: Bristol Planning Board

From: Patricia Chalmers

Dear Members of the Bristol Planning Board,

I am writing to request that a deadline for continuances be added to town regulations. Having a deadline to request a continuance only makes sense. It would prevent developers from jerking around, and playing games with town officials and concerned residents. Items stated on the posted agenda should be on the agenda. It is counterproductive not to have a deadline.

Thank you,

Patricia Chalmers
D 2 Bristol Woods Drive
Bristol, RI 02809
401 396-6109