CITY OF DOVER

DOVER PLANNING BOARD – AGENDA

REVISED

Meeting Type:	Regular Meeting
Meeting Location:	Council Chambers, City Hall, 288 Central Avenue, Dover, NH 03820
Meeting Date:	**Tuesday, February 11, 2025**
Meeting Time:	**7:00 pm**

1. **CITIZENS' FORUM**
2. **APPROVAL OF THE PRIOR MINUTES**
   - January 28, 2025 Regular Meeting Minutes
3. **OLD BUSINESS**
4. **NEW BUSINESS**

   A. Consideration and acceptance of a Conditional Use Permit for Heath J. Todd Revocable Trust, Assessor's Map M, Lot 104, zoned R-40, located at Back Road. (The proposal involves creating an access drive to the developable portion of a lot for the construction of a single home and accessory structures, resulting in 8,938 s.f. of permanent wetlands impact and 28,193 s.f. of permanent impact to the 50-foot wetland buffer, along with 166 s.f. of temporary wetlands impact.) *(COND-2024-0023)

   B. Consideration and acceptance of a Conditional Use Permit for Heath J. Todd Revocable Trust, Assessor's Map M, Lot 104, zoned R-40, located at Back Road. (Proposal is for 1,110 s.f. of permanent impact and 73 s.f. of temporary impact to the Conservation District, associated with a patio path, patio, and access to a proposed tidal docking structure.) *(COND-2024-0027)

   C. ~~Consideration and acceptance of a Lot Line Adjustment for Hawkins Family Revocable Trust, Assessor's Map 30, Lots 88 and 88-1, zoned RM-U and CBD-MU, located at 31 Sixth Street and 31 ½ Sixth Street. *(LOTA-2025-0002)~~ ***The applicant has requested to withdraw this item.***

   D. Discussion on Accessory Dwelling Units. *

   E. Discussion on Transfer of Development Rights. *

5. **STAFF COMMENT**
6. **MEMBER COMMENTS**
7. **ADJOURNMENT**

*Indicates that if the application is accepted for discussion, the public hearing will be held the same evening. Note that some hearings will be continued from one meeting to another and some may be postponed. Since this is only a partial description of the proposal and may change, persons with questions or wishing to see the plans are invited to visit the Planning Office, Monday through Thursday from 8:30 am to 5:30 pm and Friday 8:30 am to 4:00 pm or email Dover-Planning@dover.nh.gov. You may also view materials at www.dover.nh.gov. Follow us on Twitter @DoverNHPlanning and find us on Facebook at https://www.facebook.com/DoverNHPlanning. The public is encouraged to leave comments in advance by emailing Dover-Planning@dover.nh.gov, or mailing written comments to Planning Board, Dover City Hall, 288 Central Ave., Dover, NH 03820. Messages must be received no later than 4 p.m. the day of the meeting and should identify the name and Dover address of the person leaving the message or providing the comment.

DOVER PLANNING BOARD – MINUTES

CITY OF DOVER

Meeting Type:	Regular Meeting
Meeting Location:	Council Chambers, City Hall, 288 Central Ave, Dover, NH.
Meeting Date:	**Tuesday, January 28, 2025**
Meeting Time:	**7:00 pm**

Members Present: Gina Cruikshank (Chair), Doug Glennon (Vice Chair), Ken Mavrogeorge, Kyle Pimental, Melina Gambino
Members on Phone: Fergus Cullen (Councilor)
Members Not Present (excused): George DeBoer, Tom Clark, Mallory Strange (Alternate), Jeff Sanborn (Alternate)
Staff Present: Donna Benton, Planning Director

Gina Cruikshank (Chair) called the meeting to order at 7:00p.m. and noted that Councilor Cullen is participating in the meeting by telephone.

1. CITIZENS' FORUM

Citizens Forum Open
Caitlin Wilkie, 568 Sixth St expressed concerns about the TDR program and education around the program. She described some clarifications she has received from staff and how she feels that contradicts the way TDR items have been handled at Planning Board level. If the staff and board are interpreting the code beyond its written language, then the language needs to be updated to maintain fairness and legality. She is also concerned about the TDR fees and how the funds have been used. She asked for transparency in this process. She asks the board members to take the time to fully understand the repercussions their decisions have on residents – especially with TDR.
Citizens Forum Closed

2. APPROVAL OF THE PRIOR MINUTES

- January 11, 2025 Special Meeting Minutes and January 14, 2025 Regular Meeting Minutes

Motion: K. Mavrogeorge moved to approve the special meeting minutes of January 11, 2025 and regular meeting minutes of January 14, 2025. Seconded by: D. Glennon.
Roll Call Vote: Passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

3. OLD BUSINESS

4. NEW BUSINESS

A. Consideration and acceptance of a Lot Line Adjustment for Robert S. Mairs Revocable Trust, George Maglaras & Robert S, Mairs Trustee, & George Maglaras, Assessor's Map 24, Lots 141, 140 & 139, zoned CWD, located at 5, 11, and 31 Cocheco Street. *(LOTA-2024-0013)

D. Benton explained that the applicant is proposing a lot line adjustment to revise the lot lines between abutting properties located at 5 Cocheco St. (Map 24, Lot 141), 11 Cocheco St. (Map 24, Lot 140), and 31 Cocheco St. (Map 24, Lot 139).

F. Cullen disclosed that he has a professional relationship with Kevin McEneaney's firm who surveyed the property for this application, and he is a client of Mr. McEneaney's company. He does not have any financial, personal, or professional interest that would create a conflict of interest in relation to this application. His evaluation of this application is unbiased and impartial. If any member of the Planning Board objects to his participation with this application, he asked them to say so. (No one spoke)

This lot line adjustment dissolves lot 140 and adds ± 3,889 square feet to lot 139 and ±4,176 square feet to lot 141. Each lot's frontage and compliance with underlying zoning regulations (CBD-G and CWD) will remain post-adjustment.

As a Lot Line Adjustment, this application did not appear before the TRC.
Kevin McEneaney, McEneaney Survey, represented the application noted three abutting lots are proposed to adjust the lot lines. He listed the ownerships of the lots and noted though the total square footages of the two proposed lots will not be equal, they will each have equal frontages and waterfronts.

K. Pimental asked about the boundary of the zoning districts and how the adjustment of the lot line now puts one of the proposed lots in two different zoning districts.
D. Benton clarified that the rule is that the lot will have zoning regulations based on which district the majority of the lot encompasses, though the regulations allow for a change of zoning of moving the boundary 50' for that lot if necessary for a future use.

Motion: M. Gambino moved to accept the application and declared no regional impact. Seconded by: K. Mavrogeorge.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

Citizens Forum Open
No one spoke
Citizens Forum Closed

STAFF RECOMMENDATION – Lot Line Adjustment
Chapter 157-17 of the Land Subdivision Regulations of the City Code provides for the adjustment of existing lot lines between two or more lots. This plan is consistent with those regulations.

The Planning Department recommends the Planning Board make findings, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Signing of Plans:

1. Provide physical and digital copies (including CAD) of complete plan set for recording at Strafford County Registry of Deeds which additionally shall include:
   1.1. Planning File Number #LOTA-2024-0013
   1.2. The owner's signatures
   1.3. City Assessor confirms lot numbering.

Motion: M. Gambino moved to approve the Lot Line Adjustment with subsequent conditions set by staff as it meets criteria. Seconded by: K. Mavrogeorge.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

B. Consideration and acceptance of Transfer of Development Rights for 5 Sherman Street, LLC, Assessor's Map 19, Lot 8, zoned R-12, located at 103 Court Street. (Proposal is to purchase four (4) units through TDR.) *(TRAN-2024-0011)

C. Consideration and acceptance of Site Review for 5 Sherman Street, LLC, Assessor's Map 19, Lot 8, zoned R-12, located at 103 Court Street. (Proposal is to maintain an existing single-family dwelling, construct a two-family dwelling that is deed-restricted to Fair Market Rent, and construct four (4) new size-restricted single-family homes for a total of seven (7) dwelling units. *(SITE-2024-0012)

Motion: M. Gambino moved to remove this item from the table. Seconded by: D. Glennon.
Roll Call Vote: Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes

D. Benton explained that the applicant is proposing a residential project consisting of five residential units by purchasing two size restricted units through TDR. This item was before the board, accepted and tabled on December 10th, but the plan has been revised since then. The agenda reads as it does because this item was a continuance.

The proposal includes renovation of the existing single-family dwelling and the construction of four single-family "cottage" dwelling units. The duplex has been removed from the proposal and the applicant is requesting to purchase two units through TDR which will be size restricted to 1,400 sq ft.

A Site Visit was conducted on January 11, 2025, to allow staff, Planning Board members, and members of the public to review the site in person, observe existing conditions, and be able discuss how the proposed development aligns with the surrounding area and zoning requirements.

The applicant provided previous iterations of this proposal for increased units on the subject property. The applicant is now proposing a decrease in total units, an increase in perimeter screening, and a change to the site layout with the "cottage" units and access driveway being shifted further from the side property boundaries.

The existing lot, Assessor's Map 19, Lot 8, contains one single-family dwelling. The current Zoning Ordinance permits the use of the Transfer of Development Rights ordinance (TDR) in the R-12 zone, but specifies that the applicant must apply single-family density for the creation of additional single-family homes. As the applicant is proposing single-family density, the single-family yield calculation has been used and has resulted in a base density calculation of three units. This, therefore, means that the remaining two sought units could be granted if the Planning Board votes to approve the use of TDR.

Per the applicant's plan, the existing single-family home will be renovated and remain, and four single-family "cottage" dwelling units will be constructed. Two of the cottage units are proposed to be size-restricted to 1,400 square and purchased through TDR.

Because of the change of plans, the board can take action on the TDR request tonight but staff recommends the second item could be tabled so it can go to TRC.

Staff has reviewed the proposal and supplied a TDR memo to the applicant.

The Board has received comments tonight. Staff has tried to respond and reference the correct areas of the TDR code and try to ensure the public is informed.

Robert Baldwin, 5 Sherman St LLC represented the application and confirmed they are expecting to table the second request tonight to take the proposal to TRC.
He highlighted the changes to the plans: removed the duplex, straightened the driveway, noted the 25' cemetery setback, included a detailed landscape plan showing the screening, and fencing adjustments.
He described some other development options that they considered.

Board members asked clarifying questions of the applicant which were addressed. Topics included storm water, size restrictions (all four units are proposed restricted to 1,400 sf), ownership vs rental status.

The applicant reviewed the development options again while the plans were shown on the screen.

The TDR buffer was discussed and clarified that based on the plans presented and the section of the code they are developing under, the 30-foot buffer is not a requirement.

Public Hearing Open
Hilary Hamer, 91 Court St believes the 30-foot buffer does apply for this proposal and explained her reasoning and handed out a paper to the board members. She asked the board which residential performance standard applies to this project and why. She asked for an explanation for when the buffer does apply to residential TDRs. She believes this proposal is unlawful and unreasonable, that a buffer applies and has not been provided. She highlighted the state's definition of subdivision.

Merlin Mason, 91 Court St is concerned about the proposed increase to density, is in favor of the buffer, and he explained he and his wife want real neighbors in real homes.

Dorna Hamer, 18 Tuttle Ln is opposed to the project and is in favor the buffer. The parent lot is the existing lot. This density is out of place in this neighborhood. The TDR rules are vague, and this project should be put on hold until those can be clarified.

Keith Hamer, 18 Tuttle Ln is opposed to the project noting many of the neighbors and abutters have written to the office in opposition. If the board tables the item, he asks that the public hearing be tabled so it can be continued.

Caitlin Wilkie, 568 Sixth St is in opposition to the project. TDR is to be used to restrict density to appropriate locations and protect other areas. She agrees the buffer should apply. Proposed cottages have no consistency with the existing homes on the street. The proposal is also too dense for the neighborhood. She asked this proposal to be denied.

D. Benton noted emails were received from some who have already spoken tonight and summarized one from Lisa O'Grady of 100 Court St.
Public Hearing Closed

D. Benton addressed public comment:

- She gave an explanation of the two sections of the TDR ordinance with different options and how they apply to this application.
- She explained a lot restoration for four lots at Locke St and Tranquility Way and the density options for those lots being more so than the current proposal.
- She discussed that some projects have the buffer and some do not. She appreciates the table provided by the resident, but it is not 100% accurate. Staff can review and comment.
- Why this proposal isn't a subdivision: In Dover, condominiums don't fall under subdivision. Dover subdivisions are focused on fee simple lot lines, rather than form of ownership.
- The 30' buffer is not required because they are proposing units instead of fee simple lots.

Board members continued discussion about condominiums, 30-foot buffer applications to some types and not others, tightening up the zoning regulations as part of the review to require the buffer for consistency, allowed density by right, considering the reasons for a no-cut buffer and utilizing their ability to have applicants create buffers where they don't exist.

STAFF RECOMMENDATION - TDR
§170-29 provides for additional density to be purchased through Transfer of Development Rights. This application meets the ordinance.

Section 170.29G(8) states:

"Regardless of the method utilized, any other provision in this Chapter to the contrary, the density or intensity of development of a receiving parcel may be increased by the TRANSFER OF DEVELOPMENT RIGHTS so long as the increase in density or intensity meets the following criteria and a narrative is submitted indicating how those criteria are met:

(a) Is consistent with the Master Plan

(b) Is compatible with the land uses on neighboring LOTs (eg a multifamily building fits in with in a single family neighborhood). The applicant shall provide in their narrative an explanation of their neighborhood analysis.

(c) Is created on property served by public water and sanitary sewer.

(d) Any relief sought should not be caused by the additional density."

Section §170-29 provides for additional density to be purchased through Transfer of Development Rights, provided that four criteria are met: The proposal is consistent with the Master Plan; is compatible with the land uses on neighboring lots; is created on property served by public water and sanitary sewer; and not seeking permitted relief caused by additional density. This application meets the criteria.

Specifically, the lot is served by water and sewer, and the Master Plan supports housing diversity and encourages creating housing in walkable neighborhoods which encourage community engagement. Regarding the requested density, it is in line with neighboring land uses and development. The proposal is for single-family homes, and there are single- and two-family homes in the immediate area. Currently, the parcel has a single unit, and by right, the unit could be converted to a two-family dwelling unit. The applicant is proposing five total residential units, or an increase of four units. On the adjacent parcel at 109 Court Street, that and the three lots that were created from it, all meet the zoning to allow two-family units. These four lots equate to a similar-sized area, (1.5 acres), and with no Planning Board review, eight units could be constructed by right where one unit exists today. In regards to TDR buffers, as 170-29.G(7) states, "A continuous visual buffer shall be created along the perimeter of the parent parcel, which shall include a thirty-foot no cut, no disturb buffer," and the proposal is not indicating to subdivide or add new lot lines, staff's interpretation has been that the buffer is not required. However, staff has continually asked the applicant to add more green space and screening as possible and to ensure the 25' setback from the cemetery has been met. This revised plan meets those requests.

The Planning Department recommends that the Planning Board make the necessary and supporting findings of fact, and vote to find the criteria of the TDR ordinance has been met with the following subsequent conditions:

Subsequent Conditions to be Met Prior to Granting TDR:

1. A Site Plan application is required to be submitted for review and consideration;
2. Payment of TDR fees;
3. Add note to plan: "This site plan uses the Transfer of Development Rights ordinance which allows for relief to the setbacks, lot area, frontage, density and intensity of the development. The Board granted TDR relief to purchase up to two units for a maximum total of five units on the subject lot. The existing single-family unit and the proposed single-family dwellings may not be converted to a two-family dwelling without further review and approval by the Planning Board;"
4. The applicant provide a revised narrative including the latest TDR request;

5. Add note indicating which units will be purchased as size-restricted units through the TDR ordinance and that a deed restriction is required.
6. The board may decrease the total unit count based on TRC review.

Comments by board members:
M. Gambino:
Noted she thinks the developer has shown good faith and adjusted the project to be more clearly aligned with concerns around the density. This is a 50% decrease in the number of requested TDR units from 4 to 2. This TDR project will support and promote the City's diversity of ages and income which is part of the master plan by building more attainable housing on this lot that might otherwise be allowed by right.

A public comment mentioned wanting to see somebody with a garden and the swing set in the backyard. The reality is that not everybody wants that in their yard and so there needs to be diversity of housing.

She referred to the discussion about the 30-foot buffer clouded this project for her and is now confident that staff gave the Board the right information and is looking forward to having further discussions about the TDR regulations.

This project is in a place where TDR is appropriate. She prefers to see the TDR here in the R-12 zone rather than the rural zone.

K. Pimental:
Diversity of housing is important and emphasized that not everyone wants the same single-family home on a certain sized lot. This project has gotten better with public, staff and Planning Board input.

K. Mavrogeorge:
The difference tonight is the Board is being asked to approve the number of units and table the plan so it can go to TRC. The plan is heading in the right direction, but additional work is needed. Any vote tonight on number of units does not approve any particular plan or development option.

Motion: K. Pimental moved to grant Transfer of Development Rights request based on the comments and conditions set by the Planning Department. Seconded by: K. Mavrogeorge.
Roll Call Vote: Motion passed 5-1 (Cruikshank- yes, Glennon- no, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

Motion: M. Gambino moved to table the site plan. Seconded by: K. Mavrogeorge.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

The Chair announced Items 4D, E, F, & G would be heard together.

D. Consideration and acceptance of a Minor Subdivision for Allen & Major Associates, Inc., (Owners: 114 Silver Street Group, LLC), Assessor's Map 12, Lot 148, zoned HR, located at 114 Silver Street. (Proposal is to subdivide the parcel to make one (1) new lot for a total of two (2) lots.) *(SUBM-2024-0001)

E. Consideration and acceptance of a Conditional Use Permit for Allen & Major Associates, Inc., (Owners: 114 Silver Street Group, LLC), Assessor's Map 12, Lot 148, zoned HR, located at 114

DRAFT

Silver Street. (Proposal is to convert a single-family residential home to a 4-unit residential dwelling within the Heritage Residential Zoning District.) *(COND-2024-0011)

F. Consideration and acceptance of a Conditional Use Permit for Allen & Major Associates, Inc., (Owners: 114 Silver Street Group, LLC), Assessor's Map 12, Lot 148-1, zoned HR, located at 114 Silver Street. (Proposal is to construct a new 4-unit, residential dwelling in the Heritage Residential Zoning District.) *(COND-2024-0012)

G. Consideration and acceptance of a Site Review for Allen & Major Associates, Inc., (Owners: 114 Silver Street Group, LLC), Assessor's Map 12, Lot 148 & 148-1 zoned HR, located at 114 Silver Street. (Proposal is to convert an existing single-family home into a 4-unit residential dwelling on the parent lot and to construct a 3-story, 4-unit residential dwelling on the proposed subdivided lot with eight (8) associated parking spaces for each building.) *(SITE-2024-0006)

D. Benton explained that the applicant is proposing to convert an existing single-family home into a 4-unit residential dwelling on one lot and to construct a 3-story, 4-unit residential dwelling on a proposed subdivided lot.

The existing residential structure and new residential structure have been designed to appear as single-family homes facing Silver Street. The applicant provided an architectural narrative to explain adherence to guidelines set forth in the Dover Historic Preservation Guide including traditional materials and detailing.

The access driveway for the project, currently on Silver Street, is proposed to be moved to Rutland Street. The proposal includes 16 total surface parking spaces behind the residential structures with perimeter landscaping and fencing.

Within the Heritage Residential (HR) Zoning District, any conversion or creation of a structure to a 3-4 family dwelling, must meet the required criteria of a Conditional Use Permit (CUP). Two related CUPs have been submitted as part of this project (COND-2024-0011 and COND-2024-0012).

The applicant has also submitted a related Minor Subdivision application that proposes a subdivision of the subject lot at 114 Silver St., creating one new lot for a total of two lots (Assessor's Map 12, Lots 148 & 148-1). Lot 148 will be approximately 11,650 square feet and Lot 148-1 will be approximately 10,690 square feet.

The Technical Review Committee reviewed the application at their July 18, 2024, September 5, 2024, October 31, 2024, and November 21, 2024 meetings.

Tom Toye, owner, Arthur Thomas Properties and Michael Malynowski, Allen and Major represented the application.
Mr. Toye noted he and his wife purchased the property a year ago with the intent to develop it as a multi-family. He explained the experience they have with development. The intent was to repurpose the barn, but that was not viable. They intend to keep the property and manage it as part of their portfolio which includes other properties within that neighborhood.
They have looked at many options before bringing this proposal to the board. They made an effort to work the project within the confines of the ordinance. They did not seek any variances or TDR.

Mr. Malynowski addressed the engineering and technical aspects of the project.

K. Mavrogeorge noted the Engineering staff is not in favor of the subdivision of the lots as new, separate sewer lines will be required for each lot. He asked that the applicant address the reasoning for the subdivision.

Mr. Malynowski clarified there will be two separate lines from Rutland. There will also be two separate water lines.

M. Gambino asked about the unit sizes and why two 500+ sq ft units are proposed rather than a large unit. Mr. Toye addressed the four 1-bedroom units in the existing structure and two 1-bedrooms and two 2-bedrooms in the new structure. Their research shows a need for small units.

Motion: K. Pimental moved to accept the four applications and declared no regional impact. Seconded by: K. Mavrogeorge.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

Public hearing opened.
Deborah Child, 8 Rutland St provided a letter last week. She has concerns about the cut out on Rutland St due to safety. Additional concerns about traffic, transient population living nearby, and the carriage house is historic and doesn't want it removed.

Liz Goldman, 44 Rutland St is in favor of density but this seems too much. She is concerned about the design being too 'cookie cutter'.

Patty Diengott, 35 Rutland St is concerned about the traffic on Rutland St particularly at that corner. Safety is a real concern there. It is a high density street where people go way too fast at that corner. There are multiple developments in progress in that area.

Bob Gelinas, 15 Rutland St noted the historical aspects of the City and the wonderful carriage house on the lot. He is concerned about the proposed curb cut on Rutland with the added traffic and safety impacts.

D. Benton listed the emails received to the office and summarized the concerns.
Public hearing closed.

D. Benton addressed public comment:

- Traffic study/ Technical Review Committee
- Right-out only from driveway option deemed unwarranted by Traffic Bureau and Police Dept
- As the City does not own the property, they have no say in what happens to the carriage house
- Described the iterations of plans and discussion the Planning staff has had with the applicant

Chair Cruikshank noted that property owners have rights and the Planning Board does not have the authority to tell a property owner they have to keep a building or not. They are allowed to do what they want with the property within the regulations.
She also noted the board follows the rules and regulations. Sometimes they may personally agree with the public comment, but have to act as a board member within the regulations.
She appreciates the applicant's efforts in the design. The buildings look different from each other and look like single-family homes.

Board members discussed the following;

- Carriage house options
- Guidance on traffic
    - Individual projects don't show an impact, but collectively they do
    - Is there any staff guidance that can inform the Board on a wider scope
        - Lengthy discussion/ information given by K. Mavrogeorge
- Historic area alongside necessity of diversity of housing

STAFF RECOMMENDATION- Minor Subdivision
The plan is consistent with §157-17 of the City of Dover's Land Subdivision Regulations, which provides for subdivision of existing lots.

The Planning Department recommends the Planning Board make findings, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to be Met Prior to Signing of Plans:

1. Provide physical and digital copies (including CAD) of complete plan set which additionally shall include:
    1.1. The owner's signatures for recording at Strafford County Registry of Deeds;
    1.2. Include the Planning File #: SUBM-2024-0001;
    1.3. The stamp and signature of the LLS on the final plans;
    1.4. Confirm lot numbering with City Assessor.
2. Provide copies of easements between the two lots for access, and utilities.

Motion: K. Pimental moved to approve the Minor Subdivision with conditions detailed by staff as it meets the criteria of 157. Seconded by M. Gambino.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

STAFF RECOMMENDATION- Conditional Use Permit, HR District, Conversion of existing dwelling to accommodate not more than 4 units
§170-20.B(1) of the Zoning Ordinance allows for Conditional Use approval for relief from the standards herein which may be granted by the Planning Board, (RSA 674:21 II), after proper public notice and public hearing provided that the proposed project complies with the following standards:

Conversion to, or creation of Dwelling, 3-4 Family: Three- or four-family dwellings and conversions of existing dwellings to three (3) or four (4) units shall be subject to the following regulations:

a. The specific site must have an amount of open space, either landscaped or left natural, at least equal to the average amount of open space on all developed lots in the HR District that are wholly or partly within two hundred (200) feet of the subject parcel. Existing parking areas, either gravel, paved or unpaved, shall not be considered to be open space.
b. Off-street parking, in accordance with Chapter 153, Site Review, shall be provided as to avoid vehicles backing into the street. Two (2) parking spaces per unit shall be required.
c. Parking lots shall be at least five (5) feet from a side property line and ten (10) feet from a front property line.
d. Parking areas shall be screened from the street and from abutting lots.

e. Structures shall be at least twenty (20) feet from a front property line, thirty (30) feet from a rear property line and fifteen (15) from a side property line unless abutting a street, in which case, the distance from the side property line shall be twenty (20) feet.

f. For new construction, the building must be designed to look like a single-family dwelling. At a minimum, this shall mean that only one entrance shall be visible from a public street. For conversions, the building must retain its appearance as a single-family dwelling or a 2-family dwelling, whichever is the current use. notwithstanding any other provision of Chapter 170, a legal or legal non-conforming accessory structure existing as of the effective date of these regulations may be converted into one or more residential units, provided that the building shall not be enlarged, nor shall any exterior improvements be made to alter its appearance as an accessory structure.

The applicant assesses the average open space within 200' of the subject property to be 57.3%, which per the submitted Drainage Report and site plan pages C-102 & C-107, this CUP request complies with. Staff feels the parking requirements, (criteria B, C, & D), were met during TRC review, with the applicant providing the required number of spaces, adequate screening, and parking space setbacks as prescribed in criterion C. Setbacks, per the applicant's submitted plan, are compliant with criterion E, and the existing structure's appearance adheres to the aesthetic specifications detailed in criterion F.

Chapter 170-19.B.2 also lists three criterion for granting a non-environmental CUP for relief. Staff feels this proposal meets those criteria which include:

a. The requested use shall be compatible with abutting uses and the surrounding neighborhood.
b. The requested use will not create undue traffic congestion, or unduly impair pedestrian safety.
c. The requested use will not result in objectionable noise or odor which would constitute a nuisance.

The Planning Department recommends the Planning Board make the necessary and supporting findings of fact, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:

1. Include sheet C107 from related site plan (SITE-2024-0006) in CUP plan set.
2. Amend sheet C107 to include site-specific open space calculations for both lots, post subdivision.
3. Work with the Planning Department to endorse a development agreement per Chapter 170-19.C and then record at SCRD. The development agreement shall include a contribution for the RRFB at Belknap St.

Motion: M. Gambino moved to approve the Conditional Use Permit with conditions as it's consistent with regulations. Seconded by K. Pimental.

Discussion about the regulation in the zoning ordinance of requiring two parking spaces per unit in the Heritage District. Staff will look into this. At the time it was added, it is what the residents of that district wanted, but public opinion might have changed since and it seems in opposition to what Dover is doing in other districts.

Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

STAFF RECOMMENDATION- Conditional Use Permit, HR District, Creation of a 3–4-unit dwelling

§170-20.B(1) of the Zoning Ordinance allows for Conditional Use approval for relief from the standards herein which may be granted by the Planning Board, (RSA 674:21 II), after proper public notice and public hearing provided that the proposed project complies with the following standards:

Conversion to, or creation of Dwelling, 3-4 Family: Three- or four-family dwellings and conversions of existing dwellings to three (3) or four (4) units shall be subject to the following regulations:

a. The specific site must have an amount of open space, either landscaped or left natural, at least equal to the average amount of open space on all developed lots in the HR District that are wholly or partly within two hundred (200) feet of the subject parcel. Existing parking areas, either gravel, paved or unpaved, shall not be considered to be open space.

b. Off-street parking, in accordance with Chapter 153, Site Review, shall be provided as to avoid vehicles backing into the street. Two (2) parking spaces per unit shall be required.

c. Parking lots shall be at least five (5) feet from a side property line and ten (10) feet from a front property line.

d. Parking areas shall be screened from the street and from abutting lots.

e. Structures shall be at least twenty (20) feet from a front property line, thirty (30) feet from a rear property line and fifteen (15) from a side property line unless abutting a street, in which case, the distance from the side property line shall be twenty (20) feet.

f. For new construction, the building must be designed to look like a single-family dwelling. At a minimum, this shall mean that only one entrance shall be visible from a public street. For conversions, the building must retain its appearance as a single-family dwelling or a 2-family dwelling, whichever is the current use. notwithstanding any other provision of Chapter 170, a legal or legal non-conforming accessory structure existing as of the effective date of these regulations may be converted into one or more residential units, provided that the building shall not be enlarged, nor shall any exterior improvements be made to alter its appearance as an accessory structure.

The applicant assesses the average open space within 200' of the subject property to be 57.3%, which per the submitted Drainage Report and site plan pages C-102 & C-107, this CUP request complies with. Parking requirements, (criteria B, C, & D), were met per TRC review, with the applicant providing the required number of spaces, adequate screening, and parking space setbacks as prescribed in criterion C. Setbacks, per the applicant's submitted plan, are compliant with criterion E, and the proposed, (revised from previous versions), architecture, in staff's opinion, meets the criterion F's requirements, and is consistent with neighboring historic architectural design.

Chapter 170-19.B.2 also lists three criterion for granting a non-environmental CUP for relief. Staff feels this proposal meets those criteria which include:

a. The requested use shall be compatible with abutting uses and the surrounding neighborhood.
b. The requested use will not create undue traffic congestion, or unduly impair pedestrian safety.
c. The requested use will not result in objectionable noise or odor which would constitute a nuisance.

The Planning Department recommends the Planning Board make the necessary and supporting findings of fact, and vote to approve the application with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:

1. Include sheet C107 from related site plan (SITE-2024-0006) on CUP plan set.
2. Amend sheet C107 to include site-specific open space calculations for both lots, post subdivision.
3. Work with the Planning Department to endorse a development agreement per Chapter 170-19.C and

then record at SCRD. Said development agreement shall also include contribution to RRFP system at Belknap St.

Motion: M. Gambino moved to approve the Conditional Use Permit with conditions as it's consistent with regulations. Seconded by K. Mavrogeorge.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

STAFF RECOMMENDATION- Site Plan:
Chapter 153-13 outlines Site development plan. This plan meets those standards outlined. Therefore, the Planning Department recommends that the Planning Board make the necessary and supporting findings of fact, and vote to approve the Site Plan with the following subsequent conditions:

Subsequent Conditions to be Met Prior to Signing of Plans:

1. Approval of COND-2024-0011;
2. Approval of COND-2024-0012;
3. Approval of SUBM-2024-0001;
4. Confirm lot numbering with City Assessor.
5. Confirm building addressing with Building Official.
6. Draft utility and access easement to be reviewed by the Planning Department.
7. Sewer services for each building must be independent and to the satisfaction of the Community Services Department or a waiver must be approved through the Dover Utilities Commission.
8. Provide letter from pest control management professional regarding whether pest control management plan is needed per Chapter 153-10.G.
9. Provide physical and digital copies (including CAD) of complete plan set for final Planning Board signature which additionally shall include:
   9.1. Owner's signatures;
   9.2. Professional stamps and signatures;
   9.3. Amend sheet C107 to include site-specific open space calculations for both lots, post subdivision.
10. Add note to eliminate any conflicts between the proposed sanitary sewer and the stormwater system and confirm existing sewer line condition to the satisfaction of the Office of the City Engineer.

Subsequent Condition to Be Met Prior to Construction:

11. If pest management is needed per letter from pest management professional, then pre-baiting or any other recommendation occur.
12. City's standard site construction sign with the contact information for the general contractor must be displayed in a location approved by the City Engineer or Planning Director;

Subsequent Condition to Be Met Prior to Building Permit:

13. Payment of Water and Sewer Investment Fees if applicable at time or request of service;

Subsequent Conditions to Be Met Prior to Occupancy:

14. Issuance of Certificate of Occupancy;
15. Surety or other form of security acceptable to the City is provided for any unfinished work;
16. Contribution for RRFB has been paid to the City per Development agreement.
17. Design engineer to submit a construction certification letter to the City ensuring construction was completed in accordance with the plans and specifications approved by the City of Dover.

Discussion occurred on sewer lines in relation to the existing tree that is staying and the buffers.

Motion: M. Gambino moved to approve the Site Plan with subsequent conditions set by staff as it meets criteria. Seconded by: K. Pimental.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

5. STAFF COMMENT

- Director Benton announced that a discussion and training on TDR, ADUs and Planning Board roles has been scheduled for the next regular Planning Board meeting on Feb. 11, 2025.
- There have been no TRCs since the last meeting and no upcoming TRCs are scheduled.
- Land Use Chapter update kicked off last night with a steering committee meeting
- Community listening sessions for CDBG
- Thank you to Ryan Pope as Housing Navigator- he has taken a job with NH Housing
- Hiring a Housing Planner
- An email came in about McDonald's and was in the board packets

6. MEMBER COMMENTS

- The Chair signed the following:
    - Lot Line Adjustment for 3 and 59 Spur Rd.
    - Lot Line Adjustment for 120 Garrison Rd. and 20 Seaborne Dr.
    - Plans for Conservation District Conditional Use Permit for 167 Spur Rd.
- Appointed the following to the Steering Committee for the Land Use Chapter update:
    - Anna Boudreau, or representative of the Open Lands Committee (in place of a Conservation Commission member)

7. ADJOURNMENT

Motion: K. Mavrogeorge moved to adjourn at 9:08p.m. Seconded by M. Gambino.
Roll Call Vote: Motion passed unanimously (Cruikshank- yes, Glennon- yes, Pimental- yes, Mavrogeorge- yes, Gambino- yes, Cullen- yes)

DRAFT

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0023

Application Type:	Conditional Use Permit
Applicant(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Owner(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Location:	Back Road (Assessor's Map M, Lot 104)
Meeting Date:	February 11, 2025

INTENT: Proposal is for a Conditional Use Permit (CUP) to create an access drive to the developable portion of the lot where a single home and accessory structures are proposed to be built, permanently impacting 8,938± square feet of wetlands and 28,193± square feet of the 50-foot wetland buffer. *(This project was previously presented to the Planning Board and on August 27, 2024 and tabled before acceptance)*

AGENDA ITEM #: 4-A

FILE: COND-2024-0023

APPLICANT/OWNER: Heath J. Todd, Trustee, Heath J. Todd Revocable Trust

LOCATION: Back Road (Assessor's Map M, Lot 104)

UNITS PROPOSED: N/A

ACREAGE: 26.02± acres

ZONING DISTRICT: R-40

EXISTING USE: Vacant, Eversource Easement

PROPOSED USE: Residential

SURROUNDING USE: Residential, Cochecho River

PERMITS: - Two (2) City of Dover CUPs - NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit

WAIVERS REQUESTED: N/A

ZBA ACTION: N/A

CONSERVATION COMMISSION: Reviewed and endorsed on 1/13/25.

TRC: 12/5/24

ATTACHMENTS: Application materials including site plan.

Summary of Request and Background

The applicant is proposing to construct a driveway from Back Road to the developable portion of the subject parcel. The proposed driveway will primarily be constructed on a ~20'-wide strip of the subject parcel and total approximately 2,250± linear feet. The driveway is proposed to be gravel except for the first 100± linear feet and 40± linear feet connecting to the proposed residence, which will be paved. A single-family residence and accessory structures are proposed to be built on the developable portion of the subject parcel.

The proposed project will create 8,938± square feet of permanent impacts to wetlands and 28,193± square feet of permanent impacts to the 50-foot wetland buffer.

This project was previously heard by the Planning Board on August 27, 2024, and referred back to the Technical Review Committee (TRC) for further review.

In response to feedback from the Planning Board and TRC, the applicant revised their application to incorporate site design modifications, along with a Drainage Analysis and Sediment and Erosion Control Plan. Compared to the previous review, the total wetlands impact increased by 58 square feet, while the total wetlands buffer impact decreased by 983 square feet.

The applicant has also applied for NHDES Wetlands Bureau approvals.

The Technical Review Committee reviewed the application at their December 5, 2024 meeting. *(minutes attached)*

The Conservation Commission reviewed and endorsed the application at their January 13, 2025 meeting. *(minutes attached)*

Consistency with Land Use Regulations – CUP 170.28F

The Wetlands Protection District ordinance §170.28F provides for Conditional Use Permits to allow impacts to the Wetlands Protection District if standards related to demonstration that no practicable alternative is available, impact avoidance was considered, impacts were minimized, mitigation has been sought, and approval of the wetlands impact from NHDES Wetlands Bureau has been granted.

Planning Staff feels that the applicant considered and met all of the criteria as specified in §170-28F per their narrative. There is no alternative access approach to the developable portion of the subject parcel and the driveway has been redesigned to minimize impacts upon resource areas and wetland/stream crossings have been designed with culverts to manage stormwater flow appropriately. Since the last consideration by Planning Board, an additional culvert has been included in the site design towards these efforts. The proposed project does not require state mitigation and the applicant has applied for NHDES Wetlands Bureau approvals which have been reviewed and endorsed by the Conservation Commission.

STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0023

Application Type:	Conditional Use Permit
Applicant(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Owner(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Location:	Back Road (Assessor's Map M, Lot 104)
Meeting Date:	February 11, 2025

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:

1. Approval of COND-2024-0027;
2. Copies of the NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit submitted to the Planning Department.
3. Include plan note that Design Engineer shall provide signed letter to City Engineer certifying that the stormwater management system has been installed in accordance with approved plans.
4. Add note that relief from the 5-foot side boundary driveway setback has been granted by the Community Services Director per §157-50C(3).
5. Add note that any work within public right of way requires permits from Community Service.

COND-2024-0023 Back Road

Property Information

Location	BACK RD
Owner	TODD HEATH J TRUSTEE
Land Use	610V
Zoning Code	R-40
Property Id	M0104-000000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PERMIT SNAPSHOT REPORT COND-2024-0023
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	08/05/2024
Work Class:	Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	

Description: Need to cross 6 previously disturbed Wetland Protection District areas and their buffers including one Conservation District area.

Parcel: M0104-000000 Main	**Address:** Back Rd Main Dover, 03820	**Zone:** R-40(Residential - Rural)

Wetlands Scientist Michael Parsont P.O. Box 955 Dover, NH 03821 Business: (603) 767-8633	Engineer Beals Associates, PLLC Christian O Smith 70 Portsmouth Avenue Stratham, NH 03885	Owner Heath Todd 402 Webber Hill Road Kennebunk, ME 04043 Home: (603) 591-4976 Business: (603) 330-3600 Mobile: (603) 591-4976	Plan Preparer Berry Surveying & Engineering 335 Second Crown Point Road Barrington, NH 03825 Business: (603) 332-2863 Mobile: (603) 781-3403

Permit Custom Fields

Select Permit Type	Wetland Protection District	General Purpose	Alteration / Addition	Project Zone	Residential
What is the parcel zoned?	R-40	Work	See Narrative	permitstatefed	See Narrative

Attachment File Name	Added On	Added By	Attachment Group	Notes
Permit Snapshot Report.pdf	08/05/2024 14:15	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot
2024.08.27_PlanningBoard.Agenda.pdf	08/14/2024 13:51	Blonigen, Rachel		PB Agenda
PB08-27-2024 COND-2024-0023.pdf	08/23/2024 14:08	Blonigen, Rachel		Staff Memo
Abutter Letter, Kageleiry, Chad.pdf	08/27/2024 14:54	Blonigen, Rachel		
2024.08.27_PlanningBoard.Minutes.pdf	10/10/2024 15:03	Blonigen, Rachel		Approved PB Minutes
2024.12.05_PlanningTechnicalReviewCommittee.Agenda.pdf	11/22/2024 13:58	Blonigen, Rachel		TRC Agenda
2024.12.05_PlanningTechnicalReviewCommittee.BackRoad_COND-2024-0023_0027.pdf	12/20/2024 13:39	Blonigen, Rachel		TRC Minutes
2025.01.13-ConservationCommission.Minutes.draft.pdf	01/22/2025 11:37	Blonigen, Rachel		Draft ConCom Minutes
2024.02.11_PlanningBoard.Agenda_.pdf	01/29/2025 13:06	Blonigen, Rachel		PB Agenda

Note	Created By	Date and Time Created
1. Physical materials to be delivered 08/20/2024	Rachel Blonigen	08/19/2024 12:09
2. PB continued item to go to TRC before resubmitting to PB.	Rachel Blonigen	08/29/2024 16:02
3. Post TRC next steps are to go to ConCom for approval then submit for Planning Board	Rachel Blonigen	12/09/2024 11:40

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00008900	Planning General Application Fee		$200.00	$200.00
		Total for Invoice INV-00008900	$200.00	$200.00
INV-00008975	Planning Public Notice in Newspaper		$120.00	$120.00
	Planning Certified Mailing to Abutters		$140.00	$140.00
	Planning Creation / Printing of Abutter Labels		$20.00	$20.00
		Total for Invoice INV-00008975	$280.00	$280.00

INV-00011003	Planning Creation / Printing of Abutter Labels		$20.00	$20.00
	Planning Certified Mailing to Abutters		$140.00	$140.00
	Planning Public Notice in Newspaper		$120.00	$120.00
		Total for Invoice INV-00011003	$280.00	$280.00
		Grand Total for Permit	**$760.00**	**$760.00**

Activity Type	Activity Number	Name	Workflow Action Name	User	Created On
Recommendation to Planning Board (Permit)	RCMND-000053-2024		Planner Creates Staff Recommendations v.1.00	Rachel Blonigen	08/20/2024

Activity Custom Fields

Agenda Item 4-F

Application Complete? Yes

Attachments

INTENT: Proposal is for a Conditional Use Permit (CUP) to create an access drive to the developable portion of the lot where a single home and accessory structures are proposed to be built, permanently impacting 8,880± square feet of wetlands and 29,176± square feet of the 50-foot wetland buffer.
AGENDA ITEM #: 4-F
FILE: COND-2024-0023
APPLICANT/OWNER: Heatl J. Todd, Trustee, Heath J. Todd Revocable Trust
LOCATION: Back Road (Assessor's Map M, Lot 104)
UNITS PROPOSED: N/A
ACREAGE: 26.02± acres
ZONING DISTRICT: R-40
EXISTING USE: Vacant, Eversource Easement
PROPOSED USE: Residential
SURROUNDING USE: Residential, Cochecho River
PERMITS: - Two (2) City of Dover CUPs
- NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit
WAIVERS REQUESTED: N/A
ZBA ACTION: N/A
CONSERVATION COMMISSION: Reviewed and endorsed on 8/12/24.
TRC: N/A
ATTACHMENTS: Application materials including site plan.

Summary of Request and Background
The applicant is proposing to construct a driveway from Back Road to the

developable portion of the subject parcel. The proposed driveway will primarily be constructed on a 20'-wide strip of the subject parcel and total approximately 3,440± linear feet. The driveway is proposed to be gravel except for 40± linear feet leading to the proposed residence, which will be paved. A single-family residence and accessory structures are proposed to be built on the developable portion of the subject parcel.
The proposed project will create 8,880± square feet of permanent impacts to wetlands and 29,176± square feet of permanent impacts to the 50-foot wetland buffer. There are also 151± square feet of temporary impact to wetlands.
The applicant has also applied for NHDES Wetlands Bureau approvals.
The Conservation Commission reviewed and endorsed the application at their August 12, 2024 meeting. (minutes attached)
Consistency with Land Use Regulations – CUP 170.27.1.F
The Wetlands Protection District ordinance §170.27.1.F provides for Conditional Use Permits to allow impacts to the Wetlands Protection District if standards related to demonstration that no practicable alternative is available, impact avoidance was considered, impacts were minimized, mitigation has been sought, and approval of the wetlands impact from NHDES Wetlands Bureau has been granted.

Planning Staff feels that the applicant considered and met all of the criteria as specified in §170-27.1.F per their narrative. There is no alternative access approach to the developable portion of the subject parcel and the driveway has been designed to minimize impacts upon resource areas and wetland/stream crossings have been designed with culverts to manage stormwater flow appropriately. The proposed project does not require state mitigation and the applicant has applied for NHDES Wetlands Bureau approvals which have been reviewed and endorsed by the Conservation Commission.

STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:
1. Approval of COND-2024-0027;
2. Copies of the NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit submitted to the Planning Department.
3. Request relief from the 5-foot side boundary driveway setback, required by § 157-50C(3), or provide a detailed narrative describing any hardships for review and potential acceptance by the Community Services Director;
4. The Technical Review Committee review fire access and the impervious area (including gravel) to ensure stormwater regulations are met.

Summary Request & Background	The applicant is proposing to construct a driveway from Back Road to the developable portion of the subject parcel. The proposed driveway will primarily be constructed on a 20'-wide strip of the subject parcel and total approximately 3,440± linear feet. The driveway is proposed to be gravel except for 40± linear feet leading to the proposed residence, which will be paved. A single-family residence and accessory structures are proposed to be built on the developable portion of the subject parcel. The proposed project will create 8,880± square feet of permanent impacts to wetlands and 29,176± square feet of permanent impacts to the 50-foot wetland buffer. There are also 151± square feet of temporary impact to wetlands. The applicant has also applied for NHDES Wetlands Bureau approvals. The Conservation Commission reviewed and endorsed the application at their August 12, 2024 meeting. (minutes attached)

PERMIT SNAPSHOT REPORT (COND-2024-0023)

Recommendation to Planning Board (Permit)	RCMND-000016-2025	Planner Creates Staff Recommendations v.1.00	Rachel Blonigen	01/30/2025

Hearing Type	Location	Scheduled Date	Status	Subject
Planning Board Hearing v.1	Council Chambers	08/27/2024	Continued	CUP

Comments: Continued to a TRC meeting 09/12/2024

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	Approved	08/05/2024	09/02/2024	08/14/2024	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	Approved	08/05/2024	09/02/2024	08/12/2024

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	Approved	01/02/2025	01/03/2025	01/22/2025	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	Approved	01/02/2025	01/30/2025	01/22/2025

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		08/05/2024 14:16	08/14/2024 13:53
Confirm application complete v.1	Generic Action		08/05/2024 14:16
Confirm application complete v.1	Generic Action		01/02/2025 16:07
Conditional Use Review v.1	Receive Submittal	01/02/2025 0:00	01/22/2025 11:46
Conditional Use Review v.1	Receive Submittal	08/05/2024 0:00	08/14/2024 13:53
Planning Board v.1		08/14/2024 13:53	01/22/2025 11:50
Planning Board Agenda v.1	Task	08/14/2024 13:53	08/14/2024 13:54
Planning Board Agenda v.1	Task	01/22/2025 11:50	01/29/2025 13:06
Invoice for Notices v.1	Task	08/14/2024 13:54	08/20/2024 14:43
Invoice for Notices v.1	Task	01/29/2025 13:06	01/29/2025 13:06
Send Notices v.1	Task	01/29/2025 13:06	01/30/2025 14:21
Send Notices v.1	Task	08/20/2024 14:40	08/20/2024 14:43
Planner Creates Staff Recommendations v.1	Permit Activity	08/20/2024 14:43	08/23/2024 14:08
Planner Creates Staff Recommendations v.1	Permit Activity	01/30/2025 14:21	
Distribute Planning Board Materials v.1	Task	08/23/2024 14:08	08/23/2024 14:08
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Hearing v.1	Hold Hearing	08/23/2024 14:08	01/22/2025 11:50
Planning Board Decision v.1	Permit Activity		01/22/2025 11:50
Planning Board Decision v.1	Permit Activity		
NOD Sent to Applicant v.1	Create Report		01/22/2025 11:50
NOD Sent to Applicant v.1	Create Report		
Issue Permit v.1			
Verify Fees Prior to Permit v.1	Generic Action		
Issue and Review Permit v.1	Generic Action		
Print and Email Permit v.1	Generic Action		
Plans uploaded to Treeno v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Recording v.1	Task		

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

RECEIVED
Planning Office
AUG 05 2024
Dover, New Hampshire

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Heath J. Todd, Trustee - Heath J. Todd Revocable Trust Telephone # 603-591-4976

Address of Applicant: 402 Webber Hill Road, Kennebunk, ME 04043

E-Mail Address: heath@apex-constructioninc.com

Name of Property Owner (if different from applicant): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # M Lot(s) # 104

Address of Property: Back Road

Zoning District(s) R-40 Rural Residential Overlay District(s) Conservation + Wetland Protection

Existing Use of Property: None - Vacant land (Eversource easement crosses property - transmission line)

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☒ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

See separate narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain (pending), NHDES Individual Sewage Disposal System (pending), NHDES Wetlands Bureau Dredge and Fill (pending), NHDES Shoreland (pending), Construction General Permit (pending)

Name of Professional That Prepared Plans: Christian O. Smith, P.E. (Beals Associates, PLLC)

Address 70 Portsmouth Avenue, Stratham, NH 03885 Telephone #: 603-583-4860

Professional License #: 9900 E-mail address: cSmith@bealsassociates.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 8/2/2024

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: 8/2/2024

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/2/2024

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
M	104	Heath J. Todd Revocable Trust	402 Webber Hill Rd, Kennebunk, ME 04043

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Kenneth A. Berry, LLS	Berry Survey + Engineering	335 Second Crown Pt. Rd, Barrington, NH 03825
Christian O. Smith, PE	Beals Associates, PLLC	70 Portsmouth Ave., Stratham, NH 03885
Michael L. Parsons, CWS	Stable Growth Environmental LLC	P.O. Box 713, Somersworth, NH 03878

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

COND-2024-0023 **BACK ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
M0091-000000	286 MIDDLE RD	STRANGE EDWARD S TTS	FRENCH FARM 2023 REV TRUST	286 MIDDLE RD	DOVER	NH	03820
M0091-A00000	290 292 MIDDLE RD	TOWNSQUARE MEDIA PORTSMOUTH LLC		PO BOX 576	DOVER	NH	03821-0576
M0091-B00000	278 MIDDLE RD	MCKENNA JAMES F & JOANNE E TRUSTEES	MCKENNA JAMES AND JOANNE REVOCABLE LIVIN	278 MIDDLE ROAD	DOVER	NH	03820
M0091-C00000	MIDDLE RD	WATERSIDE LAND HOLDINGS LLC	C/O SUMMIT LAND DEVELOPMENT LLC	340 CENTRAL AVE STE 202	DOVER	NH	03820
M0092-A00000	BACK RD	LANGS PATRICIA		10 HAWTHORN ROAD	DOVER	NH	03820
M0092-B00000	CULLEN BAY RD	CULLEN BAY HOMEOWNERS ASSC	C/O MICHELLE TROCHALAKIS TREASURER	7 CULLEN BAY RD	DOVER	NH	03820
M0092-H00000	CULLEN BAY RD	HEBERT MARIE V TRUSTEE	HEBERT MARIE V REVOCABLE TRUST	6 CULLEN BAY RD	DOVER	NH	03820
M0102-000000	277 MIDDLE RD	DRISCOLL BRENDAN C		277 MIDDLE RD	DOVER	NH	03820
M0102-001000	268 MIDDLE RD	MINEROWICZ EDWARD & MARCIA TRUSTEES	THE RED ISLAND TRUST	268 MIDDLE RD	DOVER	NH	03820
M0102-012000	HAYDEN DR	CATHERINEBERG CONDOMINIUM UNIT OWNERS AS		38 BEECHWOOD DR	STRAFFORD	NH	03884
M0102-012DRV	HAYDEN DR	100 BROWNING LLC		38 BEECHWOOD DR	STRAFFORD	NH	03884
M0104-000000	BACK RD	TODD HEATH J TRUSTEE	TODD HEATH J REVOCABLE TRUST	402 WEBBER HILL RD	KENNEBUNK	ME	04043
		KENNETH A. BERRY, LLS	BERRY SURVEYING & ENGINEERING	335 SECOND CROWN POINT	BARRINGTON	NH	03825
		CHRISTIAN O. SMITH, PE	BEALS ASSOCIATES, PLLC	70 PORTSMOUTH AVENUE	STRATHAM	NH	03885
		MICHAEL L PARSONT, CWS	STABILE GROWTH ENVIRONMENTAL, LLC	P.O. BOX 713	SOMERSWOF	NH	03878

The purpose of this application is to request access through the Wetland Protection District (WPD) and 50-foot wetland buffers, as well as the Conservation District (CD), including 50 feet from streams, to reach the developable upland portion of a 26-acre lot, where one single-family residence and accessory structures are proposed to be built. There is only one access approach available from Back Road to reach the broader parcel of land that contains the buildable upland area of the lot, as a result there are no alternative approaches with less impact to WPD or CD areas. The driveway access from Back Road to the broader parcel is limited to within a 20-foot-wide strip of land that is owned by the applicant, over a length of approximately 2,250 linear feet (LF). The proposed gravel driveway will need to cross six previously-disturbed WPD areas and their buffers, including one CD area (50 feet either side of a Tier 1 intermittent stream) in order to reach the broader parcel.

Once the driveway reaches the broader parcel, there are two additional crossings of WPD areas and their buffers, and one CD crossing necessary in order to access the buildable area, over an additional length of approximately 1,190 LF. All except for the last 40 LF is proposed to be gravel, the remainder will be paved. These WPD/buffers and CD crossings include a pit-and-mound wetland and 50 feet either side of a Tier 1 perennial stream, and have been designed to avoid and minimize impacts upon the resource areas to the greatest extent practicable. The route layout chosen for the pit-and-mound WPD/buffers crossing reduces wetland impact as much as possible while avoiding close proximity to a natural drainage swale to the east, which carries surface water runoff to tidal shoreland areas within approximately 300 feet. This layout also maintains a practical driveway curve that will minimize safety risks, especially in low visibility conditions. The wetland/stream/wetland buffer impact areas for each crossing are shown on the four enclosed Plan & Profile sheets.

The project engineers have designed the wetland/stream crossings with culverts strategically installed to manage north-to-south stormwater flow so there will be no increase of flooding, ponding or other negative impact on abutting properties upgradient or downgradient. Each culvert was positioned based on existing topography, targeting low points along the driveway to prevent ponding and ensure uninterrupted drainage flow towards the south. Their sizing and design were calculated to maintain natural water flows and velocities, preserving the pre-development conditions of the surrounding undeveloped land. To minimize impact on wetlands, wetland buffers, and neighboring properties, retaining walls were employed. The design approach of the culverts was primarily driven by the need to facilitate the crossings over the intermittent and perennial streams. Culverts were intentionally oversized to handle stormwater more effectively and were lined with stone at the base to reduce water velocity. These design principles were consistently applied across all culverts, ensuring that both pre-development and post-development flow conditions will be effectively managed, even during severe weather events such as the 100-year storm.

The total proposed permanent impact to WPD areas is 8,880 square feet (SF), all of which is within forested and/or scrub-shrub wetland systems, and the total permanent impact to 50-foot wetland buffers is 29,176 SF, including 1,216 SF adjacent to a small isolated wetland near the buildable area (the wetland will not be impacted). No compensatory mitigation is required by State rules, since the total jurisdictional impact is less than 10,000 SF and both streams are Tier 1. Applications have been submitted to NHDES Wetlands Bureau and are pending review.

A wetlands functional assessment was completed for wetlands on the project site using the USACE Highway Methodology by Michael L. Parsont, CWS. Multiple site visits were done between February and June 2024 to gather data for this purpose. Wetland 1 is an ephemeral drainageway that will be crossed twice; it has surface water runoff piped from an upgradient parcel. It is shown on the 2020 Wildlife Action Plan as "highest ranked habitat in NH" and the Natural Heritage Bureau reported NE Cottontail observations/habitat to the south of the project area; as a result, it was designated as a principal function/value. However, the driveway crossing location is highly disturbed with significant dominance of invasive species and had no signs of wildlife use or habitat present for the NE Cottontail.

Wetland 2 contains an intermittent stream within a forested area and has no assessed principal functions or values. Wetland 3 crossing is in a forested area with no concentrated flow and has no assessed principal functions or values. Wetland 4 is a 1,714 SF isolated disturbed wetland entirely within the 20-foot-wide corridor that was forested/scrub-

shrub prior to disturbance and has no assessed principal functions or values. Wetland 5 crossing is in a forested area, has two associated impacts and has no assessed principal functions or values.

Wetland 6 was forested/scrub-shrub prior to disturbance, though it is entirely within a maintained transmission line utility easement and the vegetation has been cleared. It has no assessed principal functions or values. Wetland 7 is a forested pit-and-mound wetland that has flood storage potential designated as a principal function/value. The proposed crossing should not have significant impact on this function; it includes an equalizing culvert to allow any water that accumulates to pond or move in accordance with what existing conditions allow. Wetland 8 contains a perennial stream within a forested system and has no assessed principal functions or values. Wetland 9 is a 429 SF isolated wetland within the protected shoreland zone that has no vegetation, is surrounded by woods, and has no assessed principal functions/values.

There are minimal additional impacts proposed within the Conservation District, within 100 feet of the reference line for the Piscataqua River. The single-family residence and accessory structures are designed to be built within the protected shoreland between 100 and 250 feet of the reference line/highest observable tide line, outside the CD. The project proposes 1,110 SF of permanent and 73 SF of temporary impact within the CD to construct a patio accessory structure, a path to access the patio, and a path to access a tidal docking structure (a separate application is being submitted for the tidal dock structure by another consultant). These impacts have been minimized to the greatest extent practicable, with the patio set back greater than 20 feet from the reference line and each affected waterfront buffer grid segment meets the minimum required tree point score. The patio is being built using pervious pavers and the paths within the TBZ will be constructed using crushed stone to keep them pervious. The access way from the path to the docking structure covers 131 SF and is impervious. Temporary impacts are to facilitate construction of the patio and will be restored. No fertilizers or chemicals will be used in this area. All applicable state and federal approvals have been applied for.

Throughout the duration of construction, drainage treatment and erosion control measures will be maintained (see enclosed Erosion Control Details and Construction Details plan sheets). The initial phase involves constructing a driveway into the project site, necessitating the removal of existing vegetation and organic material from the designated area. These cuts in relatively flat terrain are expected to minimize runoff and will swiftly be stabilized with compacted gravel. At points where culverts are planned across the wetlands, intermittent stream, and perennial stream, existing material will be excavated and replaced with a stable gravel base beneath the culverts. Once in place, these culverts will be filled with 6 inches of riprap, followed by immediate stabilization of the surrounding area. Beyond the driveway, the project area slopes towards the Piscataqua River to the east and south, away from the wetlands to the west. Erosion control measures will be strategically placed at the limits of disturbance downslope from construction activities. Additionally, a vegetative buffer zone of at least 50 feet of woods between disturbed project areas and the river will serve as an additional protective barrier, ensuring no sediment from the project reaches the river. Any disturbed areas will be promptly stabilized using vegetation or other stabilized materials. Regular inspection and maintenance will uphold the effectiveness of erosion control measures throughout the project's duration, as outlined in the Stormwater Pollution Prevention Plan. Any damaged measures will be promptly repaired or replaced to prevent sedimentation and maintain compliance with environmental regulations.

CITY OF DOVER

DOVER CONSERVATION COMMISSION – MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	City Council Conference Room - 288 Central Avenue, Dover, NH
Meeting Date:	Monday January 13, 2025
Meeting Time:	**5:30 pm**

MEMBERS PRESENT: Bill Hunt (Chair), Steve Fellows (Vice Chair), Kristen Murphy, Abigail Lyon, Russ Warnock (Alternate), Brianna Group, Robert Atwood (Secretary)
Absent (Excused):
Absent (Unexcused): Jake Geddes
STAFF PRESENT: Makayla Edgecomb (Conservation Planner)
OTHERS PRESENT:

1. CALL TO ORDER AND ROLL CALL
The meeting was convened at 5:30 PM.

2. CITIZENS' FORUM
The Chair gave instructions for Citizens' forum
(None)

3. APPROVAL OF THE PRIOR MEETING MINUTES- December 9, 2024
A. Lyon moved to approve the minutes of December 9th as submitted. S. Fellows seconded. Vote: 6 in favor with 1 abstention.

4. OLD BUSINESS:
None

5. NEW BUSINESS

Members mentioned a faulty link to materials at start of the meeting. Staff received one correspondence of this the morning of and sent out a new link.

A. *Previously endorsed on August 12, 2024* City of Dover Conditional Use Permits and NHDES Standard Dredge and Fill Wetlands Permit for Heath J. Todd Trustee, Heath J. Todd Revocable Trust, Assessor's Map M, Lot 104, zoned R-40, located off of Back Road. Proposal is to create an access drive to the developable portion of the lot where a single home and accessory structures are to be built. The total proposed permanent impact is 8,938 square feet of wetlands with 166 square feet of temporary impacts to the wetland, and 28,193 square feet of 50- foot wetland buffer, including 468 square feet adjacent to a small isolated wetland (wetland will not be directly impacted). Additionally, there is a temporary impact proposed within the 100-foot Conservation district of *1,706 square feet, and 1,110 square feet of permanent impact with 73 square feet of temporary impact proposed to the Conservation District associated with a patio path, patio and access to a proposed tidal docking structure.

Proposal is to create an access drive to the developable portion of the lot where a single home and accessory structures are to be built, permanently impacting 8,938 square feet of wetlands and 28, 193 square feet of the 50-foot wetland buffer. Including 468 square feet adjacent to a small isolated wetland (wetland will not be directly impacted). Additionally, there is a temporary impact proposed within the 100-foot Conservation district of *1,706 square feet, and 1,110 square feet of permanent impact with 73 square feet of temporary impact proposed to the Conservation District associated with a patio path, patio and access to a proposed tidal docking structure.

DRAFT

M. Edgecomb noted the original application did not meet criteria for review by TRC, but the Planning Board recommended it go to TRC for review. During the TRC process, changes were made to the impacts which is why it is back before the Conservation Commission.

Michael Parsont, Stable Growth Environmental represented the item and explained the changes made to the proposal including the increase to the culvert length, changes to the permanent and temporary impacts and buffer impacts. Any changes to impact were a result of feedback from TRC and/ or DES.

Members asked some clarifying questions which were addressed.

S. Fellows moved to endorse the amended plan as presented. Seconded by: K. Murphy. Vote: 7 in favor with 0 opposed and 0 abstaining.

B. *Previously endorsed on August 12, 2024* NHDES Standard Dredge and Fill Wetlands Permit for Heath J. . Todd Trustee, Heath J. Todd Revocable Trust, Assessor's Map M, Lot 104, zoned R-40, located off of Back Road. Proposal is to install a 200-foot-long tidal docking structure with a 400 square foot float area.
**Has not changed from August*

Proposal is to install a 200-foot-long tidal docking structure with a 400 square foot float area.

M. Edgecomb noted there are no changes to this proposal since its original presentation and endorsement. It was included on the agenda as it is bundled with item A and had the Commission had any issues with item A, it may affect item B.

Item was previously endorsed therefore the Commission determined no action was required.

C. Conservation and Open Space Chapter Update

M. Edgecomb noted the open space chapter final draft is going to Planning Board tomorrow night, and there will be a presentation tomorrow on January 14th at the All Boards event.

6. REPORT FROM THE CHAIR

A. Review of Correspondence Received from NH Department of Environmental Services

M. Edgecomb noted the correspondence received.
First, a letter came in regarding the approval of a dock for 15 Landing Way, this did not need local approval.

Second, a letter from NHDES, for denial of erosion repair and dock replace for 165 Spur Rd, Map L, Lot 43A. The applicant was proposing to repair shoreline erosion and replace a dock on the subject parcel. The shoreline erosion repair would create 398 square feet of overlapping permanent impact to the 50-foot wetland buffer and Conservation District and 1,688 square feet of temporary impact to allow for access during site work. This was denied due to the impact on the saltmarsh.

DRAFT

Commission members discussed and speculated on the denial. Staff will forward the correspondence to the members.

7. OTHER BUSINESS

A. Update from Forest Management Subcommittee

- **a.** Street tree plantings update
  - **i.** Lengthy discussion occurred regarding the Ash trees in the downtown.
    1. Next steps- work on a plan with staff (meeting set with John Storer), get information out to public and get community involvement

B. B. Hunt shared an idea for Board/Committee handbooks

- **a.** B. Hunt shared the details of the idea to have a handbook that explains what the Commission does, what's the scope of their work, all the acronyms and abbreviations used, and pertinent regulations etc.
- **b.** Staff is going to start putting these together for land use boards.

8. ADJOURNMENT

S. Fellows moved to adjourn. R. Atwood seconded. Vote: U/A
The meeting was adjourned at 6:27 PM.

DRAFT

CITY OF DOVER

TECHNICAL REVIEW COMMITTEE MINUTES – COND-2024-0023, COND-2024-0027

Application Type:	Conditional Use Permit
Applicant(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Owner(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Location:	Back Road (Assessor's Map M, Lot 104)
Date:	December 5, 2024

INTENT: Proposal is for two (2) Conditional Use Permits (CUPs) to create an access drive to the developable portion of the lot where a single home and accessory structures are proposed to be built and to construct a patio, patio path, and access to a proposed tidal docking structure.

The proposed access drive will create 8,880± square feet of permanent impacts to the wetlands and 29,176± square feet of permanent impacts to the 50-foot wetland buffer. The proposed patio, patio path, and access path will create impacts to the Conservation District totaling 1,110± square feet of permanent impact and 73± square feet of temporary impact.

UNITS PROPOSED: One (1) unit

AGENDA ITEM #: 2

ACREAGE: 26.02± acres

ZONING DISTRICT: R-40

EXISTING LAND USE: Vacant, Eversource Easement

PROPOSED LAND USE: Residential

SURROUNDING LAND USE: Residential, Cochecho River

ZBA ACTION: None.

PERMITS REQUIRED:
- Two (2) City of Dover CUPs
- NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit

WAIVERS REQUESTED: None.

CONSERVATION COMMISSION: Reviewed and endorsed on 8/12/24.

ATTENDANCE:
Erin Bassegio, Planning
Paul Crouser, Zoning
Jim Maxfield, Inspection Services
Marn Speidel, Police Department
Ken Mavrogeorge, Engineering
Craig Chabot, Fire Department
James Burdin, Business Development
Tom Clark, Planning Board

Others:
Donna Benton, Planning Director
John Lorden, Beals Associates

PLAN REVIEW:
Planning:
- Ensure drainage meets city regulations to the satisfaction of the City Engineer.
- Request relief from the 5-foot side boundary driveway setback, required by § 157-50C(3), or provide a detailed narrative describing any hardships for review and potential acceptance by the Community Services Director.
- Has a lot line adjustment been considered to meet setbacks?
  - Provide something in writing that abutting property owner does/doesn't have interest in LLA.
- Reminder: Copies of the NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit will need to be submitted to the Planning Department.
- Provide plan and impact calculation changes since Conservation Commission endorsement for staff review.

Engineering:
- General Comment:
  - Applicant and Contractor shall review the Dover Construction Guidelines prior to scheduling a Preconstruction meeting with City staff. The guidelines can be found on the City of Dover Website on the Engineering page. https://www.dover.nh.gov/Assets/government/city-operations/1form/community-services/engineering/engineering-documents/Construction%20Guidelines.pdf
  -

- Add note that Design Engineer shall provide signed letter to City Engineer certifying that the stormwater management system has been installed in accordance with approved plans.
- Coordinate with CS on additional permits if work within the road is required.
- Coordinate with CS for septic permit review.

Police:

- Is a Back Road street address proposed for this property? Ensure driveway is well-marked for assigned address, especially if a street mailbox is not intended.

Inspection Services:

- Will the house be served by well?
- Septic system will need to be approved.

Fire Department:

- Fire access isn't ideal, recommend a fire suppression system in the house or a cistern.

Business Development:

- No comments.

Planning Board:

- Shoreland permit for entire plan including proposed house?

Next Steps: Revise plans per comments above and resubmit for Planning Board pending an updated review by the Conservation Commission.

Paused TRC at: 11:22 a.m.

BEALS · ASSOCIATES *PLLC*

70 Portsmouth Avenue
3rd Floor, Suite 2
Stratham, N.H. 03885
603 – 583 - 4860
Fax: 583 - 4863

RECEIVED
Planning Office
JAN 02 2025
Dover, New Hampshire

January 2, 2025

Erin Bassegio, City Planner
City of Dover Planning Department
10 Front Street
Exeter, NH 03833

RE: Planning Board / Conditional Use Permit Re-Submittal
Heath Todd - Back Road Residential Project
Tax Map M Lot 104

Ms. Bassegio and Members of the Board:

The applicant, Heath Todd, is proposing a single-family residential development on Back Road in Dover which requires a Conditional Use Permit from the City of Dover. We were before the Conservation Commission on August 12, 2024 where we received unanimous favorable endorsement. We were also before the Planning Board on August 27, 2024 to discuss the project. The Planning Board requested that we go before the Technical Review Committee (TRC) to work through concerns of constructability and further detail the plans. We revised the plans and were before the Technical Review Committee on December 5, 2024 where we received support to bring the project before the Planning Board.

Since the August Planning Board meeting the following plan changes have been incorporated:

1. Further site development items including:
    a. Drainage Analysis
    b. Additional Construction Details
    c. Effluent Disposal Plan for septic system
    d. Utility Plan
    e. Fire truck maneuvering plans
    f. Driveway cross-sections
2. Revised scale of wetland and wetland buffer impact plans for readability
3. Addressing NHDES AoT preliminary comments on drainage design along driveway

Since the TRC meeting the following plan changes have been incorporated:

1. NH Fish & Game comments addressed
2. NHDES Wetland's Bureau comments addressed, including adding an additional culvert added at wetland crossing #4 (STA 14+80 +/-)
3. At wetland crossing #8, culvert #9 was extended and includes rip rap slopes to avoid steep walls and an unsafe condition
4. Revised shoreland calculations to reflect a slightly larger tennis court layout and associated changes to the walking paths as well as revisions to the patio off of the house. These changes will require a revision to the Shoreland Permit. These changes

also required a change from infiltration trenches to a new Infiltration Pond #1 to accommodate the changes.

One item that came out of the TRC meeting was to confirm the driveway with Community Services. Through communications with the Community Services Director John Storer, it has been found that a driveway permit has already been approved for this property and no additional relief for the driveway is required. Copies of the correspondence are included as part of this submission and the applicant agrees to the requirement to provide an as-built of the driveway following construction.

Please refer to the revised Conditional Use Permit narrative for detailed information on the wetland and wetland buffer impacts. This narrative points out that the overall impact to City of Dover wetland buffers has decreased since the Conservation Commission's review of the project.

We have received Shoreland Impact Permit approval (#2024-02318) and have responded to the Wetlands Bureau's comments (copy of submittal provided to City, #2024-02319). We have also submitted to NHDES for an AoT permit and are awaiting review comments.

We look forward to presenting the updated project to you at an upcoming Planning Board meeting.

Thank you for your consideration.

Very truly yours,
BEALS ASSOCIATES, PLLC

John P Lorden

John P. Lorden, PE
Principal

John Lorden

From: Bassegio, Erin <E.Bassegio@dover.nh.gov>
Sent: Thursday, December 12, 2024 9:49 AM
To: John Lorden
Cc: Heath Todd
Subject: RE: Back Road - Approved - Driveway Permit

RECEIVED
Planning Office
JAN 02 2025
Dover, New Hampshire

Hi John,

Yes, that will suffice- please include the email as a pdf in your re-submission. Thank you!

Erin Bassegio
City Planner
City of Dover, New Hampshire
288 Central Avenue
Dover, NH 03820-4169
e: e.bassegio@dover.nh.gov
p: 603.516.6008

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From: John Lorden <jlorden@bealsassociates.com>
Sent: Thursday, December 12, 2024 8:47 AM
To: Bassegio, Erin <E.Bassegio@dover.nh.gov>
Cc: Heath Todd <heath@apex-constructioninc.com>
Subject: Back Road - Approved - Driveway Permit

Security Notice: External sender. Use caution with hyperlinks or attachments.

Good morning Erin,

Can you please review the email below and confirm if this email chain submitted as a PDF as part of the re-submission will suffice for the City's purposes, or should we request a more formal letter from John Stover?

The applicant agrees to the as-built of the driveway as requested below.

Thank you,
John

BEALS ASSOCIATES, PLLC
John Lorden, PE
Senior Project Manager

70 Portsmouth Ave. 3rd Floor
Stratham, NH 03885
603-583-4860
jlorden@bealsassociates.com

Begin forwarded message:

From: "Storer, John" <J.Storer@dover.nh.gov>
Date: December 10, 2024 at 5:39:03 PM EST
To: Heath Todd <heath@apex-constructioninc.com>
Cc: "Chambers, Jordan" <J.Chambers@dover.nh.gov>, "Mavrogeorge, Kenneth" <K.Mavrogeorge@dover.nh.gov>
Subject: RE: Approved - Driveway Permit

Heath,

After further internal review, based on the narrow size of your lot, and also considering that a Driveway Permit was previously approved by Community Services, I am comfortable granting relief from the setback requirements outlined in City Ordinance 157-50.C(3).

Please let me know if this email will be sufficient. Please note that I am copying our City Engineer, Ken Mavrogeorge, so he is aware.

In granting the relief, our request would that you provide us with a final As-Built of the constructed configuration and layout. We recognize that any environmental or wetlands impacts will fall under the purview of NH DES and either their wetlands or AOT permits.

Please let me know if you have any follow-up questions.

John Storer
Director of Community Services
City of Dover, NH
271 Mast Rd.
Dover, NH 03820-4169
e: j.storer@dover.nh.gov
p: 603.516.6450 f: 603.516.6463

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http://www.dover.nh.gov

From: Heath Todd <heath@apex-constructioninc.com>
Sent: Tuesday, December 10, 2024 1:05 PM
To: Storer, John <J.Storer@dover.nh.gov>
Cc: Chambers, Jordan <J.Chambers@dover.nh.gov>
Subject: Re: Approved - Driveway Permit

Security Notice: External sender. Use caution with hyperlinks or attachments.

Hi John,

Sorry to bother you, but I am a bit under time crunch to get this in and be ready for planning board. Do you have thoughts on below?

Should I send you a letter to request relief from the 5-foot driveway setback?

Feel free to call and discuss. 603-591-4976 is my cell, but you can call office number (below) also.

Thanks!

Heath J. Todd, P.E.
Apex Construction, Inc.
361 RT 108, Unit 1
Somersworth, NH 03878
P: (603)330-3600
heath@apex-constructioninc.com

From: Heath Todd <heath@apex-constructioninc.com>
Date: Friday, December 6, 2024 at 9:39 AM
To: "Storer, John" <J.Storer@dover.nh.gov>
Cc: "Chambers, Jordan" <J.Chambers@dover.nh.gov>
Subject: Re: Approved - Driveway Permit

Hi John,

Thanks for taking the time to speak with me and look into this issue!

To clarify, TRC minutes (attached) contain the following plan review comments/ recommendations:

1. Request relief from the 5-foot side boundary driveway setback, required by § 157-50C(3), or provide a detailed narrative describing any hardships for review and potential acceptance by the Community Services Director.

1. Has a lot line adjustment been considered to meet setbacks?
    1. Provide something in writing that abutting property owner does/doesn't have interest in LLA.

As discussed, regarding the LLA reference, it seems unfair to put the abutter in a position of leverage given the proximity of the driveway to the boundary is a result of design elements needed to meet City regs. My thought is that Planning likely would approve current layout if 5-foot side relief is granted by Community Services and they would not demand written statement from abutters regarding interest in LLA. I do not want to request LLA from abutters, presenting opportunity for extortion, and I wonder if Planning is justified in this request. Perhaps through presentation of existing driveway permit document and your acceptance of relief from the setback by you, it gives Planning opportunity to approve?

Thoughts?

Thanks.

Heath J. Todd, P.E.
Apex Construction, Inc.

361 RT 108, Unit 1
Somersworth, NH 03878
P: (603)330-3600
heath@apex-constructioninc.com

From: "Storer, John" <J.Storer@dover.nh.gov>
Date: Friday, December 6, 2024 at 9:18 AM
To: Heath Todd <heath@apex-constructioninc.com>
Cc: "Chambers, Jordan" <J.Chambers@dover.nh.gov>
Subject: Approved - Driveway Permit

Heath,

Following up on our telephone discussion – I don't think you need to do anything? At least not to appease Community Services.

Attached is the previously approved Driveway Permit. If you intend to continue using what is out there we don't need you to re-apply for a new permit. Copied here is Jordan Chambers, our Eng Tech, and he confirmed the permit should remain valid.

As I tried to explain – Community Services focus on permitting driveways really just hinges on impacts to public rights-of-way. Our regulatory foundation is via City Ordinances, Chapter 125. Below is an excerpt. I underlined the portion about "onto a public road" – and per the sketch attached below – circled in red is really the only area of concern we (Community Services) would monitor and enforce. However – Planning or Inspection Services might have some discretion with Chapter 157 regs for the "private" land away from the public ROW.

So unless I'm missing something, I think you are OK?

☐ § 125-11 **Permit for driveways.**
[Amended 12-12-2018 by Ord. No. 2018.11.28-012]

All applications for a permit to repair, widen, reconstruct, or construct a driveway from a re public road shall comply with the relevant provisions of Chapter **157**, Land Subdivision F Dover.

John Storer
Director of Community Services
City of Dover, NH
271 Mast Rd.
Dover, NH 03820-4169
e: j.storer@dover.nh.gov
p: 603.516.6450 f: 603.516.6463

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SHORELAND PERMIT APPLICATION

Water Division/ Land Resources Management

Shoreland Program

Check the Status of your Application

RSA/Rule: RSA 483-B, Env-Wq 1400

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

This is an application for a permit to excavate, fill, construct new structures, or remove structures within the protected shoreland as regulated under RSA 483-B.

SECTION 1 - PROJECT DESCRIPTION (Env-Wq 1406.07)

Provide a concise description of the proposed project: To construct a driveway with wetland and stream crossings approximately 3,440 linear feet (mostly within a 20-foot-wide strip of land), to access a buildable upland area on a broader 25 acre parcel of land, and to construct a single family residence with accessory structures within the Protected Shoreland outside the Tidal Buffer Zone.

SECTION 2 - PROJECT LOCATION (Env-Wq 1406.07)

ADDRESS: Back Road	TOWN/CITY: Dover	STATE: NH	ZIP CODE: 03820
WATERBODY NAME: Piscataqua River	TAX MAP/ BLOCK/LOT NUMBER : M-104-0-0		

SECTION 3 - PROPERTY OWNER & DEED INFORMATION (Env-Wq 1406.07)

The legal name of each property owner must be as it appears on the deed of record. If the owner is a trust or a company, then the name of the trust or company should be written as the owner's name.

LAST NAME, FIRST NAME, M.I: Todd, Heath J. (Trustee) - Heath J. Revocable Trust

MAILING ADDRESS: 402 Webber Hill Road	TOWN/CITY: Kennebunk	STATE: ME	ZIP CODE: 04043
PHONE: (603) 591-4976	EMAIL (if available): heath@apex-constructioninc.com		

REGISTRY OF DEED COUNTY Strafford , BOOK NUMBER 5159 , PAGE NUMBER 995

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER), IF DIFFERENT THAN OWNER (Env-Wq 1406.07)

If the applicant is a trust or a company, then the name of the trust or company should be written as the applicant's name. If the applicant is the owner, leave blank and check the following box: ☒.

LAST NAME, FIRST NAME, M.I:

MAILING ADDRESS:	TOWN/CITY:	STATE:	ZIP CODE:

PHONE:	EMAIL (if available):

SECTION 5 - CONTRACTOR OR AGENT (OPTIONAL)

LAST NAME, FIRST NAME, M.I: Parsont, Michael L.			
ADDRESS: P.O. Box 713	TOWN/CITY: Somersworth	STATE: NH	ZIP CODE: 03878
PHONE: (603) 767-8633	EMAIL (if available): mparsont@stablegrowth.net		

SECTION 6 - CRITERIA (Env-Wq 1406.07)

Please check at least one of the following criteria:

☒ This shoreland permit application requires neither a proposal to make the property more nearly conforming nor a request for a waiver of a minimum standard.

☐ This shoreland permit application includes a proposal to make the structures and/or the property more nearly conforming in accordance with RSA 483-B:11.

☐ This shoreland permit application includes a request for a waiver of the following minimum standard(s): RSA 483-B:9, V .

SECTION 7 - RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT (Env-Wq 1406.14)

Please indicate if any of the following permits are required and, if required, the status of the application.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit per RSA 485-A:17	☒ YES ☐ NO	unknown	☐ APPROVED ☒ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:29	☒ YES ☐ NO	unknown	☐ APPROVED ☒ PENDING ☐ DENIED
Subdivision Approval per RSA 485-A:29	☐ YES ☒ NO		☐ APPROVED ☐ PENDING ☐ DENIED
Wetlands Permit per RSA 482-A	☒ YES ☐ NO	unknown	☐ APPROVED ☒ PENDING ☐ DENIED

SECTION 8 - REFERENCE LINE ELEVATION (Env-Wq 1406.07)

Required for projects located on the protected shoreland of lakes or ponds. The reference line elevations for most lakes, ponds, and artificial impoundments greater than 10 acres in size are listed in the Consolidated List of Waterbodies Subject to the Shoreland Water Quality Protection Act. Please see RSA 483-B:4, XVII for the definition of reference line.

REFERENCE LINE ELEVATION: feet above sea level. N/A

SECTION 9 - APPLICATION FEE & SUBMITTAL (RSA 483-B:5-b, I(b); RSA 483-B:5-b, X)

A non-refundable permit application fee of $200 plus $0.20 per total square feet of impact for restoration of water quality improvement projects, or $400 plus $0.20 per total square feet of impact for all other projects is required at the time the application is submitted. **Applications for projects solely funded by municipal, county, state, or federal entities shall incur a permitting fee no greater than $3,750.**

Please mail or hand deliver this application and all required attachments to the NHDES Wetlands Bureau, PO Box 95, Concord, NH 03302-0095. Missing information will delay processing your application and may result in denial of a shoreland permit application. **Please make checks payable to the Treasurer, State of NH.**

SECTION 10 - CALCULATING TOTAL IMPACT AREA/ PERMIT APPLICATION FEE (RSA 483-B:5-b, I(b); RSA 483-B:5-b, X)

Total impact area is calculated by determining the sum of all areas disturbed by regrading, excavating, filling, construction, or structure removal. Impacts often include, but are not limited to: constructing new driveways, constructing new structures, areas disturbed when installing septic systems and foundations, creating temporary access roads to drill a new well, and regrading associated with landscaping activities.

TOTAL AREA IMPACTED WITHIN THE PROTECTED SHORELAND = 100,615 **(A) square feet** EXCLUDING 100' TBZ

- **For restoration of water quality improvement projects:**
  Multiply line (A) by $0.20 **and** add $200. **[(A) × $0.20 + $200]** = $ _____ **Permit fee[1]**
- **For all other projects:**
  Multiply line (A) by $0.20 **and** add $400. **[(A) × $0.20 + $400]** = $ 20,523.00 **Permit fee[1]**

SECTION 11 - REQUIRED CERTIFICATIONS (Env-Wq 1406.08; Env-Wq 1406.10(a))

By initialing within the blank before each of the following statements, and signing below, you are certifying that:

Initials: HJT	The information provided is true, complete, and not misleading to the knowledge and belief of the signer.
Initials: HJT	I understand that: • Any permit or waiver granted based on false, incomplete, or misleading information shall be subject to revocation. • I am subject to the applicable penalties in RSA 641, Falsification in Official Matters. And • Obtaining a shoreland permit shall not exempt the work proposed from other state, local, or federal approvals.
Initials: HJT	I have notified the governing body of the municipality or municipalities in which the property is located by certified mail, in accordance with Env-Wq 1406.13.
Initials: HJT	I have notified all abutters[2] of the proposed impacts via certified mail, in accordance with Env-Wq 1406.13.
Initials: HJT	☐ This project is within ¼ mile of a designated river and I have notified the Local River Management Advisory Committee (LAC) by providing the LAC with a copy of the complete application, including all supporting materials, via certified mail, in accordance with Env-Wq 1406.13. ☒ This project is **not** within ¼ mile of a designated river.
Initials: HJT	For any project proposing that the impervious area be at least 15% but not more than 20% within the protected shoreland, I certify that the impervious area is not more than 20%. ☒ N/A

SECTION 12 - REQUIRED SIGNATURES (Env-Wq 1406.08)

Both the property owner and applicant must sign the application.

SIGNATURE (OWNER): Heath J. Todd	PRINT NAME LEGIBLY: HEATH J. TODD, TRUSTEE	DATE: 8/2/2024
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:

[1] Applications for projects solely funded by municipal, county, state, or federal entities shall incur a permitting fee no greater than $3,750.

[2] "Abutter" means any person who owns property that is immediately contiguous to the property on which the proposed work will take place, or who owns flowage rights on such property. The term does not include those properties separated by a public road or more than ¼ mile from the limits of the proposed work. If contiguous properties are owned by the person who is proposing the work, then the term includes the person owning the next contiguous property, subject to the ¼ mile limitation.

ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division / Land Resources Management

Check the status of your application

RSA / Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)			
Applicant Name: Heath J Todd Revocable Trust		Contact Name: Heath Todd	
Email: Heath@Apex-ConstructionInc.com		Daytime Telephone: 603.591.4976	
Mailing Address: 402 Webber Hill Road			
Town/City: Kennebunk		State: ME	ZIP Code: 04043
2. APPLICANT'S AGENT INFORMATION If none, check here: ☒			
Agent's Name:		Contact Name:	
Email:		Daytime Telephone:	
Address:			
Town/City:		State:	ZIP Code:
3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT) Check here if more than one property owner, and attach additional sheets as necessary: ☐			
Owner's Name:		Contact Name:	
Email:		Daytime Telephone:	
Mailing Address:			
Town/City:		State:	ZIP Code:
4. PROPERTY OWNER'S AGENT INFORMATION If none, check here: ☒			
Business Name:		Contact Name:	
Email:		Daytime Telephone:	
Address:			
Town/City:		State:	ZIP Code:
5. CONSULTANT INFORMATION If none, check here: ☐			
Engineering Firm: Beals Associates, PLLC		Contact Name: Christian O Smith, PE	
Email: CSmith@BealsAssociates.com		Daytime Telephone: 603.583.4860	
Address: 70 Portsmouth Avenue, Third Floor			
Town/City: Stratham		State: NH	ZIP Code: 03885

6. PROJECT TYPE

☐ Excavation Only ■ Residential ☐ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☐ Other:

7. PROJECT LOCATION INFORMATION

Project Name: Back Road, Heath Todd Residential Development

Street/Road Address: Back Road

Town/City: Dover	County: Strafford

Tax Map: M	Block:	Lot Number: 104	Unit:

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

1. Stream or Wetland Purpose: Stormwater culverts below proposed driveway	■ Yes ☐ No	☐ Withdrawal	■ Discharge
2. Artificial pond created by impounding a stream or wetland Purpose:	☐ Yes ■ No	☐ Withdrawal	☐ Discharge
3. Unlined pond dug into the water table Purpose:	☐ Yes ■ No	☐ Withdrawal	☐ Discharge

Post-development, will the proposed project discharge to:

- Within one-quarter mile of a surface water impaired for phosphorus and/or nitrogen? ■ No ☐ **Yes**
- Within one-quarter mile of a Class A surface water or within the watershed area of an Outstanding Resource Water?
  ■ No ☐ **Yes**
- Within one-quarter mile of a lake or pond not covered previously? ■ No ☐ **Yes**

Is the project a High Load area? ☐ Yes ■ No
If yes, specify the type of high load land use or activity:

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ■ No
Is the project within a Groundwater Protection Area (GPA)? ■ Yes ☐ No
Will the well setbacks identified in Env-Wq 1508.02 be met? ■ Yes ☐ No
For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ■ No
If yes: Cut volume: cubic feet within the 100-year floodplain.
Fill volume: cubic feet within the 100-year floodplain.

☐ Project *is* within **¼ mile of a designated river** Name of River:
■ Project *is not* within ¼ mile of a designated river.

■ Project *is* within a Coastal/Great Bay Region community.
☐ Project *is not* within a Coastal/Great Bay Region community.

8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")

Development of single-family residence, including 2,250+/- linear foot driveway into the property. Project includes residential home, stand-alone garage, tennis court, and pier with storage house. Home to be serviced by on-site well and septic system.

9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT.

N/A

10. ADDITIONAL REQUIRED INFORMATION

A. Date a copy of the application was sent to the municipality, as required by Env-Wq 1503.05(e) (Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed): 12/27/24

(Attach proof of delivery)

B. Date a copy of the application was sent to the local river advisory committee, if required by Env-Wq 1503.05(e) (Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river): N/A

(Attach proof of delivery)

C. Type of plan required: ☐ Land Conversion ■ Detailed Development ☐ Excavation, Grading and Reclamation ☐ Steep Slope

D. Additional plans required: ■ Stormwater Drainage and Hydrologic Soil Groups ☐ Source Control ☐ Chloride Management

E. Total area of disturbance, in square feet 175,500

F. Additional impervious cover as a result of the project, in square feet (use "-"to indicate a net reduction in impervious coverage).

Total final impervious cover, in square feet 79,800

G. Total undisturbed cover, in square feet 958,148

H. Number of lots proposed: N/A

I. Total length of roadway, in linear feet: N/A Project includes a long driveway, but no roadway

J. Name(s) of receiving water(s): Piscataqua River

K. Identify all other NHDES permits required for the project. For each, indicate whether an application has been filed and is pending. If the required approval has been issued, provide the permit number, registration date, or approval letter number, as applicable.

Type of Approval	Application Filed?	Pending?	If Issued
1. Water Supply Approval	☐ Yes ☐ No ■ N/A	☐	Permit number:
2. Wetlands Permit	■ Yes ☐ No ☐ N/A	☒	Permit number: 2024-02319
3. Shoreland Permit	■ Yes ☐ No ☐ N/A	☐	Registration date: 2024-02318
4. UIC Registration	☐ Yes ☐ No ■ N/A	☐	Approval letter date:
5. Large/Small Community Well Approval	☐ Yes ☐ No ■ N/A	☐	Permit number:
6. Large Groundwater Withdrawal Permit	☐ Yes ☐ No ■ N/A	☐	Permit number:
7. Other:	☐ Yes ☐ No		

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern:

rufous bulrush, Atlantic Sturgeon, New England Cottontail, Shortnose Sturgeon, Spotted Turtle

M. Using the NHDES OneStop Data Mapper with the Surface Water Impairment layer turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."

N/A

N. Did the applicant or applicant's agent have a pre-application meeting with Alteration of Terrain Bureau staff?

☒ Yes ☐ No If yes, name of staff member: Kevin Thatcher, PE

O. Will blasting of bedrock be required? ☐ Yes ☒ No If yes, estimated quantity of blast rock in cubic yards:
If yes, standard blasting Best Management Practices notes must be placed on the plans.

NOTE: If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact Alteration of Terrain Bureau staff for additional detail.

11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN THE ORDER LISTED BELOW)

LOOSE:

- ■ Signed application form, with attached proof(s) of delivery.
- ■ Check for the application fee, calculated using the fee schedule available on the NHDES Land Development page.
- ■ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale).
- N/A ☐ If the applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

BOUND, IN A REPORT, IN THE FOLLOWING ORDER:

- ■ Copy of the signed application form and application checklist.
- ■ Copy of the check.
- ■ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale).
- ■ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points.
- ■ Printout of NHDES OneStop Mapper with "Surface Water Impairments" layer turned on.
- ■ Printout of NHDES OneStop Mapper with Alteration of Terrain screening layers turned on.
- ■ Printout of Natural Heritage Bureau DataCheck Tool letter and any relevant correspondence with New Hampshire Fish and Game.
- ■ USDA Web Soil Survey Map with project's watershed outlined.
- ■ Aerial photograph (1" = 2,000' scale with the site boundaries outlined).
- ■ Photographs representative of the site.
- ■ Groundwater recharge volume calculations (include one Best Management Practices worksheet per permit application).
- ■ Drainage analysis, stamped by a professional engineer (see "Application Checklist" at the end of this document).
- N/A ☐ Riprap apron or other energy dissipation or stability calculations.
- ■ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards of the Society of Soil Scientists of Northern New England.
- ■ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)].
- N/A ☐ Registration and Notification Form for Stormwater Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches).
- ■ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)].
- N/A ☐ Source control plan.

PLANS:

- ■ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details).
- ■ Pre- and post-development color-coded soil plans on 11" x 17" (see Application Checklist for details).
- ■ Pre- and post-construction drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details).

100-YEAR FLOODPLAIN REPORT:

- N/A ☐ All information required in Env-Wq 1503.09, submitted as a separate report.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

- ■ See Application Checklist (Attachment A) for details.

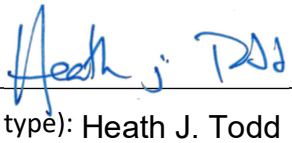
- ■ **REVIEW APPLICATION FOR COMPLETENESS. CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

12. REQUIRED SIGNATURES

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641:3.

☒ **APPLICANT** ☐ **APPLICANT'S AGENT**:

Signature:  Date: 12/26/2024

Name (print or type): Heath J. Todd Title: Owner / Applicant

☐ PROPERTY OWNER Same as Applicant ☐ PROPERTY OWNER'S AGENT:

Signature: _____ Date:

Name (print or type): Title:

ALTERATION OF TERRAIN PERMIT ATTACHMENT A: APPLICATION CHECKLIST

Check each box to indicate the item has been provided, or indicate why it does not apply.

DESIGN PLANS

- [x] Plans printed on 34 - 36" by 22 - 24" white paper.
- [x] Professional Engineer stamp.
- [x] Wetland delineation.
- [x] Temporary erosion control measures.
- [x] Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and nonresidential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the New Hampshire Stormwater Management Manual.
- [x] Pre-existing 2-foot contours.
- [x] Proposed 2-foot contours.
- N/A [ ] Drainage easements protecting the drainage/treatment structures.
- [x] Compliance with state statute governing fill and dredge in wetlands, RSA 482- A. Note that artificial detention in wetlands is prohibited. Project under review by Wetland's Bureau
- [x] Compliance with the New Hampshire Shoreland Protection Act, RSA 483-B. Shoreland Permit approved.
- N/A [ ] Benching – needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.
- [x] Check to see if any proposed ponds require state dam permits. Not required.

DETAILS

- [x] Typical ~~roadway~~ driveway cross-section.
- N/A [ ] Detention basin with inverts noted on the outlet structure.
- [x] Stone berm level spreader.
- N/A [ ] Outlet protection – riprap aprons.
- [x] A general installation detail for an erosion control blanket.
- [x] Silt fences or mulch berm.
- N/A [ ] Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.
- N/A [ ] Hay bale barriers.
- N/A [ ] Stone check dams.
- [x] Gravel construction exit.
- [x] Temporary sediment trap.
- [x] The treatment BMPs proposed.
- N/A [ ] Any innovative BMPs proposed.

CONSTRUCTION SEQUENCE / EROSION CONTROL

- ■ Note that the project must be managed to meet the requirements and intent of RSA 430:53 and Agr 3800 relative to invasive species.
- ■ Note that perimeter controls shall be installed prior to earth moving operations.
- ■ Note that temporary water diversion (swales, basins, etc.) must be used as necessary until areas are stabilized.
- ■ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).
- ■ Note that all ditches and swales shall be stabilized prior to directing runoff to them.
- N/A ☐ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
- ■ Note that all cut and fill slopes shall be seeded or loamed within 72 hours of achieving finished grade
- ■ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.
- ■ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

  Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

- ■ Note the definition of the word “stable.”

  Example note: An area shall be considered stable if one of the following has occurred:

  - Base course gravels have been installed in areas to be paved.
  - A minimum of 85 percent vegetated growth has been established.
  - A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
  - Or, erosion control blankets have been properly installed.

- ■ Note the limit of time an area may be exposed.

  Example note: All areas shall be stabilized within 45 days of initial disturbance.

- ■ Provide temporary and permanent seeding specifications. Note that although reed canary grass is listed in the Green Book; it is a problematic species according to the Wetlands Bureau and therefore should not be specified.

- ■ Provide winter construction notes that meet or exceed our standards.

  Standard Winter Notes:

  - All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
  - All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
  - After October 15, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

- N/A ☐ Note at the end of the construction sequence that “Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable.” – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES

Please provide double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

■ Professional Engineer stamp.

■ Rainfall amount obtained from the Northeast Regional Climate Center. Include extreme precipitation table as obtained from this source.

■ Drainage analyses, in the following order:

- Pre-development analysis: Drainage diagram.
- Pre-development analysis: Area Listing and Soil Listing.
- Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
- Pre-development analysis: Full summary of the 10-year storm.
- Post-development analysis: Drainage diagram.
- Post-development analysis: Area Listing and Soil Listing.
- Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
- Post-development analysis: Full summary of the 10-year storm.

■ Review the Area Listing and Soil Listing reports

- Hydrologic Soil Groups (HSG) match the HSGs on the soil maps provided.
- There is the same or less HSG A soil area after development (check for each HSG).
- There is the same or less "woods" cover in the post-development.
- Undeveloped land was assumed to be in "good" condition.
- The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre-analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses or units proposed. Do these numbers make sense?

■ Check the storage input used to model the ponds.

■ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.

■ Check the outlet structure proposed and make sure it matches that modeled.

■ Check to see if the total areas in the pre and post analyses are same.

■ Confirm the correct NRCS storm type was modeled (Coos, Carroll and Grafton counties are Type II, all others Type III).

PRE- AND POST-CONSTRUCTION DRAINAGE AREA PLANS

■ Plans printed on 34 - 36" by 22 - 24" on white paper.

■ Submit these plans separate from the soil plans.

■ A north arrow.

■ A scale.

■ Labeled subcatchments, reaches and ponds.

☒ Tc lines.

☒ A clear delineation of the subcatchment boundaries.

N/A ☐ Roadway station numbers.

☒ Culverts and other conveyance structures.

PRE- AND POST-CONSTRUCTION COLOR-CODED SOIL PLANS

☒ 11" × 17" sheets suitable, as long as it is readable.

☒ Submit these plans separate from the drainage area plans.

☒ A north arrow.

☒ A scale.

☒ Name of the soil scientist who performed the survey and date the soil survey took place.

☒ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.

☒ Delineation of the soil boundaries and wetland boundaries.

☒ Delineation of the subcatchment boundaries.

☒ Soil series symbols (e.g., 26).

☒ A key or legend identifying each soil series symbol and its associated soil series name (for example: 26 = Windsor).

☒ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, and Impervious = gray).

Please note that excavation projects (including gravel pits) have similar requirements to those above, with the following common exceptions or additions:

N/A ☐ Drainage report is not needed if site does not have off-site flow.

N/A ☐ 5-foot contours are allowed rather than 2-foot.

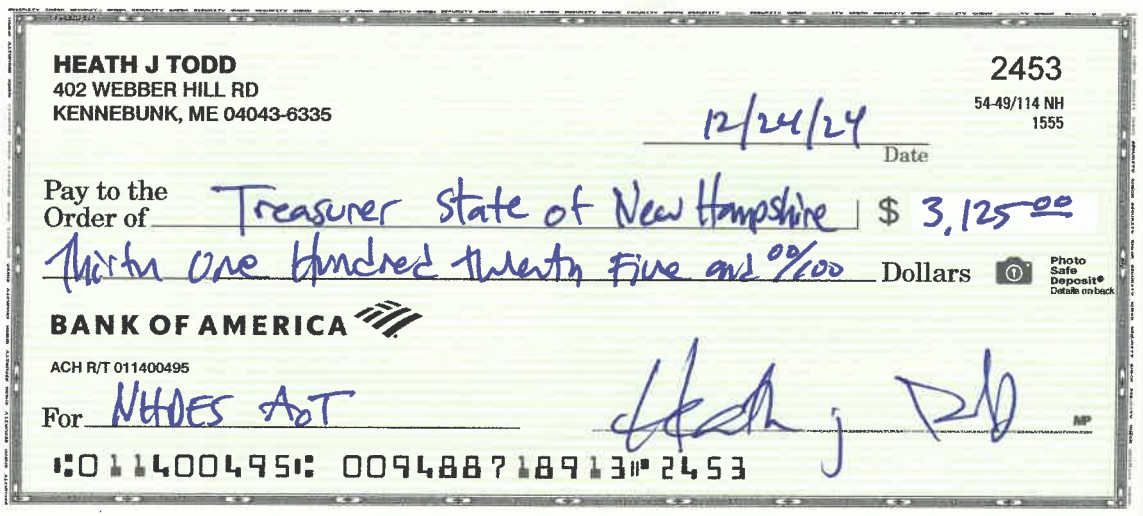
N/A ☐ No Professional Engineer stamp is needed on the plans.

N/A ☐ Add a note to the plans that the applicant must provide NHDES a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.

N/A ☐ Add reclamation notes.

N/A ☐ A description of the subsurface conditions to the planned depth of excavation, including the elevation of the location of the Seasonal High Water Table (SHWT), as observed and described by a certified soil scientist, or an individual holding a valid permit as a permitted designer as issued by the department's Subsurface Systems Bureau.

For more resources, refer to the Natural Resources Conservation Service's Vegetating New Hampshire Sand and Gravel Pits publication.



HEATH J TODD
402 WEBBER HILL RD
KENNEBUNK, ME 04043-6335

2453
54-49/114 NH
1555

12/24/24
Date

Pay to the Order of Treasurer State of New Hampshire $ 3,125.00

Thirty One Hundred Twenty Five and 0/100 Dollars

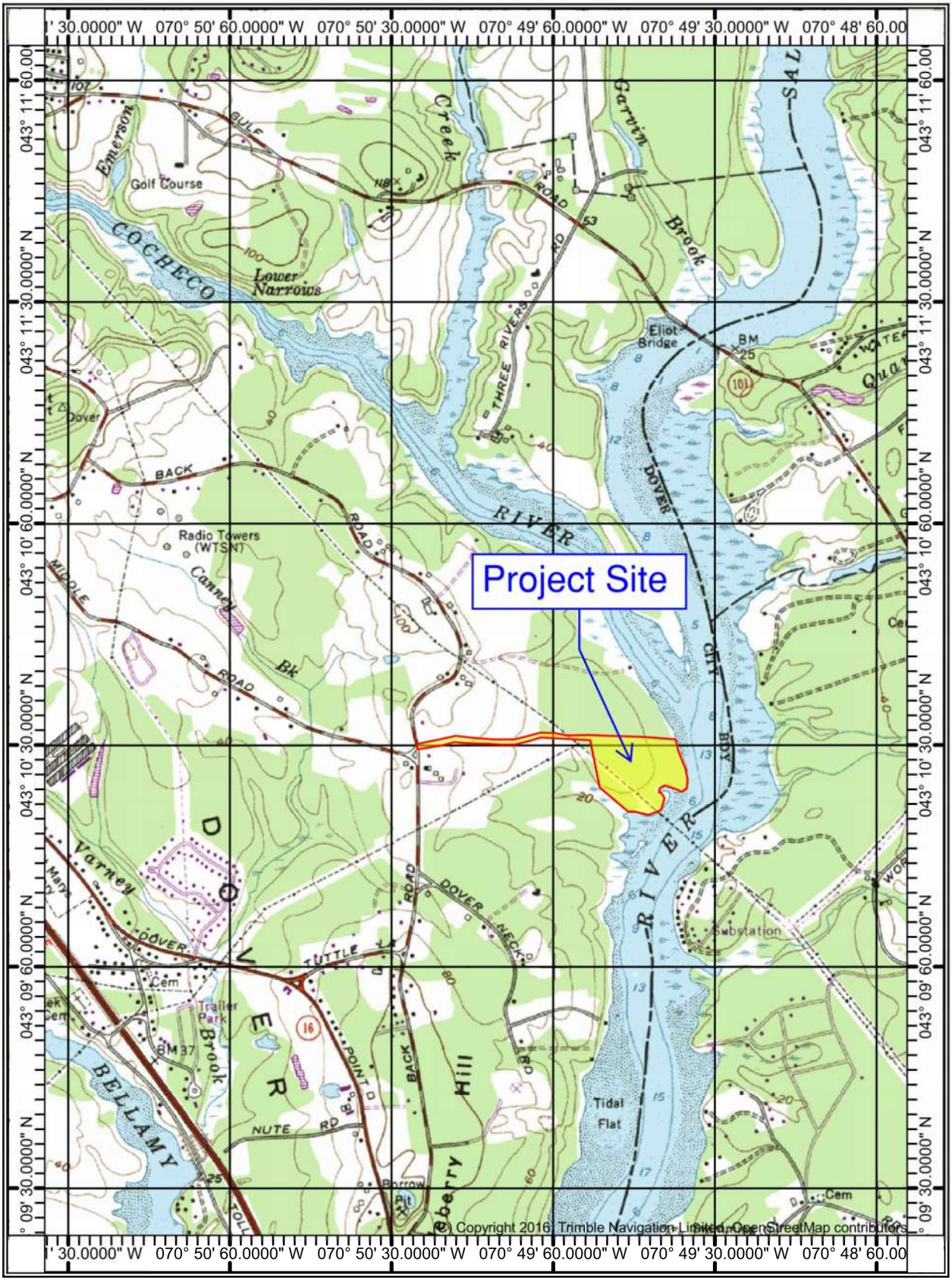
Photo Safe Deposit® Details on back

BANK OF AMERICA

ACH R/T 011400495

For NHDES AoT

⑆011400495⑆ 009488718913⑈2453



USGS Location Map

Heath Todd Back Road Dover, NH

DRAINAGE ANALYSIS
&
SEDIMENT AND EROSION CONTROL PLAN

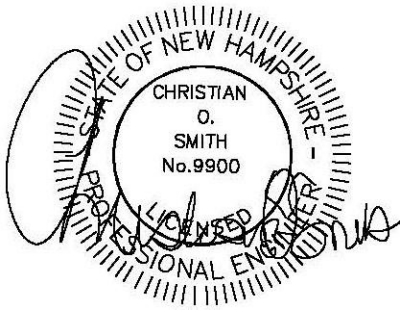
Prepared for:

HEATH J. TODD REVOCABLE TRUST
RESIDENTIAL SITE PLAN

Prepared by:

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVENUE
STRATHAM, NH 03885

Project Number:
NH-1501
Back Road
Dover, New Hampshire
November 12, 2024
Revised December 23, 2024



1.0 ANALYSIS SUMMARY

The Heath J. Todd Revocable Trust proposes to construct a residential home on a 26+/- acre parcel of land located on Back Road in Dover, New Hampshire. A drainage analysis of 65.7 acres was conducted for the purpose of estimating the peak rates and volumes of stormwater run-off and to subsequently design adequate drainage structures. Two models were compiled: one for the area in its existing (pre-construction) condition and a second for its proposed (post-construction) condition. The analysis was conducted using Extreme Precipitation data provided by Cornell University for the following 24-hour duration storm events, including increasing all 24-hour rainfall data by 15% as required since Dover is within the designated "coastal region" by NHDES:

Storm Event	Rainfall Depth (inches)
2-Year	3.65
10-Year	5.50
25-Year	6.95
50-Year	8.30

These storm events use the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment to model the rainfall and predict stormwater runoff flows and volumes. A Type III storm pattern was used in the model. The purpose of this analysis is to estimate the peak rates and volumes of run-off from the site for detention adequacy purposes, and to compare the peak rates and volumes of run-off between the existing and proposed conditions.

Peak Rates of Discharge

		Component Peak Rate of Discharge (CFS)			
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**25-Year**	**50-Year**
Reach #100	Existing	0.55	0.86	1.12	1.39
Driveway Crossing #1	Proposed	0.58	0.89	1.16	1.44
Reach #200	Existing	3.02	5.37	7.88	10.83
Driveway Crossing #2	Proposed	3.08	5.42	7.90	10.82
Reach #300	Existing	0.78	1.82	2.72	3.60
Driveway Crossing #3	Proposed	0.81	1.82	2.69	3.54
Reach #400	Existing	4.63	10.45	15.92	21.63
Driveway Crossing #4	Proposed	4.73	10.56	16.03	21.72
Reach #500	Existing	3.01	6.97	10.41	13.76
Driveway Crossing #5	Proposed	3.20	7.22	10.69	14.06
Reach #600	Existing	0.71	1.67	2.51	3.33
Driveway Crossing #6	Proposed	0.99	2.06	2.98	3.87
Reach #700	Existing	1.70	3.81	5.70	7.60
Driveway Crossing #7	Proposed	1.65	3.67	5.48	7.31
Reach #800	Existing	4.79	10.06	14.60	19.12
Driveway Crossing #8	Proposed	4.87	10.15	14.68	19.16

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Reach #800	Existing	4.79	10.06	14.60	19.12
Driveway Crossing #8	Proposed	4.87	10.15	14.68	19.16

Reach #900 Driveway Crossing #9	Existing Proposed	6.80 7.14	16.09 15.63	24.40 23.64	33.62 31.56

Discharge Volumes

		Component Volume (ac-ft)			
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**25-Year**	**50-Year**
Reach #100 Driveway Crossing #1	Existing Proposed	0.048 0.050	0.078 0.081	0.105 0.109	0.133 0.138
Reach #200 Driveway Crossing #2	Existing Proposed	0.413 0.423	0.778 0.791	1.160 1.174	1.579 1.593
Reach #300 Driveway Crossing #3	Existing Proposed	0.060 0.062	0.131 0.132	0.194 0.193	0.256 0.254
Reach #400 Driveway Crossing #4	Existing Proposed	0.526 0.548	1.176 1.204	1.777 1.811	2.386 2.424
Reach #500 Driveway Crossing #5	Existing Proposed	0.279 0.299	0.608 0.635	0.898 0.930	1.184 1.220
Reach #600 Driveway Crossing #6	Existing Proposed	0.063 0.087	0.139 0.174	0.207 0.250	0.274 0.324
Reach #700 Driveway Crossing #7	Existing Proposed	0.170 0.167	0.370 0.359	0.554 0.537	0.740 0.716
Reach #800 Driveway Crossing #8	Existing Proposed	0.576 0.595	1.188 1.213	1.772 1.801	2.382 2.415
Reach #900 Driveway Crossing #9	Existing Proposed	1.050 1.154	2.360 2.453	3.795 3.873	5.415 5.478

The proposed residential home includes a 2,250-foot long, 12-foot wide driveway from Back Road into the site. The first 100 feet of the driveway is proposed pavement which then transitions to gravel prior to transitioning back to a paved driveway into the area to be developed. The proposed improvement area includes eight different sub-catchments. Sub-catchments 1 thru 8 flow south towards the abutting properties consisting of residential, radio tower, undeveloped, and utility easement uses. Sub-catchment 9 flows towards and into the Piscataqua River, just south of the confluence the Cocheco and Salmon Falls Rivers. The Piscataqua River is designated as a 5th or 6th order stream depending on where the property abuts the river.

Many of the storm events for sub-catchments 1 thru 8 show a de minimis increase in the peak rate of runoff in the proposed conditions as compared to the existing condition. While this is the result of the proposed gravel driveway leading to the developed portion of the property, the average increase for each of the 8 sub-catchments in the 50-year storm event is 0.098 cfs, which would not be noticeable and should be considered within the mathematical tolerance of the HydroCAD stormwater modeling software falling within the "scientific uncertainty and mathematical rounding" designated in Env-Wq 1507.05(c). In addition, all 8 sub-catchments flow into wetlands and ravines, and ultimately into the Piscataqua River

Volume increases for sub-catchments 1 thru 8 are also minor, with a total increase of 0.149 acre-feet or 6,490 cubic feet during a 50-year storm event. This amount of water, distributed across the area to the property to the south that is undeveloped ravines capable of hold stormwater (958,787 sf) would amount in an increase of 0.00677 feet or 0.081 inches. This amount of runoff from the proposed project would not result in flooding or changing the hydrology of the property to the south.

In terms of treatment, the residential driveway is superelevated to the south to capture runoff into grass-lined swales along the driveway. These swales are separated by 1 foot of lawn area between the gravel driveway and 3 feet wide and 18 inches deep.

Sub-catchment 9 contains the proposed areas to be developed near the Piscataqua River where the property opens up beyond the 20-foot-wide property containing the driveway.

Impervious areas from sub-catchment 9 including the driveway, the garage, and the house are directed to either forebays and bioretention ponds or an infiltration pond prior to discharging overland through 100 feet of woodland towards the Piscataqua River.

In addition, the potential for increased erosion and sedimentation is handled by way of silt barriers surrounding the disturbed areas. The use of Best Management Practices per the Rockingham Conservation District / DES Handbook have been applied to the design of these structures and will be observed during all stages of construction. All land disturbed during construction will be stabilized within 30 days of groundbreaking. Existing wetlands and abutters will suffer no adverse effects resulting from this proposed development.

2.0 EXISTING CONDITIONS ANALYSIS

The existing property is located along the Piscataqua River and consists of a previously created path into the property, a utility easement, woodlands, and wetlands on and adjacent to the site. The existing topography is such that the site analysis is divided into eight sub-catchments within the area proposed to be improved. Reaches #100, #200, #300, #400, #500, #600, #700, and #800 flow from the north to the south, into wetlands, ravines, and ultimately towards the Piscataqua River. Reach #900 flows towards the southeast towards the Piscataqua River.

Classified by a combination of Site-Specific Soil Mapping on-site and NRCS Mapping off-site, the land is composed of relatively varying slopes and soils categorized into the Hydrologic Soil Groups (HSG) A, B, C, and D (See appendices for HISS/HSG designations).

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the impervious area, clearing of trees, and grading of slopes causes an increase in the curve number (Cn) and a decrease in the time of concentration (Tc) which results in a potential increase in peak rates of run-off from the site. To best match these flows to pre-development conditions, various stormwater management systems will be proposed. Grass-lined swales, ditch

turnouts, forebays, bioretention ponds, infiltration pond, and wooded vegetated buffers. The proposed development divides the site into eight different post-construction sub-catchments to match the existing breakout.

In an effort to prevent the sedimentation of adjacent wetlands or abutting properties, the majority of the gravel driveway will be directed towards grass lined swales and paved surfaces at the development area is directed towards forebays prior to entering the bioretention ponds.

During construction, appropriate Best Management Practices (BMP's) will be applied so as to negate the potential for sediment-laden run-off to discharge into wetlands or the Piscataqua River prior to the final stabilization of the proposed grading. The structures outlined in this proposal provide for adequate treatment of stormwater run-off for sediment control.

4.0 SEDIMENT & EROSION CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP's)

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual. Any area disturbed by construction will be re-stabilized within 30 days, and abutting properties and wetlands will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them.

4.1 Silt Barrier / Construction Fence

The plan set demonstrates the location of silt barriers for sediment control. Sheet E-1, Erosion and Sediment Control Details, has the specifications for installation and maintenance of the silt barriers selected for the site. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or approved equal. The four-foot construction fencing is to be installed using six-foot posts buried at least two feet into the ground spaced six to eight feet apart.

4.2 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of disturbance. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specifications on Sheet E-1 using the seeding mixture below:

Mixture C	Pounds per Acre	Pounds per 1,000 sf
Tall Fescue	20	0.45
Creeping Red Fescue	20	0.45

Birdsfoot Trefoil	8	0.20
Total	**48**	**1.10**

4.3 Stabilized Construction Entrance/Exit

A temporary gravel construction entrance/exit provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the gravel pad should be between 1- and 2-inch coarse aggregate and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. Plan and profile view details are shown on Sediment and Erosion Control Detail Plan.

4.4 Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

4.5 Level Spreaders

Level spreaders enable any run-off directed towards them to be spread evenly into sheet flow prior to discharge into wetlands or treatment by a filter strip, thus allowing for better filter strip efficiency and a lesser potential for erosion.

4.6 Vegetated Buffers

Vegetated buffers are areas of land with natural or planted vegetation designed to receive sheet run-off from upgradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Vegetated buffers should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet.

4.7 Filter Strips

Filter strips are areas of land with natural or planted vegetation designed to receive sheet run-off from upgradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Filter strips should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet.

4.8 Environmental Dust Control

Dust will be controlled on the site using multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

4.9 Construction Sequence

1. Wetland boundaries shall be marked in the field prior to construction/start of clearing as necessary to avoid inadvertent impacts.
2. Install erosion control measures along proposed driveway.
3. Cut and remove trees as directed or required for the installation of the proposed driveway into the site.
4. Construct gravel driveway and associated wetland/stream crossings along driveway.
5. Install erosion control measures along proposed work beyond driveway.
6. Cut and remove trees as directed or required for the development of the area beyond the driveway.
7. Construct and/or install temporary and permanent sediment erosion and detention control facilities, as required. Erosion, sediment, and facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.
8. Clear, cut, grub, and dispose of debris in approved facilities.
9. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.
10. Construct additional driveway and its associated drainage structures.
11. Construct building foundations and site amenities.
12. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required or directed.
13. Daily, or as required, construct temporary berms, drainage ditches, sediment traps, etc. To prevent erosion on the site and prevent any siltation of abutting waters or property.
14. Inspect and maintain all erosion and sediment control measures during construction.
15. Complete permanent seeding and landscaping.
16. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.
17. All swales and drainage structures will be constructed and stabilized prior to having runoff being directed to them.
18. Finish graveling/paving all roadways and stabilize material storage areas.

4.10 Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.
2. Erosion and sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.
3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4” of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired and sediment deposits shall periodically be removed and properly disposed of.
5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.
6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

4.11 Inspection and Maintenance Schedule

Silt barriers shall be inspected during and after storm events to ensure that the barrier still has integrity and is not allowing sediment to pass.

5.0 CONCLUSION

This proposed site development off of Back Road in Dover, NH will have no adverse effect on the abutting property owners by way of stormwater run-off or siltation. The post-construction peak rates and volume of run-off for the site will not significantly increase over the existing conditions for the storm events, as shown in the tables above. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of grass swales, forebays, bioretention ponds, infiltration trenches, and wooded vegetated buffers. The Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and these applications will be enforced throughout the construction process.

An Alteration of Terrain Permit (RSA 485: A-17) is required for this project due to the area of disturbance being more than 100,000 square feet.

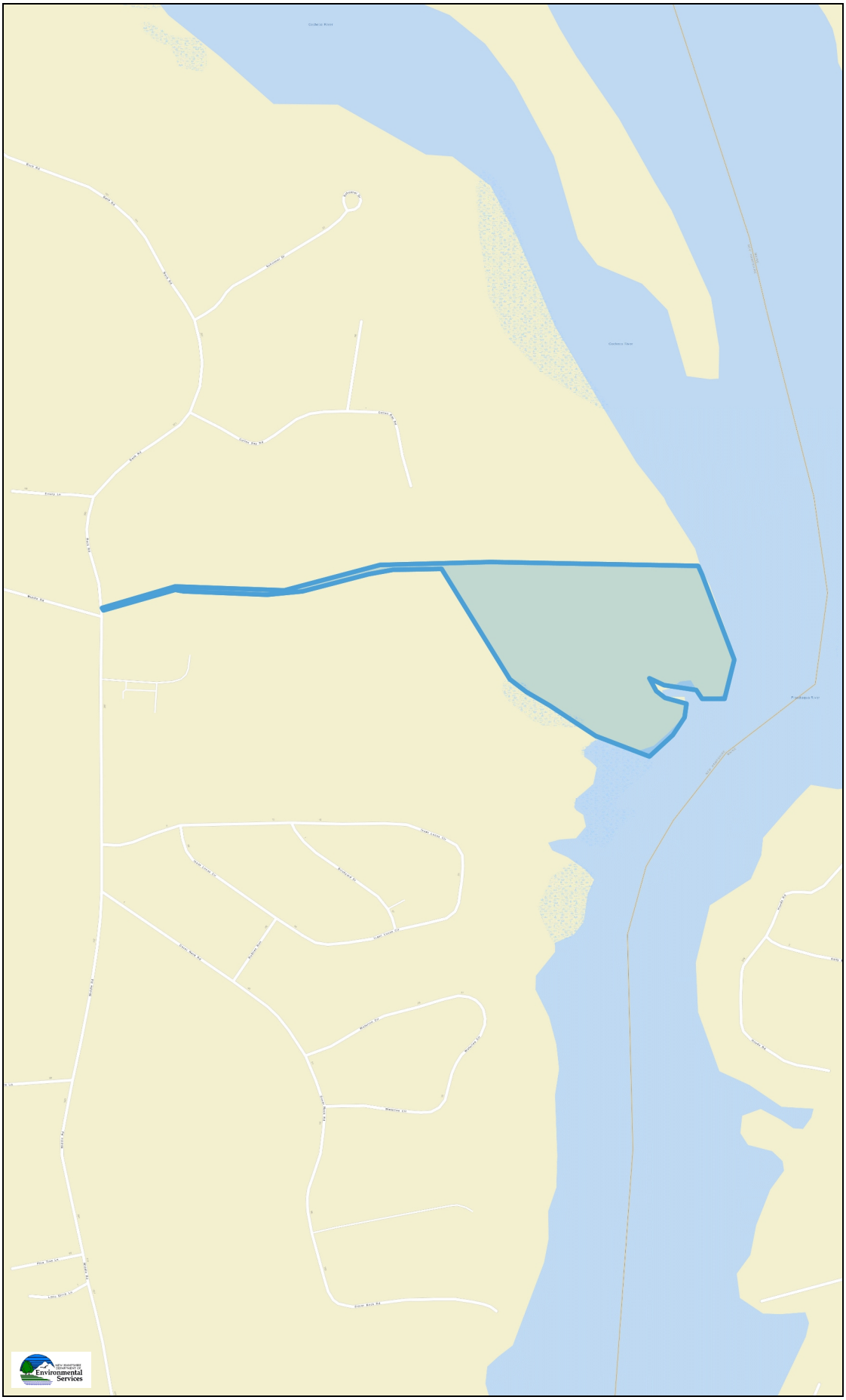
Respectfully Submitted,

BEALS ASSOCIATES, *PLLC*.

Christian O. Smith

Christian O Smith, PE
Principal

Back Road, Dover, NH - Drinking Water Layers



Legend

- Wellhead Protection Areas
- Hydrologic Areas of Concern
- GA2 High-Yield Stratified-Dr Aquifer

Map Scale

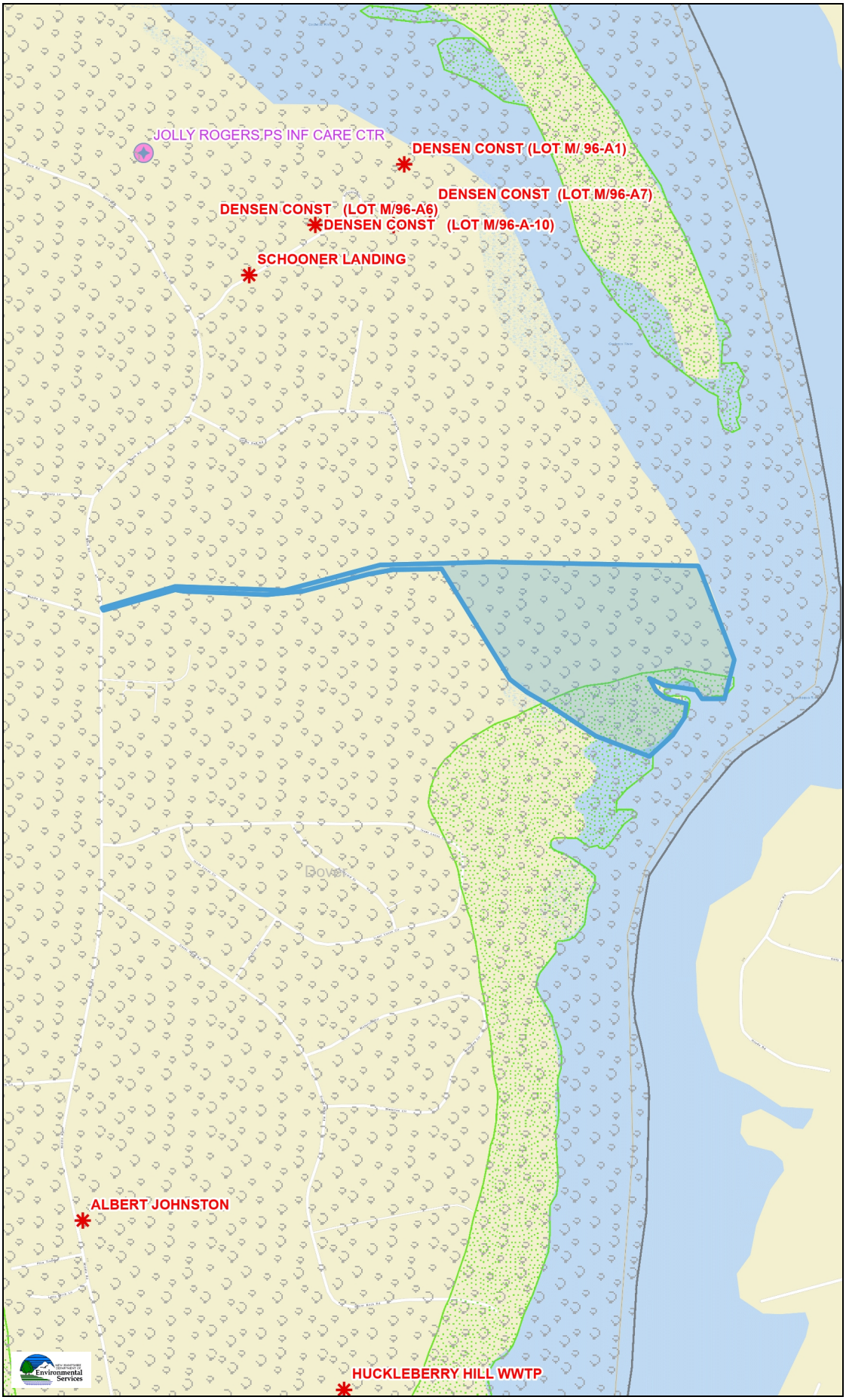
1: 10,000

© NH DES, http://des.nh.gov

Map Generated: 4/9/2024

Notes

Back Road, Dover, NH - AoT Layers



Legend

- Remediation Sites
- Coastal and Great Bay Regi Communities
- Designated Rivers Quarterm Buffer
- Public Water Supply Wells
- Groundwater Classification A GA1
- Groundwater Classification A GA2
- Water Supply Intake Protect Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarte Buffer
- Class A - All Features
- All Lakes, with a Quarter Mil Buffer
- Outstanding Resource Wate Watersheds
- Surface Waters with Impairm with Quarter Mile Buffer
- Watersheds with Chloride Impairments

Map Scale

1: 10,000

© NH DES, http://des.nh.gov

Map Generated: 4/9/2024

Notes

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: Heath Todd
361 RT 108 Unit 1
Somersworth, NH 03878
heath@apex-constructioninc.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review, Anthony Tur

Date: 11/07/2023 (valid until 11/07/2024)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: NHDES - Shoreland Standard Permit, NHDES - Wetland Standard Dredge & Fill - Major

NHB ID: NHB23-3169

Town: Dover
Location: Back Road

Project Description: I am requesting permitting for a single family home with septic system, well, gravel and paved driveway, shoreland dock and boat launch on Piscataqua. This project will provide a home for my family and requires a lengthy driveway with wetland impacts to access buildable area on the property.

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments and consultation requirements below.

NHB Comments: Please send NHB existing and proposed conditions plans for the construction of the driveway and house. Please also send representative site photos during the growing season of any wet areas that are proposed to be impacted. This includes low fields, ditches, wet meadows, and other wetland habitat.

NHFG Comments: Please refer to NHFG consultation requirements below. Please show location of dock.

NHB Consultation

If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB DataCheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://www.wildlife.nh.gov/wildlife-and-habitat/nongame-and-endangered-species/environmental-review. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB DataCheck results letter number and "Fis 1004 consultation request" in the subject line**.

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email NHFGreview@wildlife.nh.gov, and include the NHB DataCheck results letter number and "review request" in the email subject line.
Contact NH Fish & Game at (603) 271-0467 with questions.

NHB Database Records:
The following record(s) have been documented in the vicinity of the proposed project.
Please see the map and detailed information about the record(s) on the following pages.

Plant species	**State[1]**	**Federal**	**Notes**
rufous bulrush (*Scirpus pendulus*)	E	--	Occurs in a variety of wetland habitats, including mesic forests, peatlands, and marshes. Potential threats include water level changes, water quality degradation, development (of adjacent uplands), off road vehicles, and succession.

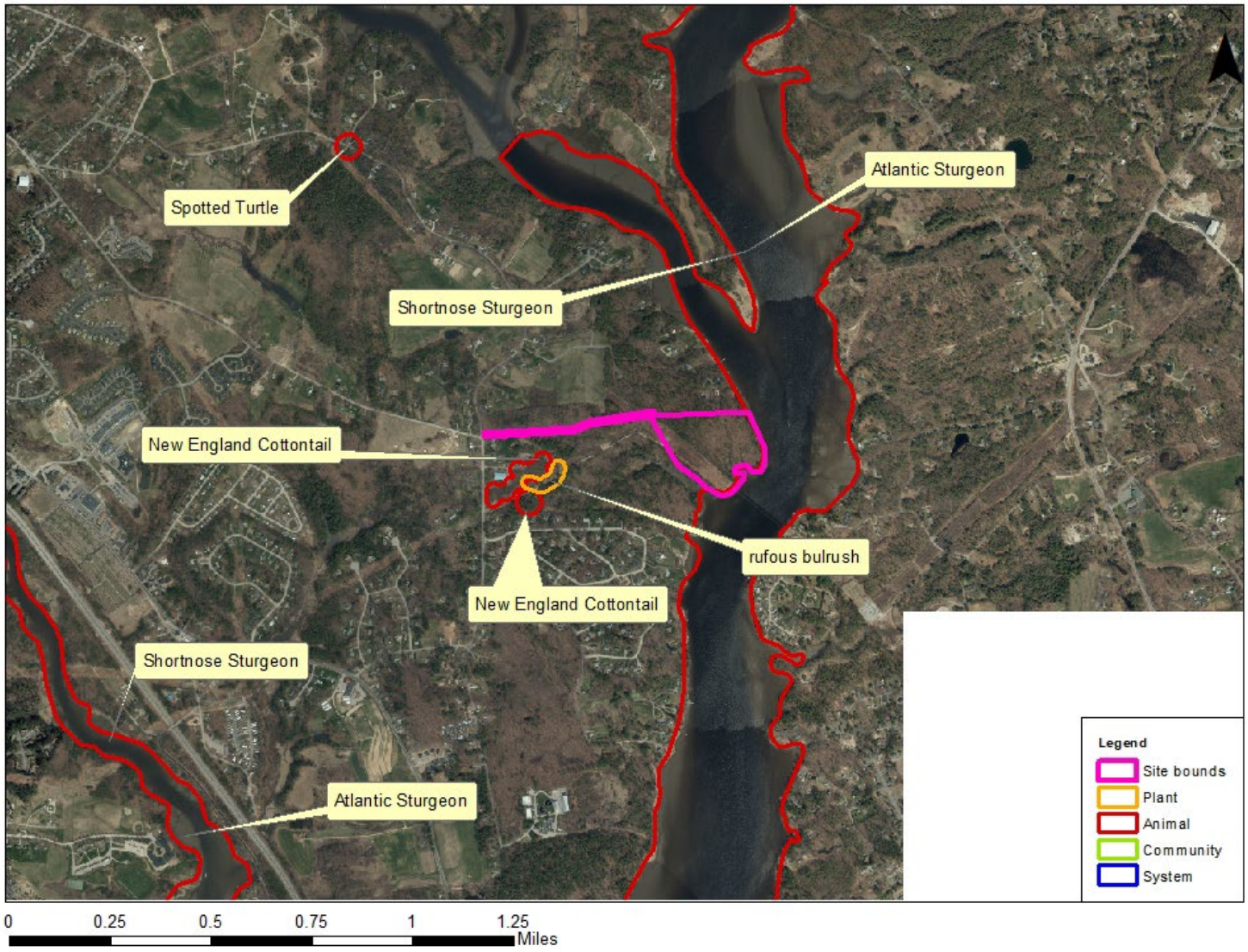
Vertebrate species	**State[1]**	**Federal**	**Notes**
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	T	T	Contact the NH Fish & Game Dept (see above) and the US Fish & Wildlife Service (see below).
New England Cottontail (*Sylvilagus transitionalis*)	E	--	Contact the NH Fish & Game Dept (see above).
Shortnose Sturgeon (*Acipenser brevirostrum*)	E	E	Contact the NH Fish & Game Dept (see above) and the US Fish & Wildlife Service (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list.
An asterisk (*) indicates that the most recent report for that occurrence was 20 or more years ago.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above. Contact for federally-listed animals: Anthony Tur, US FWS, at (603) 223-2541.

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB. Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.
However, many areas have never been surveyed, or have only been surveyed for certain species.
NHB recommends surveys to determine what species/natural communities are present onsite.

NHB23-3169


Spotted Turtle
Atlantic Sturgeon
Shortnose Sturgeon
New England Cottontail
rufous bulrush
New England Cottontail
Shortnose Sturgeon
Atlantic Sturgeon
Legend
Site bounds
Plant
Animal
Community
System
0
0.25
0.5
0.75
1
1.25
Miles

NHB23-3169 EOCODE: PMCYP0Q160*006*NH

New Hampshire Natural Heritage Bureau - Plant Record

rufous bulrush (*Scirpus pendulus*)

Legal Status	**Conservation Status**
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: --

Detailed Description: 2004: The population contains thousands of flowering/fruiting culms.

General Area: 2004: The population occurs in a wet meadow on either side of a powerline corridor access road. The powerline corridor is kept open and is characterized by mixed shrub and herbaceous vegetation on both mesic and dry soil. Associates include *Elaeagnus umbellata* (autumn olive), *Alnus incana* ssp. *rugosa* (speckled alder), *Scirpus hattorianus* (bulrush), *Scirpus cyperinus* (woolly bulrush), *Carex vulpinoidea* (setaceous foxtail sedge), *Carex flava* (yellow sedge), *Phleum pratense* (common timothy), *Poa pratensis* (Kentucky bluegrass), *Poa compressa* (Canada bluegrass), *Phalaris arundinacea* (reed canary-grass), and *Onoclea sensibilis* (sensitive fern).

General Comments: --

Management Comments: 2004: Several invasive plant species occur in the wet meadow with the bulrush. They include *Elaeagnus umbellata* (autumn olive), *Rhamnus cathartica* (common buckthorn), *Rosa multiflora* (multiflora rose), *Lonicera morrowii* (Morrow's honeysuckle), *Poa compressa* (Canada bluegrass), *Lysimachia nummularia* (moneywort), *Phalaris arundinacea* (reed canary-grass), and *Lythrum salicaria* (purple loosestrife). These plants should be monitored and their effects on the bulrush population determined.

Location

Survey Site Name: Middle Road, east of
Managed By:

County: Strafford
Town(s): Dover
Size: 2.5 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2004: Powerline crosses Middle Road less than 0.2 miles south of Back Road. At powerline corridor, take dirt access road NE 0.1 miles or more onto the corridor. Population occurs on either side of access road in wet meadow (43.173029N, 70.8376W to 43.172858N, 70.837W to 43.173577N, 70.8361W).

NHB23-3169 EOCODE: PMCYP0Q160*006*NH

Dates documented

First reported:	2004-08-16	Last reported:	2004-08-16

NHB23-3169 EOCODE: AFCAA01042*003*NH

New Hampshire Natural Heritage Bureau - Animal Record

Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)

Legal Status	Conservation Status
Federal: Listed Threatened	Global: Rare or uncommon
State: Listed Threatened	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2016: 1 individual, sex unknown, detected in the lower Piscataqua River. 2015: 1 individual, sex unknown, detected in Portsmouth Harbor. 2012: 1 individual, sex unknown, detected in Little Bay.
General Area: 2016: Tidal waters in Portsmouth Harbor, Little Bay, and the Piscataqua River.
General Comments: --
Management Comments: --

Location

Survey Site Name: Piscataqua River
Managed By:

County:
Town(s): Out-Of-State
Size: 7749.3 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: 2016: Tidal waters of Portsmouth Harbor, Little Bay, and the Piscataqua River.

Dates documented

First reported: 2012-06-02 Last reported: 2016-05-27

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

NHB23-3169 EOCODE: AMAEB01110*010*NH

New Hampshire Natural Heritage Bureau - Animal Record

New England Cottontail (*Sylvilagus transitionalis*)

Legal Status	**Conservation Status**
Federal: Not listed	Global: Rare or uncommon
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2011: Winter observations at 12 points. 2002: 2 age and sex unknowns.
General Area: 2002: Terrestrial: scrub / shrubland.
General Comments: 2002: Results from J. Litvaitis Regional Study - 2003.
Management Comments: --

Location

Survey Site Name: Canney Brook
Managed By:

County: Strafford
Town(s): Dover
Size: 7.4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2002: Middle Rd. powerlines.

Dates documented

First reported: 2002-01-23 Last reported: 2011-02-16

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

NHB23-3169 EOCODE: AFCAA01010*001*NH

New Hampshire Natural Heritage Bureau - Animal Record

Shortnose Sturgeon (*Acipenser brevirostrum*)

Legal Status	**Conservation Status**
Federal: Listed Endangered	Global: Rare or uncommon
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2016: 2 individuals, 1 female and 1 sex unknown, detected in Portsmouth Harbor and the lower Piscataqua River. 2015: 3 females and 2 other individuals, sex unknown detected in Portsmouth Harbor. 2014: 1 female detected moving from Portsmouth Harbor up the Piscataqua River to the mouth of the Cocheco River. 2012: 1 female detected in Little Bay. 2011: 1 female detected in Little Bay. 2010: 1 female detected in Little Bay.
General Area: 2016: Tidal waters in Portsmouth Harbor, Little Bay, and the Piscataqua River.
General Comments: --
Management Comments: --

Location

Survey Site Name: Piscataqua River
Managed By:

County:
Town(s): Out-Of-State
Size: 7749.3 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: 2016: Tidal waters of Portsmouth Harbor, Little Bay, and the Piscataqua River.

Dates documented

First reported: 2010-11-03 Last reported: 2016-10-20

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB23-3169 EOCODE: ARAAD02010*198*NH

New Hampshire Natural Heritage Bureau - Animal Record

Spotted Turtle (*Clemmys guttata*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2017: Area 14574: 1 adult female observed, dead on road.
General Area: 2017: Area 14574: Roadside.
General Comments: --
Management Comments: --

Location

Survey Site Name: Canney Brook
Managed By:

County: Strafford
Town(s): Dover
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: Area 14574: At intersection of Back Road and Mallard Lane, Dover.

Dates documented

First reported:	2017-05-07	Last reported:	2017-05-07

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

From: "DNCR: NHB Review" <nhbreview@dncr.nh.gov>
Date: September 3, 2024 at 1:12:13 PM EDT
To: Heath Todd <heath@apex-constructioninc.com>
Cc: mcook@metrocast.net
Subject: RE: NHB Review: NHB23-3169

Hi Heath,

I received the proposed plans, representative site photos, and a project description in the mail for NHB23-3169.

Thank you for having Stable Growth Environmental assess the wetlands proposed to be impacted. Having detailed descriptions, lists of vegetation, and photos of each wetland crossing is very helpful for me to determine if surveys are necessary.

Based on the provided information, none of the proposed wetland impacts are within wet meadows which is the most likely habitat rufous bulrush (*Scirpus pendulus*) would be found in. The wetland most likely to support this species is Wetland 6 which was previously forested/scrub-shrub and is now a regularly cleared transmission line ROW. Although the nearby occurrence of rufous bulrush was found within a utility ROW, this species does not generally occur in scrub-shrub habitat so it is less likely for the species to be present in this wetland.

Based on the provided report, Stable Growth Environmental did a thorough job assessing each wetland over multiple site visits. During the site visits, vegetation lists were compiled for each wetland which includes other bulrush species. Because of the thoroughness of these visits and the fact that bulrush was visible at the time of the visits, it is likely that if rufous bulrush were present in these wetlands, it would have been observed.

Although the wetlands proposed to be impacted could support rufous bulrush, it is not highly likely that this species is present within these habitats. In addition, because the wetlands proposed to be impacted were thoroughly assessed and the nearby known occurrence of rufous bulrush has not been seen in over 20 years, it is unlikely that this species would be present within the proposed impact areas. Because of this, **NHB has no further concerns regarding NHB23-3169.**

Please let me know if you have any questions.

Best,

Madeline (Maddie) Severance (*she/her/hers*)
Environmental Reviewer
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
N.H. Department of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603)-271-2834 (note the new number)
nhbreview@dncr.nh.gov
nhdfl.dncr.nh.gov
NHB DataCheck Tool

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Tuesday, November 7, 2023 10:57 AM
To: heath@apex-constructioninc.com
Cc: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; mcook@metrocast.net
Subject: NHB Review: NHB23-3169

Attached, please find the review of the NH Natural Heritage Bureau's (NHB) database to determine whether the proposed project could impact rare species and exemplary natural communities.

If you received a comment on the DataCheck Letter from NHB, please reply to this email with any documents, photos, or information requested.

If you received a comment on the DataCheck Letter from NHFG, please follow the consultation requirements listed on the DataCheck Letter and coordinate with NHFGreview@wildlife.nh.gov

Best,
Maddie

Maddie Severance
Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-0687

If there are problems with your DataCheck letter or you need help using the DataCheck Tool, contact Maddie Severance: (603) 271-0687

If there is a rare plant or exemplary natural community and an NHB Comment on your DataCheck letter, contact Ashley Litwinenko for any environmental review questions: (603) 271-2834

If there is a rare wildlife species and an NHFG comment on your DataCheck Letter, contact Kim Snyder for any environmental review questions: (603) 271- 0467

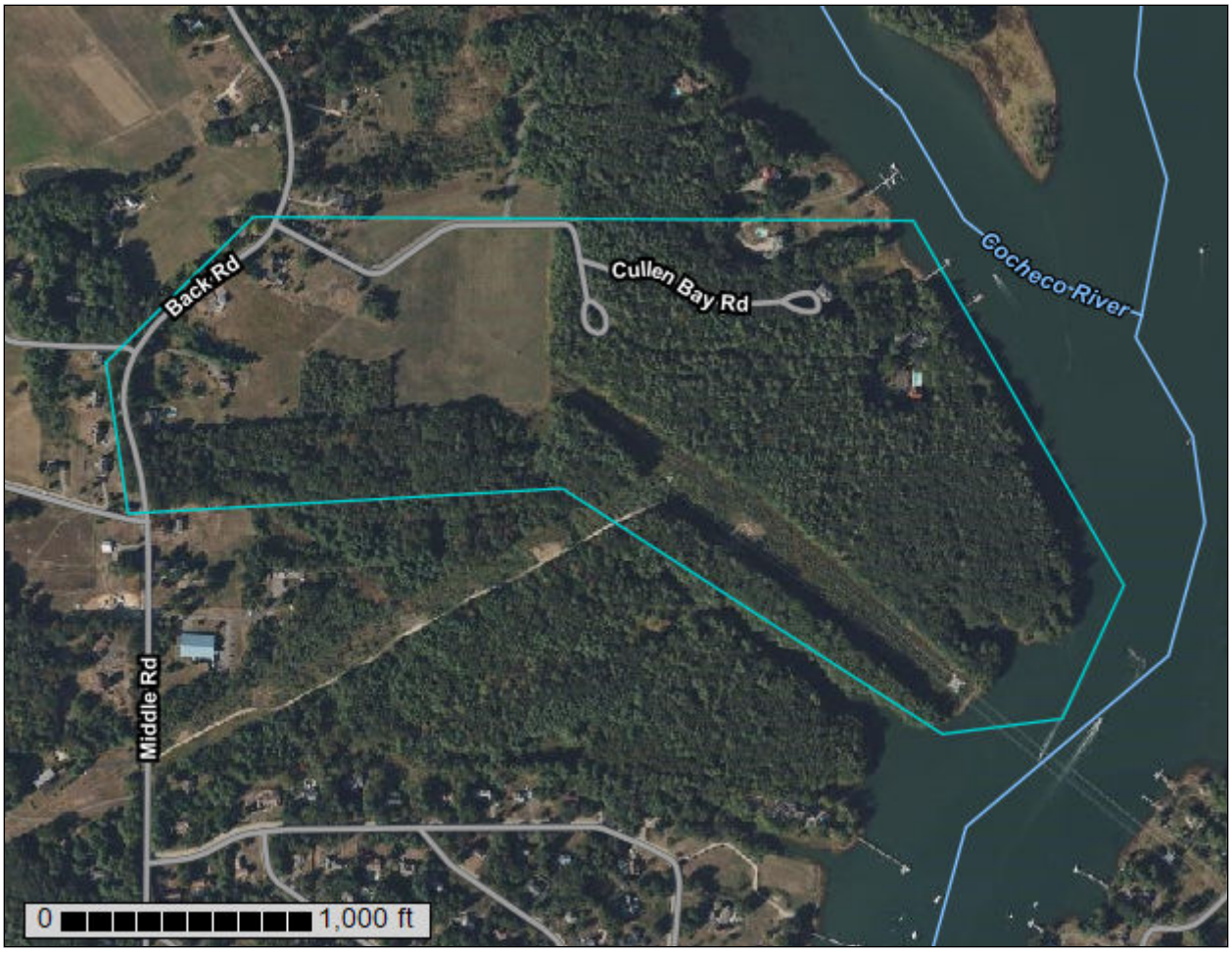
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Strafford County, New Hampshire



April 4, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 24, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	17.8	15.5%
CfB	Charlton fine sandy loam, 3 to 8 percent slopes	3.4	3.0%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	6.6	5.8%
HaA	Hinckley loamy sand, 0 to 3 percent slopes	2.1	1.8%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	0.0	0.0%
HcC	Hollis-Charlton fine sandy loams, 8 to 15 percent slopes	0.1	0.1%
ScA	Scantic silt loam, 0 to 3 percent slopes	3.7	3.3%
ScB	Scantic silt loam, 3 to 8 percent slopes	7.6	6.7%
SfC	Suffield silt loam, 8 to 15 percent slopes	19.0	16.5%
W	Water	7.7	6.7%
WdA	Windsor loamy sand, 0 to 3 percent slopes	2.0	1.8%
WdB	Windsor loamy sand, 3 to 8 percent slopes	28.1	24.4%
WdE	Windsor loamy sand, 15 to 60 percent slopes	3.7	3.3%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	12.9	11.2%
Totals for Area of Interest		**114.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class.

Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The

pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d6p
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Buxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 28 inches: silty clay loam
H3 - 28 to 43 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F145XY006CT - Semi-Rich Moist Lake Plain
Hydric soil rating: No

Minor Components

Elmwood

Percent of map unit: 10 percent
Hydric soil rating: No

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

CfB—Charlton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wh0n
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Charlton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton

Percent of map unit: 8 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester

Percent of map unit: 1 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Chatfield

Percent of map unit: 1 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash deltas, kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, outwash terraces, outwash deltas, kame terraces
Landform position (three-dimensional): Tread

Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

HaA—Hinckley loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svm7
Elevation: 0 to 1,420 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 5 percent
Landform: Outwash terraces, kame terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Kame terraces, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Kame terraces, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

HcB—Hollis-Charlton fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7j
Elevation: 0 to 1,020 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hollis and similar soils: 55 percent
Charlton and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 36 inches: fine sandy loam
H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

Buxton

Percent of map unit: 5 percent
Hydric soil rating: No

HcC—Hollis-Charlton fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d7k
Elevation: 0 to 1,080 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hollis and similar soils: 55 percent
Charlton and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 36 inches: fine sandy loam
H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

Buxton

Percent of map unit: 5 percent
Hydric soil rating: No

ScA—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9d8s
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Scantic and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scantic

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 23 inches: silty clay loam
H3 - 23 to 40 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Swanton

Percent of map unit: 5 percent
Landform: Marine terraces

Hydric soil rating: Yes

Not named wet

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Biddeford

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

ScB—Scantic silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d8t
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Scantic and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scantic

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 23 inches: silty clay loam
H3 - 23 to 40 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Buxton
Percent of map unit: 5 percent
Hydric soil rating: No

Swanton
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Not named wet
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

SfC—Suffield silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 9d8v
Elevation: 0 to 250 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Suffield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Typical profile
H1 - 0 to 19 inches: silt loam
H2 - 19 to 28 inches: silt loam
H3 - 28 to 41 inches: silty clay

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY017NH - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 9 percent
Hydric soil rating: No

Buxton

Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water (less than 40 acres): 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WdA—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser

Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

WdB—Windsor loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svkf
Elevation: 0 to 1,210 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 10 percent
Landform: Eskers
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Deerfield, loamy sand

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

WdE—Windsor loamy sand, 15 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2w2ws
Elevation: 0 to 760 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Outwash plains, outwash terraces, deltas, dunes
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand

C - 25 to 65 inches: sand

Properties and qualities

Slope: 15 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 10 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Deerfield

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

WfB—Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d9b
Elevation: 0 to 280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Windsor variant and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor Variant

Typical profile

H1 - 0 to 26 inches: loamy fine sand
H2 - 26 to 30 inches: loamy sand
H3 - 30 to 42 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

References

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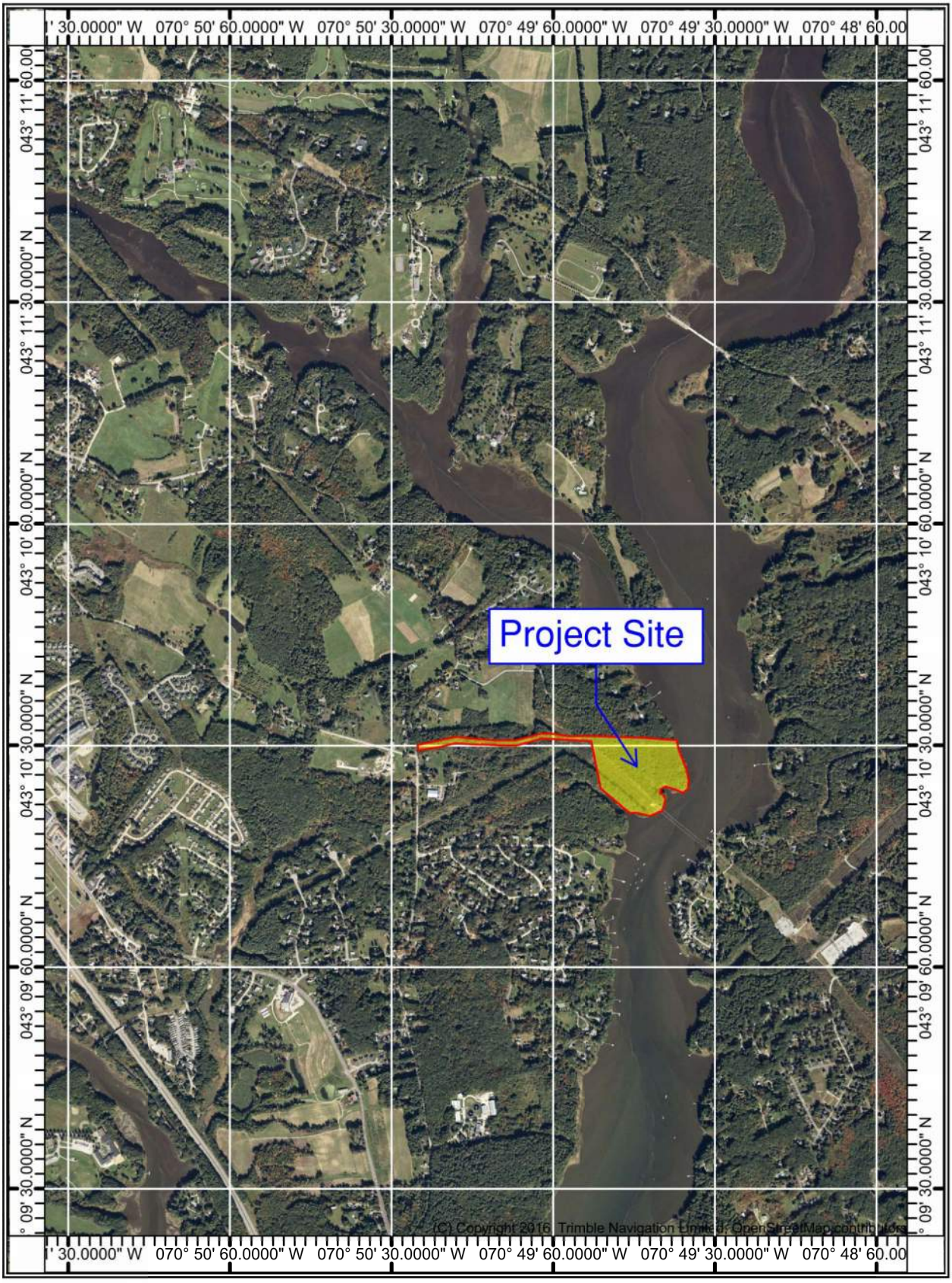


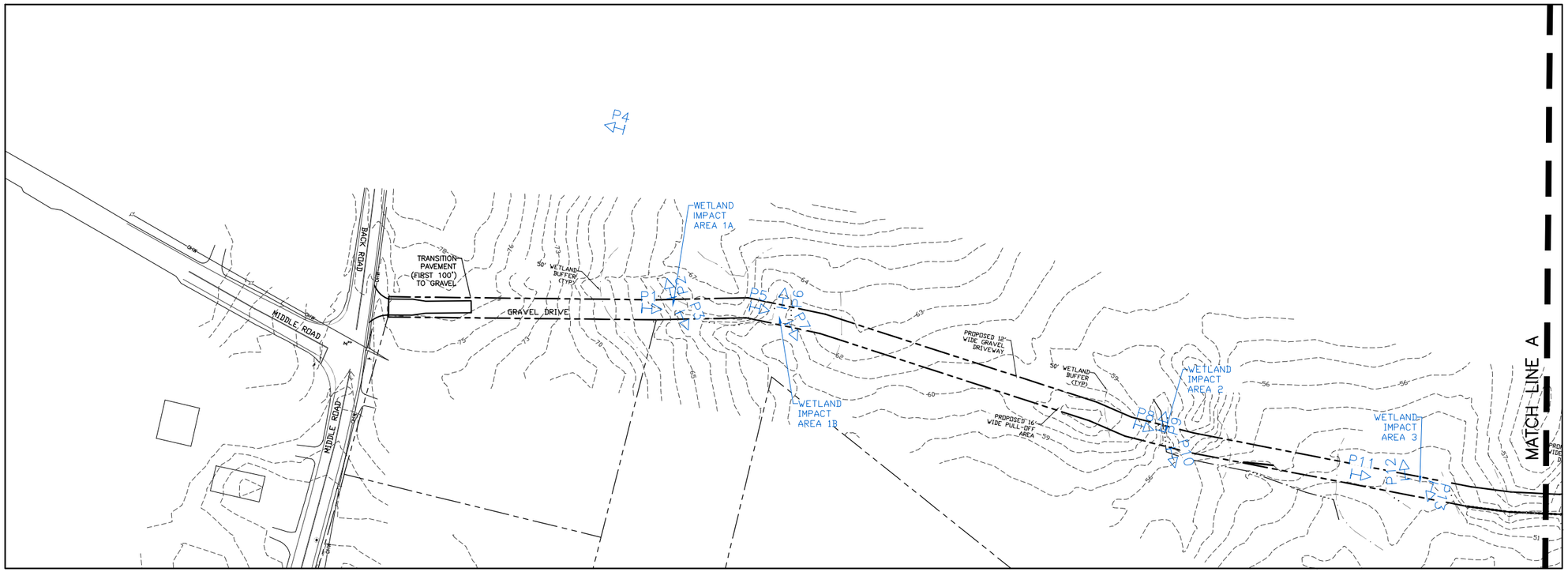
Aerial Photo

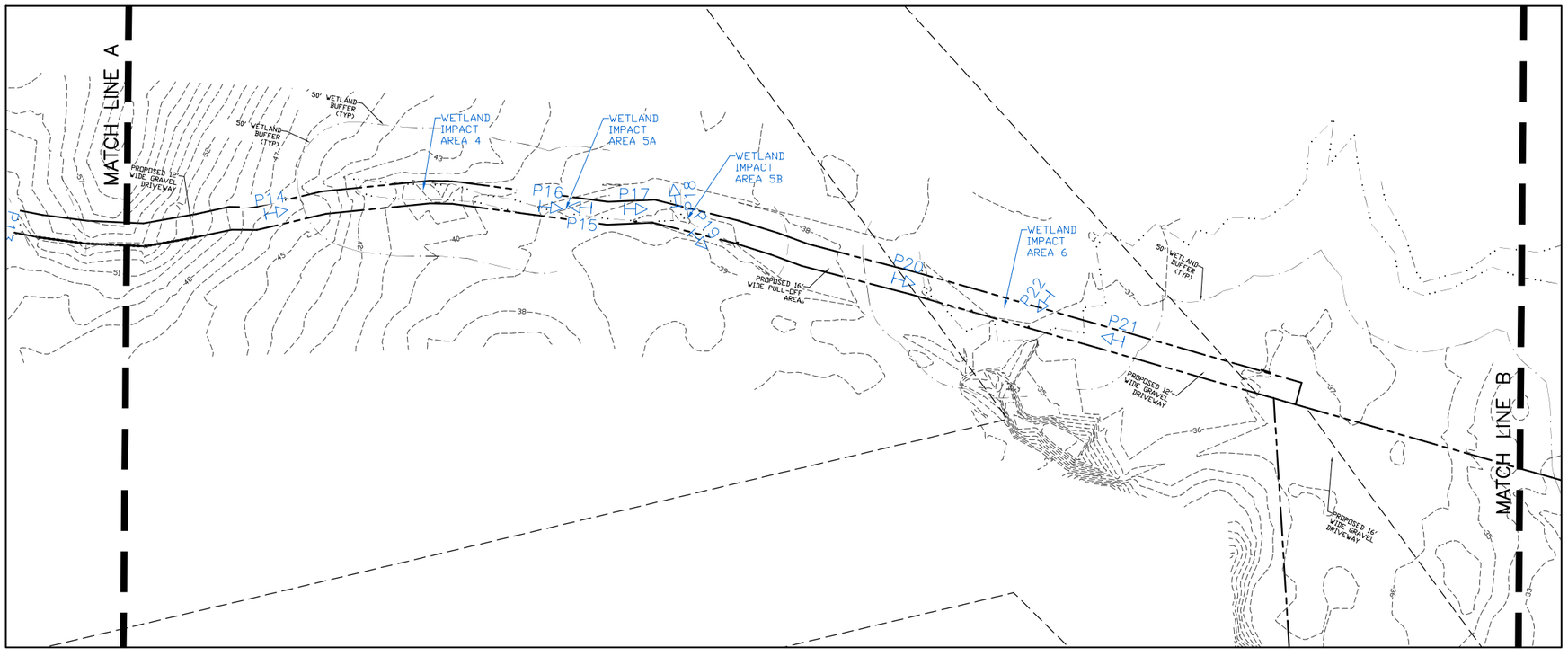
SCALE 1:24000

0 1000 2000 3000 4000 5000 6000

Feet

Heath Todd Back Road Dover, NH





PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- P1 — PHOTO LOCATION (WETLAND CROSSINGS)

N

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH No. 9900
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

PHOTO LOG PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=60'
PROJ. NO:	NH-1501	SHEET NO.	18

MATCH LINE B

PROPOSED 16' WIDE GRAVEL DRIVEWAY

50' WETLAND BUFFER (TYP.)

WETLAND IMPACT AREA 7

WETLAND IMPACT AREA 8

P23 P24 P25 P26 P27 P28 P29 P30

PA1 PA2 PA3 PA4 PA5 PA6 PA7 PA8 PA9 PA10 PA11 PA12 PA13 PA14 PA15 PA16 PA17 PA18 PA19 PA20

TBZ1 TBZ2 TBZ3

PISCATAQUA RIVER (TIDAL)

N

LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT

P1 PHOTO LOCATION (WETLAND CROSSINGS)

PA2 PHOTO LOCATION (PROJECT AREAS)

TBZ3 PHOTO LOCATION (TBZ AREAS)

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

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HEATH J. TODD, TRUSTEE
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FAX. 603-583-4863

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PHOTO LOG PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. NO:	NH-1501	SHEET NO.	19

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Proposed Wetland Crossing Areas

Photographs taken May 3, 2024

PHOTOGRAPH 1 (P1): **Proposed wetland impact #1A**. Facing east, looking at crossing location.

PHOTOGRAPH 2 (P2): **Proposed wetland impact #1A**. Facing northwest, looking at wetland upgradient from crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3 (P3) and February 21 (P4), 2024

PHOTOGRAPH 3 (P3): **Proposed wetland impact #1A**. Facing southeast, looking at wetland downgradient from crossing location.

PHOTOGRAPH 4 (P4): Approximately 200 feet northwest of **proposed wetland impact #1A**. Facing west, looking at culvert where drainage is released from an adjacent parcel towards crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 5 (P5): **Proposed wetland impact #1B**. Facing east, looking at crossing location.

PHOTOGRAPH 6 (P6): **Proposed wetland impact #1B**. Facing north, looking at limit of wetland upgradient from crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 7 (P7): **Proposed wetland impact #1B**. Facing southeast, looking at wetland downgradient from crossing location.

PHOTOGRAPH 8 (P8): **Proposed wetland impact #2**. Facing east, looking at wetland/intermittent stream crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 9 (P9): **Proposed wetland impact #2**. Facing north, looking at wetland/intermittent stream flow upgradient of crossing location.

PHOTOGRAPH 10 (P10): **Proposed wetland impact #2**. Facing southeast, looking at wetland/intermittent stream flow downgradient from crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 11 (P11): **Proposed wetland impact #3**. Facing east, looking at crossing location.

PHOTOGRAPH 12 (P12): **Proposed wetland impact #3**. Facing northwest, looking at wetland upgradient from crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3 (P13) and May 24 (P14), 2024

PHOTOGRAPH 13 (P13): **Proposed wetland impact #3**. Facing south, looking at wetland downgradient of crossing location.

PHOTOGRAPH 14 (P14): **Proposed wetland impact #4**. Facing east, looking at isolated wetland impact area.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 24 (P15) and May 3 (P16), 2024

PHOTOGRAPH 15 (P15): **Proposed wetland impact #4**. Facing west, looking at isolated wetland impact area.

PHOTOGRAPH 16 (P16): **Proposed wetland impact #5A**. Facing east, looking at impact area.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 17 (P17): **Proposed wetland impact #5B**. Facing east, looking at crossing location.

PHOTOGRAPH 18 (P18): **Proposed wetland impact #5B**. Facing north, looking at wetland upgradient from crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 19 (P19): **Proposed wetland impact #5B**. Facing southeast, looking at wetland downgradient of crossing location.

PHOTOGRAPH 20 (P20): **Proposed wetland impact #6**. Facing east, looking at crossing location (utility line easement in background).

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken February 22 (P21) and May 3 (P22), 2024

PHOTOGRAPH 21 (P21): **Proposed wetland impact #6**. Facing west, looking at crossing (from utility line easement) and wetland to north side of crossing location.

PHOTOGRAPH 22 (P22): **Proposed wetland impact #6**. Facing southwest, looking at crossing and wetland to south side of crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken February 22, 2024

PHOTOGRAPH 23 (P23): **Proposed wetland impact #7**. Facing southwest, looking at crossing location (utility line easement/clearing is beyond the tree line).

PHOTOGRAPH 24 (P24): **Proposed wetland impact #7**. Facing northeast, looking at crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken February 22, 2024

PHOTOGRAPH 25 (P25): **Proposed wetland impact #7**. Facing northwest, looking at wetland to north side of crossing location.

PHOTOGRAPH 26 (P26): **Proposed wetland impact #7**. Facing southeast, looking at wetland to south side of crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 27 (P27): **Proposed wetland impact #8**. Facing northeast, looking at wetland/perennial stream crossing location.

PHOTOGRAPH 28 (P28): **Proposed wetland impact #8**. Facing southwest, looking at wetland/perennial stream crossing location.

Heath J. Todd Rev Trust Property
Tax Map M, Lot 104
Back Road, Dover NH

Photographs taken March 1, 2024

PHOTOGRAPH 29 (P29): **Proposed wetland impact #8**. Facing northwest, looking upstream from crossing location.

PHOTOGRAPH 30 (P30): **Proposed wetland impact #8**. Facing southeast, looking downstream from crossing location.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Project Area

Photographs taken May 3, 2024

PHOTOGRAPH 1 (PA1): Facing southeast, looking at project area.

PHOTOGRAPH 2 (PA2): Facing south, looking at project area.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 3 (PA3): Facing northeast, looking at project area.

PHOTOGRAPH 4 (PA4): Facing southeast, looking at project area.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 5 (PA5): Facing east, looking at project area.

PHOTOGRAPH 6 (PA6): Facing southeast, looking at project area.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 7 (PA7): Facing northwest, looking at project area.

PHOTOGRAPH 8 (PA8): Facing north, looking at project area.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 9 (PA9): Facing northeast, looking at remains of an old brick chimney (?) adjacent to project area.

PHOTOGRAPH 10 (PA10): Facing northwest, looking at the same remains of an old brick chimney (?).

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 24 (PA11) and May 3 (PA12), 2024

PHOTOGRAPH 11 (PA11): Facing north, looking at isolated wetland adjacent to project location.

PHOTOGRAPH 12 (PA12): Facing east, looking at area adjacent to project location.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 13 (PA13): Facing southeast, looking at area adjacent to project location.

PHOTOGRAPH 14 (PA14): Facing south, looking at area adjacent to project location.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 15 (PA15): Facing southwest, looking at area adjacent to project location.

PHOTOGRAPH 16 (PA16): Facing southwest, looking at area adjacent to project location.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3, 2024

PHOTOGRAPH 17 (PA17): Facing west, looking at area adjacent to project location.

PHOTOGRAPH 18 (PA18): Facing northwest, looking at area adjacent to project location.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken May 3 (PA19) and May 24 (PA20), 2024

PHOTOGRAPHS 19 (PA19 above) & 20 (PA20): Facing north, looking at area adjacent to project location.

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

0.41	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.62	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
0.81	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.22	inches	Rd = Weighted groundwater recharge depth	
0.3973	ac-in	GRV = AI * Rd	
1,442	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12")	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

Required = 1,442 cubic feet

Provided = 8,450 cubic feet (see calculation below for 2-year storms)

Bioretention Pond #1 = 0.049 acre-feet = 2,134 cf
Bioretention Pond #2 = 0.068 acre-feet = 2,962 cf
Infiltration Pond #1 = 0.077 acre-feet = 3,354 cf

Sum of Bioretention and Infiltration Ponds = 8,450 cubic feet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention Pond # 1 (PB1)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.61	ac	A = Area draining to the practice	
0.19	ac	A_I = Impervious area draining to the practice	
0.32	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.34	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.21	ac-in	WQV= 1" x Rv x A	
745	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
186	cf	25% x WQV (check calc for sediment forebay volume)	
559	cf	75% x WQV (check calc for surface sand filter volume)	
Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,208	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
2,688	sf	A_{SA} = Surface area of the practice	
4.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
0.8	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
20.55	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
19.55	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
19.55	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
20.55	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.00	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.00	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
21.82	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
22.20	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
3,015	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
12.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	26	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	26	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: 12" filter media used for residential development

Stage-Area-Storage for Pond BP1: Bioretention Pond North

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.55	2,688	0
19.60	2,688	54
19.65	2,688	108
19.70	2,688	161
19.75	2,688	215
19.80	2,688	269
19.85	2,688	323
19.90	2,688	376
19.95	2,688	430
20.00	2,688	484
20.05	2,688	538
20.10	2,688	591
20.15	2,688	645
20.20	2,688	699
20.25	2,688	753
20.30	2,688	806
20.35	2,688	860
20.40	2,688	914
20.45	2,688	968
20.50	2,688	1,021
20.55	2,688	1,075
20.60	2,688	1,116
20.65	2,688	1,156
20.70	2,688	1,196
20.75	2,688	1,236
20.80	2,688	1,277
20.85	2,688	1,317
20.90	2,688	1,357
20.95	2,688	1,398
21.00	2,688	1,438
21.05	2,688	1,478
21.10	2,688	1,519
21.15	2,688	1,559
21.20	2,688	1,599
21.25	2,688	1,640
21.30	2,688	1,680
21.35	2,688	1,720
21.40	2,688	1,761
21.45	2,688	1,801
21.50	2,688	1,841
21.55	2,688	1,882
21.60	2,724	2,017
21.65	2,760	2,154
21.70	2,796	2,293
21.75	2,832	2,434
21.80	2,869	2,576
21.85	2,906	2,720
21.90	2,943	2,867
21.95	2,980	3,015
22.00	3,018	3,165
22.05	3,055	3,317
22.10	3,093	3,470
22.15	3,130	3,626
22.20	**3,168**	**3,783**

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention Pond # 2 (PB2)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.72	ac	A = Area draining to the practice	
0.22	ac	A_I = Impervious area draining to the practice	
0.30	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.32	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.23	ac-in	WQV= 1" x Rv x A	
850	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
213	cf	25% x WQV (check calc for sediment forebay volume)	
638	cf	75% x WQV (check calc for surface sand filter volume)	
Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,463	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
2,629	sf	A_{SA} = Surface area of the practice	
2.84	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
1.4	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
18.85	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
17.85	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
17.85	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
18.85	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
1.00	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
1.00	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
20.85	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
21.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
4,638	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
12.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	26	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet	26	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: 12" filter media used for residential development

Stage-Area-Storage for Pond BP2: Bioretention Pond South

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
17.85	2,629	0
17.90	2,629	53
17.95	2,629	105
18.00	2,629	158
18.05	2,629	210
18.10	2,629	263
18.15	2,629	315
18.20	2,629	368
18.25	2,629	421
18.30	2,629	473
18.35	2,629	526
18.40	2,629	578
18.45	2,629	631
18.50	2,629	684
18.55	2,629	736
18.60	2,629	789
18.65	2,629	841
18.70	2,629	894
18.75	2,629	946
18.80	2,629	999
18.85	2,629	1,052
18.90	2,629	1,091
18.95	2,629	1,130
19.00	2,629	1,170
19.05	2,629	1,209
19.10	2,629	1,249
19.15	2,629	1,288
19.20	2,629	1,328
19.25	2,629	1,367
19.30	2,629	1,407
19.35	2,629	1,446
19.40	2,629	1,485
19.45	2,629	1,525
19.50	2,629	1,564
19.55	2,629	1,604
19.60	2,629	1,643
19.65	2,629	1,683
19.70	2,629	1,722
19.75	2,629	1,761
19.80	2,629	1,801
19.85	2,629	1,840
19.90	2,661	1,973
19.95	2,694	2,106
20.00	2,727	2,242
20.05	2,760	2,379
20.10	2,792	2,518
20.15	2,825	2,658
20.20	2,858	2,800
20.25	2,892	2,944
20.30	2,925	3,090
20.35	2,959	3,237
20.40	2,993	3,385
20.45	3,027	3,536
20.50	3,061	3,688
20.55	3,095	3,842
20.60	3,130	3,998
20.65	3,165	4,155
20.70	3,200	4,314
20.75	3,235	4,475
20.80	3,270	4,638
20.85	3,306	4,802
20.90	3,342	4,968
20.95	3,378	5,136
21.00	**3,414**	**5,306**

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

Type/Node Name: **Infiltration Pond #1 (Pond IP1)**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	**← yes**
0.39	ac	A = Area draining to the practice	
0.24	ac	A_I = Impervious area draining to the practice	
0.62	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.61	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.23	ac-in	WQV= 1" x Rv x A	
853	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
213	cf	25% x WQV (check calc for sediment forebay volume)	
N/R		Method of pretreatment? (not required for clean or roof runoff)	
-	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
3,268	cf	V = Volume[1] (attach a stage-storage table)	**≥ WQV**
1,362	sf	A_{SA} = Surface area of the bottom of the pond	
0.56	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
13.4	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
19.00	feet	E_{BTM} = Elevation of the bottom of the basin	
17.33	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
17.33	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.67	feet	D_{SHWT} = Separation from SHWT	**≥ *** [3]
1.7	feet	D_{ROCK} = Separation from bedrock	**≥ *** [3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	**≥ 24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	**←yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	**← yes**
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	**← yes**
	:1	If a basin is proposed, pond side slopes.	**≥3:1**
20.81	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
20.88	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
20.99	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	**← yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	**← yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Stage-Area-Storage for Pond IP1: Infiltration Pond #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
19.00	1,362	0
19.05	1,387	69
19.10	1,412	139
19.15	1,436	210
19.20	1,461	282
19.25	1,486	356
19.30	1,511	431
19.35	1,536	507
19.40	1,560	584
19.45	1,585	663
19.50	1,610	743
19.55	1,635	824
19.60	1,660	906
19.65	1,684	990
19.70	1,709	1,075
19.75	1,734	1,161
19.80	1,759	1,248
19.85	1,784	1,337
19.90	1,808	1,427
19.95	1,833	1,518
20.00	1,858	1,610
20.05	1,885	1,704
20.10	1,912	1,798
20.15	1,939	1,895
20.20	1,965	1,992
20.25	1,992	2,091
20.30	2,019	2,192
20.35	2,046	2,293
20.40	2,073	2,396
20.45	2,100	2,501
20.50	2,127	2,606
20.55	2,154	2,713
20.60	2,181	2,822
20.65	2,207	2,931
20.70	2,234	3,042
20.75	2,261	3,155
20.80	2,288	3,268
20.85	2,466	3,387
20.90	2,644	3,515
20.95	2,822	3,652
21.00	**3,000**	**3,797**
21.05	3,000	3,797
21.10	3,000	3,797
21.15	3,000	3,797
21.20	3,000	3,797
21.25	3,000	3,797
21.30	3,000	3,797
21.35	3,000	3,797
21.40	3,000	3,797
21.45	3,000	3,797
21.50	3,000	3,797
21.55	3,000	3,797
21.60	3,000	3,797
21.65	3,000	3,797
21.70	3,000	3,797
21.75	3,000	3,797
21.80	3,000	3,797
21.85	3,000	3,797
21.90	3,000	3,797
21.95	3,000	3,797
22.00	3,000	3,797
22.05	3,000	3,797
22.10	3,000	3,797
22.15	3,000	3,797
22.20	3,000	3,797
22.25	3,000	3,797
22.30	3,000	3,797
22.35	3,000	3,797
22.40	3,000	3,797
22.45	3,000	3,797
22.50	3,000	3,797

DRAINAGE ANALYSIS
&
SEDIMENT AND EROSION CONTROL PLAN

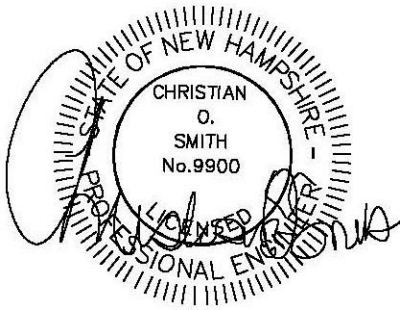
Prepared for:

HEATH J. TODD REVOCABLE TRUST
RESIDENTIAL SITE PLAN

Prepared by:

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVENUE
STRATHAM, NH 03885

Project Number:
NH-1501
Back Road
Dover, New Hampshire
November 12, 2024
Revised December 23, 2024



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2.0	Existing Conditions Analysis	Page 3
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5.0	Conclusion	Page 7

Appendix I - Existing Conditions Analysis
2-Year 24-Hour Summary
10-Year 24-Hour Complete
25-Year 24-Hour Summary
50-Year 24-Hour Summary

Appendix II - Proposed Conditions Analysis
2-Year 24-Hour Summary
10-Year 24-Hour Complete
25-Year 24-Hour Summary
50-Year 24-Hour Summary

Appendix III - Charts, Graphs, and Calculations

Appendix IV - Plans
Sheet W-1 Existing Conditions Watershed Plan
Sheet W-2 Proposed Conditions Watershed Plan

1.0 ANALYSIS SUMMARY

The Heath J. Todd Revocable Trust proposes to construct a residential home on a 26+/- acre parcel of land located on Back Road in Dover, New Hampshire. A drainage analysis of 65.7 acres was conducted for the purpose of estimating the peak rates and volumes of stormwater run-off and to subsequently design adequate drainage structures. Two models were compiled: one for the area in its existing (pre-construction) condition and a second for its proposed (post-construction) condition. The analysis was conducted using Extreme Precipitation data provided by Cornell University for the following 24-hour duration storm events, including increasing all 24-hour rainfall data by 15% as required since Dover is within the designated "coastal region" by NHDES:

Storm Event	Rainfall Depth (inches)
2-Year	3.65
10-Year	5.50
25-Year	6.95
50-Year	8.30

These storm events use the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment to model the rainfall and predict stormwater runoff flows and volumes. A Type III storm pattern was used in the model. The purpose of this analysis is to estimate the peak rates and volumes of run-off from the site for detention adequacy purposes, and to compare the peak rates and volumes of run-off between the existing and proposed conditions.

Peak Rates of Discharge

		Component Peak Rate of Discharge (CFS)			
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**25-Year**	**50-Year**
Reach #100	Existing	0.55	0.86	1.12	1.39
Driveway Crossing #1	Proposed	0.58	0.89	1.16	1.44
Reach #200	Existing	3.02	5.37	7.88	10.83
Driveway Crossing #2	Proposed	3.08	5.42	7.90	10.82
Reach #300	Existing	0.78	1.82	2.72	3.60
Driveway Crossing #3	Proposed	0.81	1.82	2.69	3.54
Reach #400	Existing	4.63	10.45	15.92	21.63
Driveway Crossing #4	Proposed	4.73	10.56	16.03	21.72
Reach #500	Existing	3.01	6.97	10.41	13.76
Driveway Crossing #5	Proposed	3.20	7.22	10.69	14.06
Reach #600	Existing	0.71	1.67	2.51	3.33
Driveway Crossing #6	Proposed	0.99	2.06	2.98	3.87
Reach #700	Existing	1.70	3.81	5.70	7.60
Driveway Crossing #7	Proposed	1.65	3.67	5.48	7.31
Reach #800	Existing	4.79	10.06	14.60	19.12
Driveway Crossing #8	Proposed	4.87	10.15	14.68	19.16

Reach #900 Driveway Crossing #9	Existing Proposed	6.80 7.14	16.09 15.63	24.40 23.64	33.62 31.56

Discharge Volumes

		Component Volume (ac-ft)			
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**25-Year**	**50-Year**
Reach #100 Driveway Crossing #1	Existing Proposed	0.048 0.050	0.078 0.081	0.105 0.109	0.133 0.138
Reach #200 Driveway Crossing #2	Existing Proposed	0.413 0.423	0.778 0.791	1.160 1.174	1.579 1.593
Reach #300 Driveway Crossing #3	Existing Proposed	0.060 0.062	0.131 0.132	0.194 0.193	0.256 0.254
Reach #400 Driveway Crossing #4	Existing Proposed	0.526 0.548	1.176 1.204	1.777 1.811	2.386 2.424
Reach #500 Driveway Crossing #5	Existing Proposed	0.279 0.299	0.608 0.635	0.898 0.930	1.184 1.220
Reach #600 Driveway Crossing #6	Existing Proposed	0.063 0.087	0.139 0.174	0.207 0.250	0.274 0.324
Reach #700 Driveway Crossing #7	Existing Proposed	0.170 0.167	0.370 0.359	0.554 0.537	0.740 0.716
Reach #800 Driveway Crossing #8	Existing Proposed	0.576 0.595	1.188 1.213	1.772 1.801	2.382 2.415
Reach #900 Driveway Crossing #9	Existing Proposed	1.050 1.154	2.360 2.453	3.795 3.873	5.415 5.478

The proposed residential home includes a 2,250-foot long, 12-foot wide driveway from Back Road into the site. The first 100 feet of the driveway is proposed pavement which then transitions to gravel prior to transitioning back to a paved driveway into the area to be developed. The proposed improvement area includes eight different sub-catchments. Sub-catchments 1 thru 8 flow south towards the abutting properties consisting of residential, radio tower, undeveloped, and utility easement uses. Sub-catchment 9 flows towards and into the Piscataqua River, just south of the confluence the Cocheco and Salmon Falls Rivers. The Piscataqua River is designated as a 5th or 6th order stream depending on where the property abuts the river.

Many of the storm events for sub-catchments 1 thru 8 show a de minimis increase in the peak rate of runoff in the proposed conditions as compared to the existing condition. While this is the result of the proposed gravel driveway leading to the developed portion of the property, the average increase for each of the 8 sub-catchments in the 50-year storm event is 0.098 cfs, which would not be noticeable and should be considered within the mathematical tolerance of the HydroCAD stormwater modeling software falling within the "scientific uncertainty and mathematical rounding" designated in Env-Wq 1507.05(c). In addition, all 8 sub-catchments flow into wetlands and ravines, and ultimately into the Piscataqua River

Volume increases for sub-catchments 1 thru 8 are also minor, with a total increase of 0.149 acre-feet or 6,490 cubic feet during a 50-year storm event. This amount of water, distributed across the area to the property to the south that is undeveloped ravines capable of hold stormwater (958,787 sf) would amount in an increase of 0.00677 feet or 0.081 inches. This amount of runoff from the proposed project would not result in flooding or changing the hydrology of the property to the south.

In terms of treatment, the residential driveway is superelevated to the south to capture runoff into grass-lined swales along the driveway. These swales are separated by 1 foot of lawn area between the gravel driveway and 3 feet wide and 18 inches deep.

Sub-catchment 9 contains the proposed areas to be developed near the Piscataqua River where the property opens up beyond the 20-foot-wide property containing the driveway.

Impervious areas from sub-catchment 9 including the driveway, the garage, and the house are directed to either forebays and bioretention ponds or an infiltration pond prior to discharging overland through 100 feet of woodland towards the Piscataqua River.

In addition, the potential for increased erosion and sedimentation is handled by way of silt barriers surrounding the disturbed areas. The use of Best Management Practices per the Rockingham Conservation District / DES Handbook have been applied to the design of these structures and will be observed during all stages of construction. All land disturbed during construction will be stabilized within 30 days of groundbreaking. Existing wetlands and abutters will suffer no adverse effects resulting from this proposed development.

2.0 EXISTING CONDITIONS ANALYSIS

The existing property is located along the Piscataqua River and consists of a previously created path into the property, a utility easement, woodlands, and wetlands on and adjacent to the site. The existing topography is such that the site analysis is divided into eight sub-catchments within the area proposed to be improved. Reaches #100, #200, #300, #400, #500, #600, #700, and #800 flow from the north to the south, into wetlands, ravines, and ultimately towards the Piscataqua River. Reach #900 flows towards the southeast towards the Piscataqua River.

Classified by a combination of Site-Specific Soil Mapping on-site and NRCS Mapping off-site, the land is composed of relatively varying slopes and soils categorized into the Hydrologic Soil Groups (HSG) A, B, C, and D (See appendices for HISS/HSG designations).

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the impervious area, clearing of trees, and grading of slopes causes an increase in the curve number (Cn) and a decrease in the time of concentration (Tc) which results in a potential increase in peak rates of run-off from the site. To best match these flows to pre-development conditions, various stormwater management systems will be proposed. Grass-lined swales, ditch

turnouts, forebays, bioretention ponds, infiltration pond, and wooded vegetated buffers. The proposed development divides the site into eight different post-construction sub-catchments to match the existing breakout.

In an effort to prevent the sedimentation of adjacent wetlands or abutting properties, the majority of the gravel driveway will be directed towards grass lined swales and paved surfaces at the development area is directed towards forebays prior to entering the bioretention ponds.

During construction, appropriate Best Management Practices (BMP's) will be applied so as to negate the potential for sediment-laden run-off to discharge into wetlands or the Piscataqua River prior to the final stabilization of the proposed grading. The structures outlined in this proposal provide for adequate treatment of stormwater run-off for sediment control.

4.0 SEDIMENT & EROSION CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP's)

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual. Any area disturbed by construction will be re-stabilized within 30 days, and abutting properties and wetlands will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them.

4.1 Silt Barrier / Construction Fence

The plan set demonstrates the location of silt barriers for sediment control. Sheet E-1, Erosion and Sediment Control Details, has the specifications for installation and maintenance of the silt barriers selected for the site. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or approved equal. The four-foot construction fencing is to be installed using six-foot posts buried at least two feet into the ground spaced six to eight feet apart.

4.2 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of disturbance. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specifications on Sheet E-1 using the seeding mixture below:

Mixture C	Pounds per Acre	Pounds per 1,000 sf
Tall Fescue	20	0.45
Creeping Red Fescue	20	0.45

Birdsfoot Trefoil	8	0.20
Total	**48**	**1.10**

4.3 Stabilized Construction Entrance/Exit

A temporary gravel construction entrance/exit provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the gravel pad should be between 1- and 2-inch coarse aggregate and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. Plan and profile view details are shown on Sediment and Erosion Control Detail Plan.

4.4 Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

4.5 Level Spreaders

Level spreaders enable any run-off directed towards them to be spread evenly into sheet flow prior to discharge into wetlands or treatment by a filter strip, thus allowing for better filter strip efficiency and a lesser potential for erosion.

4.6 Vegetated Buffers

Vegetated buffers are areas of land with natural or planted vegetation designed to receive sheet run-off from upgradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Vegetated buffers should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet.

4.7 Filter Strips

Filter strips are areas of land with natural or planted vegetation designed to receive sheet run-off from upgradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Filter strips should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet.

4.8 Environmental Dust Control

Dust will be controlled on the site using multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

4.9 Construction Sequence

1. Wetland boundaries shall be marked in the field prior to construction/start of clearing as necessary to avoid inadvertent impacts.
2. Install erosion control measures along proposed driveway.
3. Cut and remove trees as directed or required for the installation of the proposed driveway into the site.
4. Construct gravel driveway and associated wetland/stream crossings along driveway.
5. Install erosion control measures along proposed work beyond driveway.
6. Cut and remove trees as directed or required for the development of the area beyond the driveway.
7. Construct and/or install temporary and permanent sediment erosion and detention control facilities, as required. Erosion, sediment, and facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.
8. Clear, cut, grub, and dispose of debris in approved facilities.
9. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.
10. Construct additional driveway and its associated drainage structures.
11. Construct building foundations and site amenities.
12. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required or directed.
13. Daily, or as required, construct temporary berms, drainage ditches, sediment traps, etc. To prevent erosion on the site and prevent any siltation of abutting waters or property.
14. Inspect and maintain all erosion and sediment control measures during construction.
15. Complete permanent seeding and landscaping.
16. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.
17. All swales and drainage structures will be constructed and stabilized prior to having runoff being directed to them.
18. Finish graveling/paving all roadways and stabilize material storage areas.

4.10 Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.
2. Erosion and sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.
3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4” of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired and sediment deposits shall periodically be removed and properly disposed of.
5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.
6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

4.11 Inspection and Maintenance Schedule

Silt barriers shall be inspected during and after storm events to ensure that the barrier still has integrity and is not allowing sediment to pass.

5.0 CONCLUSION

This proposed site development off of Back Road in Dover, NH will have no adverse effect on the abutting property owners by way of stormwater run-off or siltation. The post-construction peak rates and volume of run-off for the site will not significantly increase over the existing conditions for the storm events, as shown in the tables above. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of grass swales, forebays, bioretention ponds, infiltration trenches, and wooded vegetated buffers. The Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and these applications will be enforced throughout the construction process.

An Alteration of Terrain Permit (RSA 485: A-17) is required for this project due to the area of disturbance being more than 100,000 square feet.

Respectfully Submitted,

BEALS ASSOCIATES, *PLLC*.

Christian O. Smith

Christian O Smith, PE
Principal

Appendix I

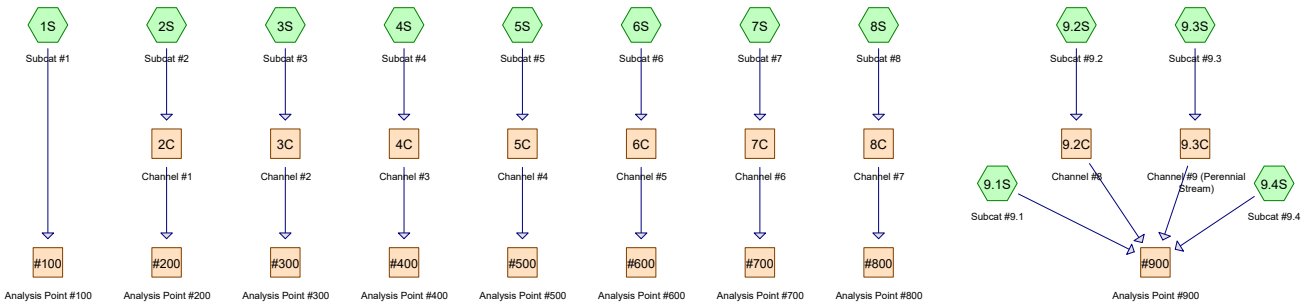
Existing Conditions Analysis

2-Year 24-Hour Summary

10-Year 24-Hour Complete

25-Year 24-Hour Summary

50-Year 24-Hour Summary



Subcat Reach Pond Link

Routing Diagram for NH-1501 Existing
Prepared by Beals Associates, PLLC, Printed 12/16/2024
HydroCAD® 10.20-6a s/n 01754 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.592	39	>75% Grass cover, Good, HSG A (1S, 2S, 4S, 7S, 8S)
0.585	61	>75% Grass cover, Good, HSG B (2S)
7.395	74	>75% Grass cover, Good, HSG C (4S, 5S, 7S, 8S)
6.960	30	Brush, Good, HSG A (8S, 9.1S, 9.4S)
0.107	48	Brush, Good, HSG B (9.1S)
0.525	65	Brush, Good, HSG C (9.1S, 9.4S)
0.016	96	Gravel surface, HSG B (1S)
1.271	98	Paved parking, HSG A (1S, 2S, 8S, 9.3S)
0.349	98	Paved parking, HSG B (2S)
0.124	98	Water Surface, HSG A (2S)
21.014	30	Woods, Good, HSG A (1S, 2S, 7S, 8S, 9.1S, 9.2S, 9.3S, 9.4S)
2.205	55	Woods, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 9.2S, 9.3S, 9.4S)
18.072	70	Woods, Good, HSG C (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9.2S, 9.3S, 9.4S)
0.064	77	Woods, Good, HSG D (9.4S)
0.131	65	Woods/grass comb., Fair, HSG B (2S, 3S, 4S, 5S, 6S)
0.242	76	Woods/grass comb., Fair, HSG C (2S, 3S, 4S, 5S, 6S, 7S, 8S)
64.653	**51**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
34.960	HSG A	1S, 2S, 4S, 7S, 8S, 9.1S, 9.2S, 9.3S, 9.4S
3.393	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 9.1S, 9.2S, 9.3S, 9.4S
26.235	HSG C	2S, 3S, 4S, 5S, 6S, 7S, 8S, 9.1S, 9.2S, 9.3S, 9.4S
0.064	HSG D	9.4S
0.000	Other	
64.653		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 32.71% Impervious Runoff Depth=1.24"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=0.55 cfs 0.048 af

Subcatchment2S: Subcat #2 Runoff Area=331,505 sf 15.30% Impervious Runoff Depth=0.65"
Flow Length=1,114' Tc=26.0 min CN=WQ Runoff=3.02 cfs 0.413 af

Subcatchment3S: Subcat #3 Runoff Area=28,340 sf 0.00% Impervious Runoff Depth=1.10"
Tc=6.0 min CN=WQ Runoff=0.78 cfs 0.060 af

Subcatchment4S: Subcat #4 Runoff Area=323,625 sf 0.00% Impervious Runoff Depth=0.85"
Flow Length=896' Tc=20.4 min CN=WQ Runoff=4.63 cfs 0.526 af

Subcatchment5S: Subcat #5 Runoff Area=130,282 sf 0.00% Impervious Runoff Depth=1.12"
Flow Length=513' Tc=11.8 min CN=WQ Runoff=3.01 cfs 0.279 af

Subcatchment6S: Subcat #6 Runoff Area=30,908 sf 0.00% Impervious Runoff Depth=1.07"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=0.71 cfs 0.063 af

Subcatchment7S: Subcat #7 Runoff Area=101,369 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=634' Tc=15.0 min CN=WQ Runoff=1.70 cfs 0.170 af

Subcatchment8S: Subcat #8 Runoff Area=409,940 sf 1.36% Impervious Runoff Depth=0.73"
Flow Length=1,324' Tc=24.6 min CN=WQ Runoff=4.79 cfs 0.576 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=163,382 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.02 cfs 0.004 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=141,823 sf 0.00% Impervious Runoff Depth=0.03"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.04 cfs 0.007 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=0.46"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=1.94 cfs 0.304 af

Subcatchment9.4S: Subcat #9.4 Runoff Area=787,957 sf 0.00% Impervious Runoff Depth=0.49"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=4.81 cfs 0.735 af

Reach #100: Analysis Point #100 Inflow=0.55 cfs 0.048 af
Outflow=0.55 cfs 0.048 af

Reach #200: Analysis Point #200 Inflow=3.02 cfs 0.413 af
Outflow=3.02 cfs 0.413 af

Reach #300: Analysis Point #300 Inflow=0.78 cfs 0.060 af
Outflow=0.78 cfs 0.060 af

Reach #400: Analysis Point #400 Inflow=4.63 cfs 0.526 af
Outflow=4.63 cfs 0.526 af

Reach #500: Analysis Point #500 Inflow=3.01 cfs 0.279 af
Outflow=3.01 cfs 0.279 af

Reach #600: Analysis Point #600 Inflow=0.71 cfs 0.063 af
Outflow=0.71 cfs 0.063 af

Reach #700: Analysis Point #700 Inflow=1.70 cfs 0.170 af
Outflow=1.70 cfs 0.170 af

Reach #800: Analysis Point #800 Inflow=4.79 cfs 0.576 af
Outflow=4.79 cfs 0.576 af

Reach #900: Analysis Point #900 Inflow=6.80 cfs 1.050 af
Outflow=6.80 cfs 1.050 af

Reach 2C: Channel #1 Avg. Flow Depth=0.26' Max Vel=2.08 fps Inflow=3.02 cfs 0.413 af
n=0.050 L=18.0' S=0.0556 '/' Capacity=583.28 cfs Outflow=3.02 cfs 0.413 af

Reach 3C: Channel #2 Avg. Flow Depth=0.17' Max Vel=1.08 fps Inflow=0.78 cfs 0.060 af
n=0.050 L=16.0' S=0.0250 '/' Capacity=131.08 cfs Outflow=0.78 cfs 0.060 af

Reach 4C: Channel #3 Avg. Flow Depth=0.47' Max Vel=2.67 fps Inflow=4.63 cfs 0.526 af
n=0.030 L=18.0' S=0.0167 '/' Capacity=39.54 cfs Outflow=4.63 cfs 0.526 af

Reach 5C: Channel #4 Avg. Flow Depth=0.08' Max Vel=0.90 fps Inflow=3.01 cfs 0.279 af
n=0.050 L=20.0' S=0.0300 '/' Capacity=313.15 cfs Outflow=3.01 cfs 0.279 af

Reach 6C: Channel #5 Avg. Flow Depth=0.10' Max Vel=0.76 fps Inflow=0.71 cfs 0.063 af
n=0.050 L=22.0' S=0.0227 '/' Capacity=23.93 cfs Outflow=0.71 cfs 0.063 af

Reach 7C: Channel #6 Avg. Flow Depth=0.15' Max Vel=1.05 fps Inflow=1.70 cfs 0.170 af
n=0.050 L=19.0' S=0.0263 '/' Capacity=74.06 cfs Outflow=1.70 cfs 0.170 af

Reach 8C: Channel #7 Avg. Flow Depth=0.30' Max Vel=1.20 fps Inflow=4.79 cfs 0.576 af
n=0.050 L=19.0' S=0.0158 '/' Capacity=47.54 cfs Outflow=4.79 cfs 0.576 af

Reach 9.2C: Channel #8 Avg. Flow Depth=0.02' Max Vel=0.14 fps Inflow=0.04 cfs 0.007 af
n=0.050 L=17.0' S=0.0059 '/' Capacity=18.91 cfs Outflow=0.04 cfs 0.007 af

Reach 9.3C: Channel #9 (Perennial Avg. Flow Depth=0.14' Max Vel=2.23 fps Inflow=1.94 cfs 0.304 af
n=0.030 L=45.0' S=0.0289 '/' Capacity=5,176.94 cfs Outflow=1.94 cfs 0.304 af

Total Runoff Area = 64.653 ac Runoff Volume = 3.186 af Average Runoff Depth = 0.59"
97.30% Pervious = 62.909 ac 2.70% Impervious = 1.743 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 32.71% Impervious Runoff Depth=2.00"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=0.86 cfs 0.078 af

Subcatchment2S: Subcat #2 Runoff Area=331,505 sf 15.30% Impervious Runoff Depth=1.23"
Flow Length=1,114' Tc=26.0 min CN=WQ Runoff=5.37 cfs 0.778 af

Subcatchment3S: Subcat #3 Runoff Area=28,340 sf 0.00% Impervious Runoff Depth=2.41"
Tc=6.0 min CN=WQ Runoff=1.82 cfs 0.131 af

Subcatchment4S: Subcat #4 Runoff Area=323,625 sf 0.00% Impervious Runoff Depth=1.90"
Flow Length=896' Tc=20.4 min CN=WQ Runoff=10.45 cfs 1.176 af

Subcatchment5S: Subcat #5 Runoff Area=130,282 sf 0.00% Impervious Runoff Depth=2.44"
Flow Length=513' Tc=11.8 min CN=WQ Runoff=6.97 cfs 0.608 af

Subcatchment6S: Subcat #6 Runoff Area=30,908 sf 0.00% Impervious Runoff Depth=2.36"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=1.67 cfs 0.139 af

Subcatchment7S: Subcat #7 Runoff Area=101,369 sf 0.00% Impervious Runoff Depth=1.91"
Flow Length=634' Tc=15.0 min CN=WQ Runoff=3.81 cfs 0.370 af

Subcatchment8S: Subcat #8 Runoff Area=409,940 sf 1.36% Impervious Runoff Depth=1.52"
Flow Length=1,324' Tc=24.6 min CN=WQ Runoff=10.06 cfs 1.188 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=163,382 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.09 cfs 0.021 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=141,823 sf 0.00% Impervious Runoff Depth=0.09"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.10 cfs 0.024 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=0.94"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=4.12 cfs 0.626 af

Subcatchment9.4S: Subcat #9.4 Runoff Area=787,957 sf 0.00% Impervious Runoff Depth=1.12"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=11.84 cfs 1.689 af

Reach #100: Analysis Point #100 Inflow=0.86 cfs 0.078 af
Outflow=0.86 cfs 0.078 af

Reach #200: Analysis Point #200 Inflow=5.37 cfs 0.778 af
Outflow=5.37 cfs 0.778 af

Reach #300: Analysis Point #300 Inflow=1.82 cfs 0.131 af
Outflow=1.82 cfs 0.131 af

Reach #400: Analysis Point #400 Inflow=10.45 cfs 1.176 af
Outflow=10.45 cfs 1.176 af

Reach #500: Analysis Point #500 Inflow=6.97 cfs 0.608 af
Outflow=6.97 cfs 0.608 af

Reach #600: Analysis Point #600 Inflow=1.67 cfs 0.139 af
Outflow=1.67 cfs 0.139 af

Reach #700: Analysis Point #700 Inflow=3.81 cfs 0.370 af
Outflow=3.81 cfs 0.370 af

Reach #800: Analysis Point #800 Inflow=10.06 cfs 1.188 af
Outflow=10.06 cfs 1.188 af

Reach #900: Analysis Point #900 Inflow=16.09 cfs 2.360 af
Outflow=16.09 cfs 2.360 af

Reach 2C: Channel #1 Avg. Flow Depth=0.34' Max Vel=2.41 fps Inflow=5.37 cfs 0.778 af
n=0.050 L=18.0' S=0.0556 '/' Capacity=583.28 cfs Outflow=5.37 cfs 0.778 af

Reach 3C: Channel #2 Avg. Flow Depth=0.25' Max Vel=1.35 fps Inflow=1.82 cfs 0.131 af
n=0.050 L=16.0' S=0.0250 '/' Capacity=131.08 cfs Outflow=1.82 cfs 0.131 af

Reach 4C: Channel #3 Avg. Flow Depth=0.67' Max Vel=3.28 fps Inflow=10.45 cfs 1.176 af
n=0.030 L=18.0' S=0.0167 '/' Capacity=39.54 cfs Outflow=10.45 cfs 1.176 af

Reach 5C: Channel #4 Avg. Flow Depth=0.13' Max Vel=1.21 fps Inflow=6.97 cfs 0.608 af
n=0.050 L=20.0' S=0.0300 '/' Capacity=313.15 cfs Outflow=6.97 cfs 0.608 af

Reach 6C: Channel #5 Avg. Flow Depth=0.15' Max Vel=0.97 fps Inflow=1.67 cfs 0.139 af
n=0.050 L=22.0' S=0.0227 '/' Capacity=23.93 cfs Outflow=1.67 cfs 0.139 af

Reach 7C: Channel #6 Avg. Flow Depth=0.23' Max Vel=1.30 fps Inflow=3.81 cfs 0.370 af
n=0.050 L=19.0' S=0.0263 '/' Capacity=74.06 cfs Outflow=3.81 cfs 0.370 af

Reach 8C: Channel #7 Avg. Flow Depth=0.41' Max Vel=1.46 fps Inflow=10.06 cfs 1.188 af
n=0.050 L=19.0' S=0.0158 '/' Capacity=47.54 cfs Outflow=10.06 cfs 1.188 af

Reach 9.2C: Channel #8 Avg. Flow Depth=0.03' Max Vel=0.20 fps Inflow=0.10 cfs 0.024 af
n=0.050 L=17.0' S=0.0059 '/' Capacity=18.91 cfs Outflow=0.10 cfs 0.024 af

Reach 9.3C: Channel #9 (Perennial Avg. Flow Depth=0.22' Max Vel=2.90 fps Inflow=4.12 cfs 0.626 af
n=0.030 L=45.0' S=0.0289 '/' Capacity=5,176.94 cfs Outflow=4.11 cfs 0.626 af

Total Runoff Area = 64.653 ac Runoff Volume = 6.828 af Average Runoff Depth = 1.27"
97.30% Pervious = 62.909 ac 2.70% Impervious = 1.743 ac

Summary for Subcatchment 1S: Subcat #1

Runoff = 0.86 cfs @ 12.11 hrs, Volume= 0.078 af, Depth= 2.00"
Routed to Reach #100 : Analysis Point #100

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
8,563	30	Woods, Good, HSG A
735	55	Woods, Good, HSG B
3,640	39	>75% Grass cover, Good, HSG A
6,620	98	Paved parking, HSG A
680	96	Gravel surface, HSG B
20,238		Weighted Average
13,618		67.29% Pervious Area
6,620		32.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0360	0.65		**Sheet Flow, Sheet** n= 0.030 P2= 2.92"
1.0	68	0.0250	1.11		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
5.9	272	0.0240	0.77		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
8.2	390	Total			

Summary for Subcatchment 2S: Subcat #2

Runoff = 5.37 cfs @ 12.36 hrs, Volume= 0.778 af, Depth= 1.23"
Routed to Reach 2C : Channel #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
109,286	30	Woods, Good, HSG A
12,285	55	Woods, Good, HSG B
15,128	70	Woods, Good, HSG C
115,682	39	>75% Grass cover, Good, HSG A
25,491	61	>75% Grass cover, Good, HSG B
30,156	98	Paved parking, HSG A
15,186	98	Paved parking, HSG B
5,391	98	Water Surface, HSG A
2,748	65	Woods/grass comb., Fair, HSG B
152	76	Woods/grass comb., Fair, HSG C
331,505		Weighted Average
280,772		84.70% Pervious Area
50,733		15.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0750	0.22		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
0.5	20	0.0100	0.72		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 2.92"
19.5	820	0.0100	0.70		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
3.7	244	0.0471	1.09		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
26.0	1,114	Total			

Summary for Subcatchment 3S: Subcat #3

Runoff = 1.82 cfs @ 12.09 hrs, Volume= 0.131 af, Depth= 2.41"
Routed to Reach 3C : Channel #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
363	55	Woods, Good, HSG B
26,905	70	Woods, Good, HSG C
264	65	Woods/grass comb., Fair, HSG B
808	76	Woods/grass comb., Fair, HSG C
28,340		Weighted Average
28,340		100.00% Pervious Area

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

Summary for Subcatchment 4S: Subcat #4

Runoff = 10.45 cfs @ 12.29 hrs, Volume= 1.176 af, Depth= 1.90"
Routed to Reach 4C : Channel #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
516	55	Woods, Good, HSG B
151,679	70	Woods, Good, HSG C
92,420	39	>75% Grass cover, Good, HSG A
76,170	74	>75% Grass cover, Good, HSG C
536	65	Woods/grass comb., Fair, HSG B
2,304	76	Woods/grass comb., Fair, HSG C
323,625		Weighted Average
323,625		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
4.4	373	0.0400	1.40		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
10.1	473	0.0242	0.78		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
20.4	896	Total			

Summary for Subcatchment 5S: Subcat #5

Runoff = 6.97 cfs @ 12.17 hrs, Volume= 0.608 af, Depth= 2.44"
Routed to Reach 5C : Channel #4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
2,465	55	Woods, Good, HSG B
108,581	70	Woods, Good, HSG C
16,520	74	>75% Grass cover, Good, HSG C
1,368	65	Woods/grass comb., Fair, HSG B
1,348	76	Woods/grass comb., Fair, HSG C
130,282		Weighted Average
130,282		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0600	0.22		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
1.3	153	0.0780	1.95		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
6.7	310	0.0235	0.77		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
11.8	513	Total			

Summary for Subcatchment 6S: Subcat #6

Runoff = 1.67 cfs @ 12.15 hrs, Volume= 0.139 af, Depth= 2.36"
Routed to Reach 6C : Channel #5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
0	30	Woods, Good, HSG A
1,805	55	Woods, Good, HSG B
26,933	70	Woods, Good, HSG C
0	39	>75% Grass cover, Good, HSG A
0	74	>75% Grass cover, Good, HSG C
784	65	Woods/grass comb., Fair, HSG B
1,386	76	Woods/grass comb., Fair, HSG C
30,908		Weighted Average
30,908		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1040	0.12		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 2.92"
3.6	256	0.0550	1.17		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
10.3	306	Total			

Summary for Subcatchment 7S: Subcat #7

Runoff = 3.81 cfs @ 12.21 hrs, Volume= 0.370 af, Depth= 1.91"
Routed to Reach 7C : Channel #6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
13,987	30	Woods, Good, HSG A
0	55	Woods, Good, HSG B
44,931	70	Woods, Good, HSG C
13,592	39	>75% Grass cover, Good, HSG A
26,781	74	>75% Grass cover, Good, HSG C
0	65	Woods/grass comb., Fair, HSG B
2,078	76	Woods/grass comb., Fair, HSG C
101,369		Weighted Average
101,369		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
9.1	584	0.0453	1.06		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
15.0	634	Total			

Summary for Subcatchment 8S: Subcat #8

Runoff = 10.06 cfs @ 12.33 hrs, Volume= 1.188 af, Depth= 1.52"
Routed to Reach 8C : Channel #7

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
39,987	30	Brush, Good, HSG A
135,768	30	Woods, Good, HSG A
5,189	70	Woods, Good, HSG C
18,267	39	>75% Grass cover, Good, HSG A
202,657	74	>75% Grass cover, Good, HSG C
5,592	98	Paved parking, HSG A
2,480	76	Woods/grass comb., Fair, HSG C
409,940		Weighted Average
404,348		98.64% Pervious Area
5,592		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
8.1	757	0.0490	1.55		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
12.0	517	0.0105	0.72		**Shallow Concentrated Flow, SCF thru brush** Short Grass Pasture Kv= 7.0 fps
24.6	1,324	Total			

Summary for Subcatchment 9.1S: Subcat #9.1

Runoff = 0.09 cfs @ 12.36 hrs, Volume= 0.021 af, Depth= 0.07"
Routed to Reach #900 : Analysis Point #900

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
109,251	30	Woods, Good, HSG A
47,999	30	Brush, Good, HSG A
4,669	48	Brush, Good, HSG B
1,463	65	Brush, Good, HSG C
163,382		Weighted Average
163,382		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0140	0.06		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 2.92"
6.7	485	0.0590	1.21		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
21.6	535	Total			

Summary for Subcatchment 9.2S: Subcat #9.2

Runoff = 0.10 cfs @ 12.67 hrs, Volume= 0.024 af, Depth= 0.09"
Routed to Reach 9.2C : Channel #8

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
137,412	30	Woods, Good, HSG A
1,559	55	Woods, Good, HSG B
2,852	70	Woods, Good, HSG C
141,823		Weighted Average
141,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0080	0.10		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
37.1	996	0.0080	0.45		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
45.6	1,046	Total			

Summary for Subcatchment 9.3S: Subcat #9.3

Runoff = 4.12 cfs @ 12.54 hrs, Volume= 0.626 af, Depth= 0.94"
Routed to Reach 9.3C : Channel #9 (Perennial Stream)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
228,387	30	Woods, Good, HSG A
2,175	55	Woods, Good, HSG B
103,350	70	Woods, Good, HSG C
12,988	98	Paved parking, HSG A
346,900		Weighted Average
333,912		96.26% Pervious Area
12,988		3.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	50	0.0250	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 2.92"
27.8	1,143	0.0188	0.69		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
39.6	1,193	Total			

Summary for Subcatchment 9.4S: Subcat #9.4

Runoff = 11.84 cfs @ 12.52 hrs, Volume= 1.689 af, Depth= 1.12"
Routed to Reach #900 : Analysis Point #900

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
215,183	30	Brush, Good, HSG A
21,423	65	Brush, Good, HSG C
172,696	30	Woods, Good, HSG A
74,166	55	Woods, Good, HSG B
301,685	70	Woods, Good, HSG C
2,804	77	Woods, Good, HSG D
787,957		Weighted Average
787,957		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	50	0.0100	0.05		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 2.92"
19.0	996	0.0306	0.87		**Shallow Concentrated Flow, SCF thru grass** Woodland Kv= 5.0 fps
36.0	1,046	Total			

Summary for Reach #100: Analysis Point #100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.465 ac, 32.71% Impervious, Inflow Depth = 2.00" for 10-YR event
Inflow = 0.86 cfs @ 12.11 hrs, Volume= 0.078 af
Outflow = 0.86 cfs @ 12.11 hrs, Volume= 0.078 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 #200: Analysis Point #200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.610 ac, 15.30% Impervious, Inflow Depth = 1.23" for 10-YR event
Inflow = 5.37 cfs @ 12.36 hrs, Volume= 0.778 af
Outflow = 5.37 cfs @ 12.36 hrs, Volume= 0.778 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 #300: Analysis Point #300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.651 ac, 0.00% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.82 cfs @ 12.09 hrs, Volume= 0.131 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 #400: Analysis Point #400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.429 ac, 0.00% Impervious, Inflow Depth = 1.90" for 10-YR event
Inflow = 10.45 cfs @ 12.29 hrs, Volume= 1.176 af
Outflow = 10.45 cfs @ 12.29 hrs, Volume= 1.176 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 #500: Analysis Point #500

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.991 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10-YR event
Inflow = 6.97 cfs @ 12.17 hrs, Volume= 0.608 af
Outflow = 6.97 cfs @ 12.17 hrs, Volume= 0.608 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 #600: Analysis Point #600

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.710 ac, 0.00% Impervious, Inflow Depth = 2.36" for 10-YR event
Inflow = 1.67 cfs @ 12.15 hrs, Volume= 0.139 af
Outflow = 1.67 cfs @ 12.15 hrs, Volume= 0.139 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 #700: Analysis Point #700

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.327 ac, 0.00% Impervious, Inflow Depth = 1.91" for 10-YR event
Inflow = 3.81 cfs @ 12.22 hrs, Volume= 0.370 af
Outflow = 3.81 cfs @ 12.22 hrs, Volume= 0.370 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 #800: Analysis Point #800

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.411 ac, 1.36% Impervious, Inflow Depth = 1.52" for 10-YR event
Inflow = 10.06 cfs @ 12.34 hrs, Volume= 1.188 af
Outflow = 10.06 cfs @ 12.34 hrs, Volume= 1.188 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 #900: Analysis Point #900

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 33.059 ac, 0.90% Impervious, Inflow Depth = 0.86" for 10-YR event
Inflow = 16.09 cfs @ 12.53 hrs, Volume= 2.360 af
Outflow = 16.09 cfs @ 12.53 hrs, Volume= 2.360 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

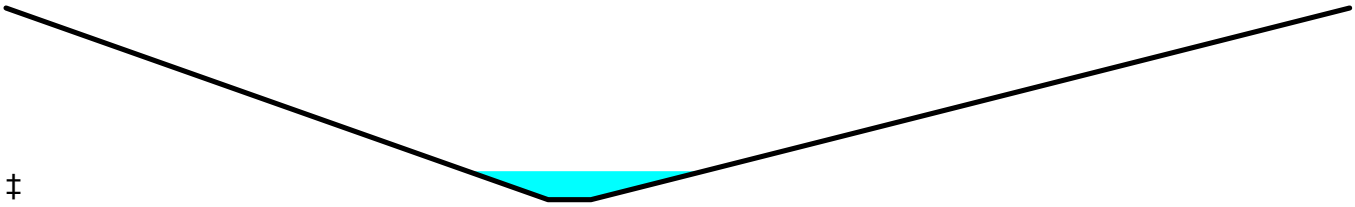
Summary for Reach 2C: Channel #1

Inflow Area = 7.610 ac, 15.30% Impervious, Inflow Depth = 1.23" for 10-YR event
Inflow = 5.37 cfs @ 12.36 hrs, Volume= 0.778 af
Outflow = 5.37 cfs @ 12.36 hrs, Volume= 0.778 af, Atten= 0%, Lag= 0.0 min
Routed to Reach #200 : Analysis Point #200

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.41 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 0.3 min

Peak Storage= 40 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.34' , Surface Width= 11.03'
Defined Flood Depth= 68.00' Flow Area= 4,175.2 sf, Capacity= 43,304.11 cfs
Bank-Full Depth= 2.30' Flow Area= 74.4 sf, Capacity= 583.28 cfs

2.00' x 2.30' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 11.0 15.4 '/' Top Width= 62.72'
Length= 18.0' Slope= 0.0556 '/'
Inlet Invert= 64.70', Outlet Invert= 63.70'



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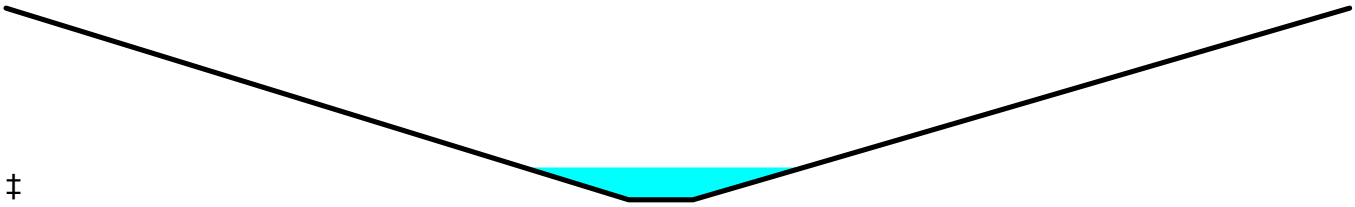
Summary for Reach 3C: Channel #2

Inflow Area = 0.651 ac, 0.00% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.82 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #300 : Analysis Point #300

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.35 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 0.5 min

Peak Storage= 21 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 8.67'
Defined Flood Depth= 64.00' Flow Area= 2,629.8 sf, Capacity= 13,926.79 cfs
Bank-Full Depth= 1.50' Flow Area= 32.8 sf, Capacity= 131.08 cfs

2.00' x 1.50' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 12.9 13.6 '/' Top Width= 41.75'
Length= 16.0' Slope= 0.0250 '/'
Inlet Invert= 61.50', Outlet Invert= 61.10'



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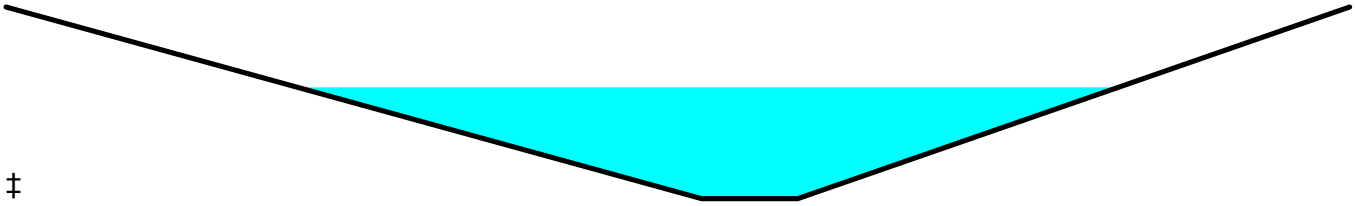
Summary for Reach 4C: Channel #3

Inflow Area = 7.429 ac, 0.00% Impervious, Inflow Depth = 1.90" for 10-YR event
Inflow = 10.45 cfs @ 12.29 hrs, Volume= 1.176 af
Outflow = 10.45 cfs @ 12.29 hrs, Volume= 1.176 af, Atten= 0%, Lag= 0.0 min
Routed to Reach #400 : Analysis Point #400

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.2 min

Peak Storage= 57 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.67' , Surface Width= 8.54'
Defined Flood Depth= 60.00' Flow Area= 828.4 sf, Capacity= 5,041.03 cfs
Bank-Full Depth= 1.15' Flow Area= 8.6 sf, Capacity= 39.54 cfs

1.00' x 1.15' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 6.3 5.0 '/' Top Width= 13.99'
Length= 18.0' Slope= 0.0167 '/'
Inlet Invert= 56.90', Outlet Invert= 56.60'



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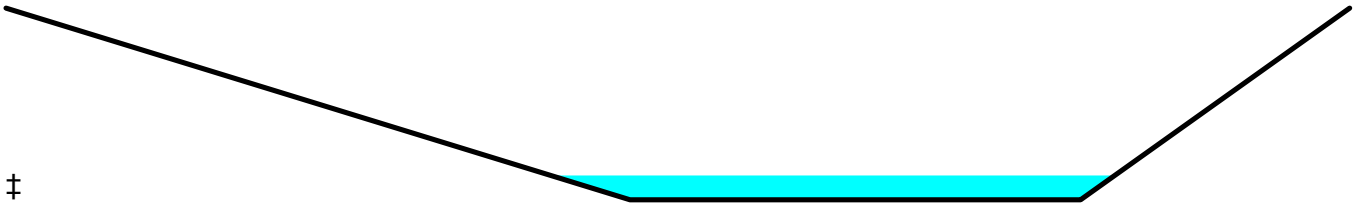
Summary for Reach 5C: Channel #4

Inflow Area = 2.991 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10-YR event
Inflow = 6.97 cfs @ 12.17 hrs, Volume= 0.608 af
Outflow = 6.97 cfs @ 12.17 hrs, Volume= 0.608 af, Atten= 0%, Lag= 0.2 min
Routed to Reach #500 : Analysis Point #500

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.21 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 0.9 min

Peak Storage= 115 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 50.10'
Defined Flood Depth= 53.00' Flow Area= 6,262.6 sf, Capacity= 33,548.52 cfs
Bank-Full Depth= 1.00' Flow Area= 79.7 sf, Capacity= 313.15 cfs

40.00' x 1.00' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 55.4 23.9 '/' Top Width= 119.30'
Length= 20.0' Slope= 0.0300 '/'
Inlet Invert= 52.10', Outlet Invert= 51.50'



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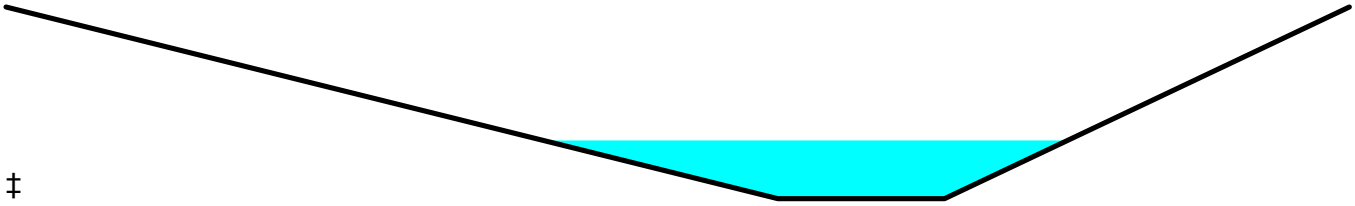
Summary for Reach 6C: Channel #5

Inflow Area = 0.710 ac, 0.00% Impervious, Inflow Depth = 2.36" for 10-YR event
Inflow = 1.67 cfs @ 12.15 hrs, Volume= 0.139 af
Outflow = 1.67 cfs @ 12.15 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.3 min
Routed to Reach #600 : Analysis Point #600

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.97 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.35 fps, Avg. Travel Time= 1.1 min

Peak Storage= 38 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 17.27'
Defined Flood Depth= 41.40' Flow Area= 1,816.4 sf, Capacity= 4,650.62 cfs
Bank-Full Depth= 0.50' Flow Area= 12.4 sf, Capacity= 23.93 cfs

5.50' x 0.50' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 50.9 26.7 '/' Top Width= 44.30'
Length= 22.0' Slope= 0.0227 '/'
Inlet Invert= 41.20', Outlet Invert= 40.70'



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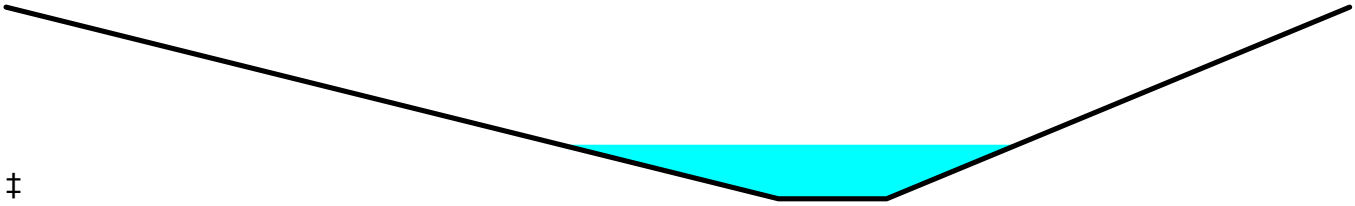
Summary for Reach 7C: Channel #6

Inflow Area = 2.327 ac, 0.00% Impervious, Inflow Depth = 1.91" for 10-YR event
Inflow = 3.81 cfs @ 12.21 hrs, Volume= 0.370 af
Outflow = 3.81 cfs @ 12.22 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.2 min
Routed to Reach #700 : Analysis Point #700

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.30 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 0.6 min

Peak Storage= 56 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 21.11'
Defined Flood Depth= 39.00' Flow Area= 2,392.0 sf, Capacity= 8,749.33 cfs
Bank-Full Depth= 0.80' Flow Area= 26.9 sf, Capacity= 74.06 cfs

5.00' x 0.80' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 44.7 26.8 '/' Top Width= 62.20'
Length= 19.0' Slope= 0.0263 '/'
Inlet Invert= 38.20', Outlet Invert= 37.70'



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Summary for Reach 8C: Channel #7

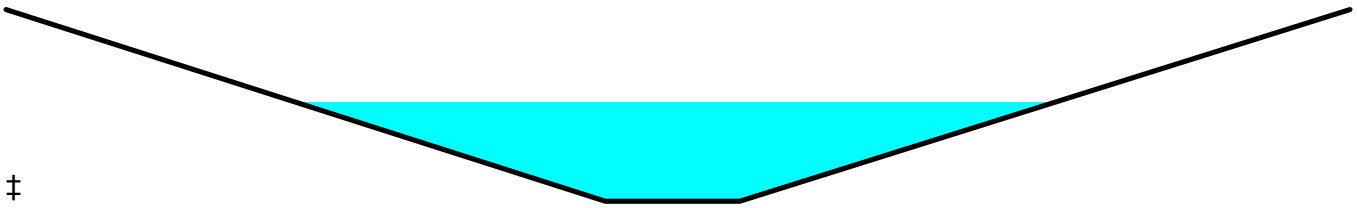
[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 9.411 ac, 1.36% Impervious, Inflow Depth = 1.52" for 10-YR event
Inflow = 10.06 cfs @ 12.33 hrs, Volume= 1.188 af
Outflow = 10.06 cfs @ 12.34 hrs, Volume= 1.188 af, Atten= 0%, Lag= 0.7 min
Routed to Reach #800 : Analysis Point #800

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.46 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 0.7 min

Peak Storage= 131 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 28.33'
Defined Flood Depth= 37.50' Flow Area= 1,850.2 sf, Capacity= 5,308.53 cfs
Bank-Full Depth= 0.80' Flow Area= 22.0 sf, Capacity= 47.54 cfs

5.00' x 0.80' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 27.9 28.4 '/' Top Width= 50.04'
Length= 19.0' Slope= 0.0158 '/'
Inlet Invert= 37.20', Outlet Invert= 36.90'



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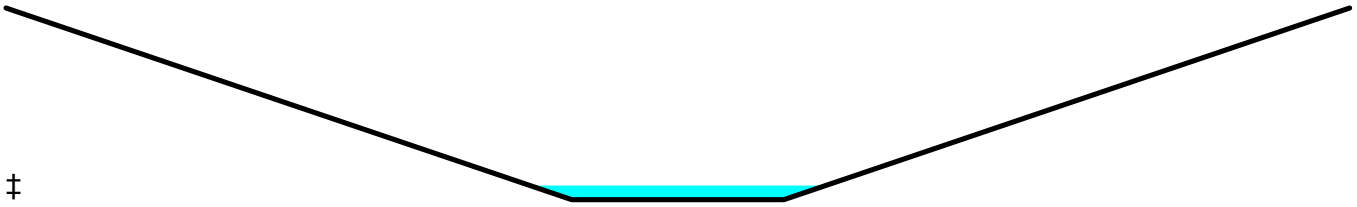
Summary for Reach 9.2C: Channel #8

Inflow Area = 3.256 ac, 0.00% Impervious, Inflow Depth = 0.09" for 10-YR event
Inflow = 0.10 cfs @ 12.67 hrs, Volume= 0.024 af
Outflow = 0.10 cfs @ 12.68 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.7 min
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.20 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 2.9 min

Peak Storage= 9 cf @ 12.68 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 20.89'
Defined Flood Depth= 31.00' Flow Area= 2,916.8 sf, Capacity= 3,347.55 cfs
Bank-Full Depth= 0.40' Flow Area= 22.0 sf, Capacity= 18.91 cfs

15.00' x 0.40' deep channel, n= 0.050 Scattered brush, heavy weeds
Side Slope Z-value= 100.0 '/' Top Width= 95.00'
Length= 17.0' Slope= 0.0059 '/'
Inlet Invert= 30.60', Outlet Invert= 30.50'



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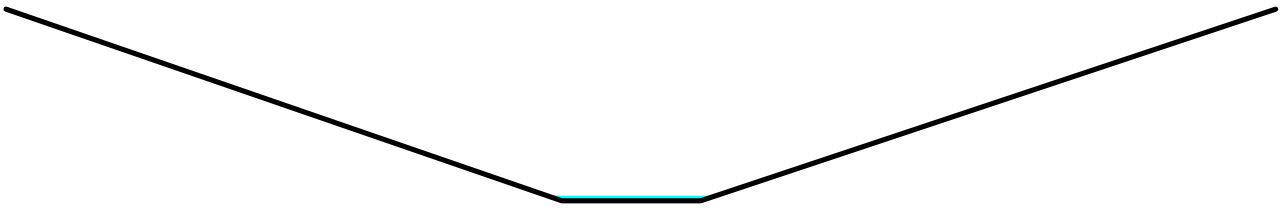
Summary for Reach 9.3C: Channel #9 (Perennial Stream)

Inflow Area = 7.964 ac, 3.74% Impervious, Inflow Depth = 0.94" for 10-YR event
Inflow = 4.12 cfs @ 12.54 hrs, Volume= 0.626 af
Outflow = 4.11 cfs @ 12.55 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.3 min
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.90 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.5 min

Peak Storage= 64 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 7.10'
Defined Flood Depth= 24.00' Flow Area= 1,079.4 sf, Capacity= 29,917.04 cfs
Bank-Full Depth= 8.00' Flow Area= 235.2 sf, Capacity= 5,176.94 cfs

5.80' x 8.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 2.9 3.0 '/' Top Width= 53.00'
Length= 45.0' Slope= 0.0289 '/'
Inlet Invert= 18.00', Outlet Invert= 16.70'



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 32.71% Impervious Runoff Depth=2.71"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=1.12 cfs 0.105 af

Subcatchment2S: Subcat #2 Runoff Area=331,505 sf 15.30% Impervious Runoff Depth=1.83"
Flow Length=1,114' Tc=26.0 min CN=WQ Runoff=7.88 cfs 1.160 af

Subcatchment3S: Subcat #3 Runoff Area=28,340 sf 0.00% Impervious Runoff Depth=3.57"
Tc=6.0 min CN=WQ Runoff=2.72 cfs 0.194 af

Subcatchment4S: Subcat #4 Runoff Area=323,625 sf 0.00% Impervious Runoff Depth=2.87"
Flow Length=896' Tc=20.4 min CN=WQ Runoff=15.92 cfs 1.777 af

Subcatchment5S: Subcat #5 Runoff Area=130,282 sf 0.00% Impervious Runoff Depth=3.60"
Flow Length=513' Tc=11.8 min CN=WQ Runoff=10.42 cfs 0.898 af

Subcatchment6S: Subcat #6 Runoff Area=30,908 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=2.51 cfs 0.207 af

Subcatchment7S: Subcat #7 Runoff Area=101,369 sf 0.00% Impervious Runoff Depth=2.86"
Flow Length=634' Tc=15.0 min CN=WQ Runoff=5.70 cfs 0.554 af

Subcatchment8S: Subcat #8 Runoff Area=409,940 sf 1.36% Impervious Runoff Depth=2.26"
Flow Length=1,324' Tc=24.6 min CN=WQ Runoff=14.61 cfs 1.772 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=163,382 sf 0.00% Impervious Runoff Depth=0.27"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.18 cfs 0.083 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=141,823 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.17 cfs 0.079 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=1.46"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=6.00 cfs 0.972 af

Subcatchment9.4S: Subcat #9.4 Runoff Area=787,957 sf 0.00% Impervious Runoff Depth=1.77"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=18.15 cfs 2.661 af

Reach #100: Analysis Point #100 Inflow=1.12 cfs 0.105 af
Outflow=1.12 cfs 0.105 af

Reach #200: Analysis Point #200 Inflow=7.88 cfs 1.160 af
Outflow=7.88 cfs 1.160 af

Reach #300: Analysis Point #300 Inflow=2.72 cfs 0.194 af
Outflow=2.72 cfs 0.194 af

Reach #400: Analysis Point #400 Inflow=15.92 cfs 1.777 af
Outflow=15.92 cfs 1.777 af

Reach #500: Analysis Point #500 Inflow=10.41 cfs 0.898 af
Outflow=10.41 cfs 0.898 af

Reach #600: Analysis Point #600 Inflow=2.51 cfs 0.207 af
Outflow=2.51 cfs 0.207 af

Reach #700: Analysis Point #700 Inflow=5.70 cfs 0.554 af
Outflow=5.70 cfs 0.554 af

Reach #800: Analysis Point #800 Inflow=14.60 cfs 1.772 af
Outflow=14.60 cfs 1.772 af

Reach #900: Analysis Point #900 Inflow=24.40 cfs 3.795 af
Outflow=24.40 cfs 3.795 af

Reach 2C: Channel #1 Avg. Flow Depth=0.40' Max Vel=2.66 fps Inflow=7.88 cfs 1.160 af
n=0.050 L=18.0' S=0.0556 '/' Capacity=583.28 cfs Outflow=7.88 cfs 1.160 af

Reach 3C: Channel #2 Avg. Flow Depth=0.30' Max Vel=1.50 fps Inflow=2.72 cfs 0.194 af
n=0.050 L=16.0' S=0.0250 '/' Capacity=131.08 cfs Outflow=2.72 cfs 0.194 af

Reach 4C: Channel #3 Avg. Flow Depth=0.79' Max Vel=3.65 fps Inflow=15.92 cfs 1.777 af
n=0.030 L=18.0' S=0.0167 '/' Capacity=39.54 cfs Outflow=15.92 cfs 1.777 af

Reach 5C: Channel #4 Avg. Flow Depth=0.16' Max Vel=1.40 fps Inflow=10.42 cfs 0.898 af
n=0.050 L=20.0' S=0.0300 '/' Capacity=313.15 cfs Outflow=10.41 cfs 0.898 af

Reach 6C: Channel #5 Avg. Flow Depth=0.18' Max Vel=1.08 fps Inflow=2.51 cfs 0.207 af
n=0.050 L=22.0' S=0.0227 '/' Capacity=23.93 cfs Outflow=2.51 cfs 0.207 af

Reach 7C: Channel #6 Avg. Flow Depth=0.27' Max Vel=1.44 fps Inflow=5.70 cfs 0.554 af
n=0.050 L=19.0' S=0.0263 '/' Capacity=74.06 cfs Outflow=5.70 cfs 0.554 af

Reach 8C: Channel #7 Avg. Flow Depth=0.49' Max Vel=1.60 fps Inflow=14.61 cfs 1.772 af
n=0.050 L=19.0' S=0.0158 '/' Capacity=47.54 cfs Outflow=14.60 cfs 1.772 af

Reach 9.2C: Channel #8 Avg. Flow Depth=0.04' Max Vel=0.23 fps Inflow=0.17 cfs 0.079 af
n=0.050 L=17.0' S=0.0059 '/' Capacity=18.91 cfs Outflow=0.17 cfs 0.079 af

Reach 9.3C: Channel #9 (Perennial Avg. Flow Depth=0.27' Max Vel=3.30 fps Inflow=6.00 cfs 0.972 af
n=0.030 L=45.0' S=0.0289 '/' Capacity=5,176.94 cfs Outflow=6.00 cfs 0.972 af

Total Runoff Area = 64.653 ac Runoff Volume = 10.462 af Average Runoff Depth = 1.94"
97.30% Pervious = 62.909 ac 2.70% Impervious = 1.743 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 32.71% Impervious Runoff Depth=3.45"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=1.39 cfs 0.133 af

Subcatchment2S: Subcat #2 Runoff Area=331,505 sf 15.30% Impervious Runoff Depth=2.49"
Flow Length=1,114' Tc=26.0 min CN=WQ Runoff=10.83 cfs 1.579 af

Subcatchment3S: Subcat #3 Runoff Area=28,340 sf 0.00% Impervious Runoff Depth=4.72"
Tc=6.0 min CN=WQ Runoff=3.60 cfs 0.256 af

Subcatchment4S: Subcat #4 Runoff Area=323,625 sf 0.00% Impervious Runoff Depth=3.85"
Flow Length=896' Tc=20.4 min CN=WQ Runoff=21.62 cfs 2.386 af

Subcatchment5S: Subcat #5 Runoff Area=130,282 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=513' Tc=11.8 min CN=WQ Runoff=13.76 cfs 1.184 af

Subcatchment6S: Subcat #6 Runoff Area=30,908 sf 0.00% Impervious Runoff Depth=4.64"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=3.34 cfs 0.274 af

Subcatchment7S: Subcat #7 Runoff Area=101,369 sf 0.00% Impervious Runoff Depth=3.82"
Flow Length=634' Tc=15.0 min CN=WQ Runoff=7.60 cfs 0.740 af

Subcatchment8S: Subcat #8 Runoff Area=409,940 sf 1.36% Impervious Runoff Depth=3.04"
Flow Length=1,324' Tc=24.6 min CN=WQ Runoff=19.13 cfs 2.382 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=163,382 sf 0.00% Impervious Runoff Depth=0.57"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.63 cfs 0.179 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=141,823 sf 0.00% Impervious Runoff Depth=0.60"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.46 cfs 0.163 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=2.05"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=8.04 cfs 1.360 af

Subcatchment9.4S: Subcat #9.4 Runoff Area=787,957 sf 0.00% Impervious Runoff Depth=2.46"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=24.76 cfs 3.713 af

Reach #100: Analysis Point #100 Inflow=1.39 cfs 0.133 af
Outflow=1.39 cfs 0.133 af

Reach #200: Analysis Point #200 Inflow=10.83 cfs 1.579 af
Outflow=10.83 cfs 1.579 af

Reach #300: Analysis Point #300 Inflow=3.60 cfs 0.256 af
Outflow=3.60 cfs 0.256 af

Reach #400: Analysis Point #400 Inflow=21.63 cfs 2.386 af
Outflow=21.63 cfs 2.386 af

Reach #500: Analysis Point #500 Inflow=13.76 cfs 1.184 af
Outflow=13.76 cfs 1.184 af

Reach #600: Analysis Point #600 Inflow=3.33 cfs 0.274 af
Outflow=3.33 cfs 0.274 af

Reach #700: Analysis Point #700 Inflow=7.60 cfs 0.740 af
Outflow=7.60 cfs 0.740 af

Reach #800: Analysis Point #800 Inflow=19.12 cfs 2.382 af
Outflow=19.12 cfs 2.382 af

Reach #900: Analysis Point #900 Inflow=33.62 cfs 5.415 af
Outflow=33.62 cfs 5.415 af

Reach 2C: Channel #1 Avg. Flow Depth=0.46' Max Vel=2.88 fps Inflow=10.83 cfs 1.579 af
n=0.050 L=18.0' S=0.0556 '/' Capacity=583.28 cfs Outflow=10.83 cfs 1.579 af

Reach 3C: Channel #2 Avg. Flow Depth=0.34' Max Vel=1.61 fps Inflow=3.60 cfs 0.256 af
n=0.050 L=16.0' S=0.0250 '/' Capacity=131.08 cfs Outflow=3.60 cfs 0.256 af

Reach 4C: Channel #3 Avg. Flow Depth=0.90' Max Vel=3.94 fps Inflow=21.62 cfs 2.386 af
n=0.030 L=18.0' S=0.0167 '/' Capacity=39.54 cfs Outflow=21.63 cfs 2.386 af

Reach 5C: Channel #4 Avg. Flow Depth=0.19' Max Vel=1.54 fps Inflow=13.76 cfs 1.184 af
n=0.050 L=20.0' S=0.0300 '/' Capacity=313.15 cfs Outflow=13.76 cfs 1.184 af

Reach 6C: Channel #5 Avg. Flow Depth=0.21' Max Vel=1.16 fps Inflow=3.34 cfs 0.274 af
n=0.050 L=22.0' S=0.0227 '/' Capacity=23.93 cfs Outflow=3.33 cfs 0.274 af

Reach 7C: Channel #6 Avg. Flow Depth=0.31' Max Vel=1.55 fps Inflow=7.60 cfs 0.740 af
n=0.050 L=19.0' S=0.0263 '/' Capacity=74.06 cfs Outflow=7.60 cfs 0.740 af

Reach 8C: Channel #7 Avg. Flow Depth=0.55' Max Vel=1.72 fps Inflow=19.13 cfs 2.382 af
n=0.050 L=19.0' S=0.0158 '/' Capacity=47.54 cfs Outflow=19.12 cfs 2.382 af

Reach 9.2C: Channel #8 Avg. Flow Depth=0.07' Max Vel=0.31 fps Inflow=0.46 cfs 0.163 af
n=0.050 L=17.0' S=0.0059 '/' Capacity=18.91 cfs Outflow=0.46 cfs 0.163 af

Reach 9.3C: Channel #9 (Perennial Avg. Flow Depth=0.33' Max Vel=3.63 fps Inflow=8.04 cfs 1.360 af
n=0.030 L=45.0' S=0.0289 '/' Capacity=5,176.94 cfs Outflow=8.04 cfs 1.360 af

Total Runoff Area = 64.653 ac Runoff Volume = 14.350 af Average Runoff Depth = 2.66"
97.30% Pervious = 62.909 ac 2.70% Impervious = 1.743 ac

Appendix II

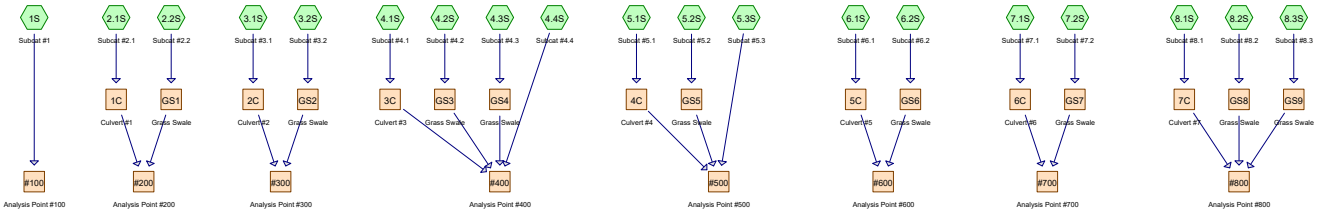
Proposed Conditions Analysis

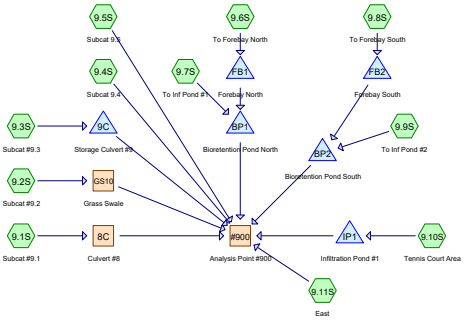
2-Year 24-Hour Summary

10-Year 24-Hour Complete

25-Year 24-Hour Summary

50-Year 24-Hour Summary





Subcat Reach Pond Link

Routing Diagram for NH-1501 Proposed
Prepared by Beals Associates, PLLC, Printed 12/23/2024
HydroCAD® 10.20-6a s/n 01754 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.915	39	>75% Grass cover, Good, HSG A (1S, 2.1S, 4.1S, 7.1S, 8.1S, 9.10S, 9.11S, 9.1S, 9.6S, 9.7S, 9.8S)
1.349	61	>75% Grass cover, Good, HSG B (1S, 2.1S, 2.2S, 3.2S, 4.4S, 5.2S, 5.3S, 6.2S, 9.10S, 9.11S, 9.2S, 9.7S, 9.8S, 9.9S)
8.348	74	>75% Grass cover, Good, HSG C (3.2S, 4.1S, 4.2S, 4.3S, 4.4S, 5.1S, 5.2S, 5.3S, 6.2S, 7.1S, 7.2S, 8.1S, 8.2S, 8.3S, 9.10S, 9.11S, 9.2S, 9.8S)
6.884	30	Brush, Good, HSG A (8.1S, 9.4S, 9.5S)
0.492	65	Brush, Good, HSG C (9.5S)
0.212	96	Gravel surface, HSG A (9.1S, 9.3S, 9.6S)
0.285	96	Gravel surface, HSG B (2.2S, 3.2S, 4.4S, 5.2S, 5.3S, 6.2S, 9.2S, 9.4S, 9.5S, 9.6S)
0.479	96	Gravel surface, HSG C (3.2S, 4.2S, 4.3S, 4.4S, 5.2S, 5.3S, 6.2S, 7.2S, 8.2S, 8.3S, 9.2S, 9.3S, 9.5S)
1.399	98	Paved parking, HSG A (1S, 2.1S, 8.1S, 9.3S, 9.6S, 9.8S)
0.605	98	Paved parking, HSG B (1S, 2.1S, 2.2S, 9.10S, 9.11S, 9.8S)
0.304	98	Paved parking, HSG C (9.10S, 9.11S, 9.8S)
0.066	98	Roofs, HSG A (9.6S)
0.090	98	Roofs, HSG B (9.10S, 9.11S, 9.8S)
0.028	98	Roofs, HSG C (9.11S, 9.6S)
0.124	98	Water Surface, HSG A (2.1S)
20.361	30	Woods, Good, HSG A (1S, 2.1S, 7.1S, 8.1S, 9.11S, 9.1S, 9.3S, 9.4S, 9.5S, 9.6S, 9.7S, 9.8S)
1.065	55	Woods, Good, HSG B (2.1S, 3.1S, 5.1S, 7.1S, 9.11S, 9.1S, 9.3S, 9.5S, 9.8S)
16.585	70	Woods, Good, HSG C (2.1S, 3.1S, 4.1S, 5.1S, 6.1S, 7.1S, 8.1S, 9.11S, 9.1S, 9.3S, 9.5S, 9.6S, 9.8S)
0.064	77	Woods, Good, HSG D (9.5S)
64.653	**52**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
34.960	HSG A	1S, 2.1S, 4.1S, 7.1S, 8.1S, 9.10S, 9.11S, 9.1S, 9.3S, 9.4S, 9.5S, 9.6S, 9.7S, 9.8S
3.393	HSG B	1S, 2.1S, 2.2S, 3.1S, 3.2S, 4.4S, 5.1S, 5.2S, 5.3S, 6.2S, 7.1S, 9.10S, 9.11S, 9.1S, 9.2S, 9.3S, 9.4S, 9.5S, 9.6S, 9.7S, 9.8S, 9.9S
26.235	HSG C	2.1S, 3.1S, 3.2S, 4.1S, 4.2S, 4.3S, 4.4S, 5.1S, 5.2S, 5.3S, 6.1S, 6.2S, 7.1S, 7.2S, 8.1S, 8.2S, 8.3S, 9.10S, 9.11S, 9.1S, 9.2S, 9.3S, 9.5S, 9.6S, 9.8S
0.064	HSG D	9.5S
0.000	Other	
64.653		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 37.63% Impervious Runoff Depth=1.30"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=0.58 cfs 0.050 af

Subcatchment2.1S: Subcat #2.1 Runoff Area=326,721 sf 15.53% Impervious Runoff Depth=0.65"
Flow Length=1,094' Tc=25.8 min CN=WQ Runoff=3.00 cfs 0.406 af

Subcatchment2.2S: Subcat #2.2 Runoff Area=4,234 sf 6.78% Impervious Runoff Depth=2.13"
Tc=6.0 min CN=WQ Runoff=0.22 cfs 0.017 af

Subcatchment3.1S: Subcat #3.1 Runoff Area=25,804 sf 0.00% Impervious Runoff Depth=1.10"
Tc=6.0 min CN=WQ Runoff=0.71 cfs 0.054 af

Subcatchment3.2S: Subcat #3.2 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=WQ Runoff=0.10 cfs 0.008 af

Subcatchment4.1S: Subcat #4.1 Runoff Area=316,864 sf 0.00% Impervious Runoff Depth=0.84"
Flow Length=876' Tc=20.3 min CN=WQ Runoff=4.51 cfs 0.511 af

Subcatchment4.2S: Subcat #4.2 Runoff Area=3,959 sf 0.00% Impervious Runoff Depth=2.50"
Tc=6.0 min CN=WQ Runoff=0.25 cfs 0.019 af

Subcatchment4.3S: Subcat #4.3 Runoff Area=2,703 sf 0.00% Impervious Runoff Depth=2.51"
Tc=6.0 min CN=WQ Runoff=0.17 cfs 0.013 af

Subcatchment4.4S: Subcat #4.4 Runoff Area=1,052 sf 0.00% Impervious Runoff Depth=2.12"
Tc=6.0 min CN=WQ Runoff=0.05 cfs 0.004 af

Subcatchment5.1S: Subcat #5.1 Runoff Area=123,988 sf 0.00% Impervious Runoff Depth=1.13"
Flow Length=493' Tc=11.7 min CN=WQ Runoff=2.90 cfs 0.267 af

Subcatchment5.2S: Subcat #5.2 Runoff Area=3,669 sf 0.00% Impervious Runoff Depth=2.42"
Tc=6.0 min CN=WQ Runoff=0.22 cfs 0.017 af

Subcatchment5.3S: Subcat #5.3 Runoff Area=3,398 sf 0.00% Impervious Runoff Depth=2.27"
Tc=6.0 min CN=WQ Runoff=0.19 cfs 0.015 af

Subcatchment6.1S: Subcat #6.1 Runoff Area=26,066 sf 0.00% Impervious Runoff Depth=1.10"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=0.62 cfs 0.055 af

Subcatchment6.2S: Subcat #6.2 Runoff Area=6,843 sf 0.00% Impervious Runoff Depth=2.47"
Tc=6.0 min CN=WQ Runoff=0.42 cfs 0.032 af

Subcatchment7.1S: Subcat #7.1 Runoff Area=96,251 sf 0.00% Impervious Runoff Depth=0.85"
Flow Length=614' Tc=14.8 min CN=WQ Runoff=1.57 cfs 0.156 af

Subcatchment7.2S: Subcat #7.2 Runoff Area=2,164 sf 0.00% Impervious Runoff Depth=2.48"
Tc=6.0 min CN=WQ Runoff=0.13 cfs 0.010 af

Subcatchment8.1S: Subcat #8.1 Runoff Area=404,198 sf 1.38% Impervious Runoff Depth=0.73"
Flow Length=1,304' Tc=24.3 min CN=WQ Runoff=4.71 cfs 0.562 af

Subcatchment8.2S: Subcat #8.2 Runoff Area=3,781 sf 0.00% Impervious Runoff Depth=2.56"
Tc=6.0 min CN=WQ Runoff=0.24 cfs 0.018 af

Subcatchment8.3S: Subcat #8.3 Runoff Area=3,011 sf 0.00% Impervious Runoff Depth=2.36"
Tc=6.0 min CN=WQ Runoff=0.18 cfs 0.014 af

Subcatchment9.10S: Tennis Court Area Runoff Area=16,757 sf 62.24% Impervious Runoff Depth=2.41"
Tc=6.0 min CN=WQ Runoff=0.95 cfs 0.077 af

Subcatchment9.11S: East Runoff Area=161,413 sf 5.11% Impervious Runoff Depth=1.11"
Flow Length=450' Tc=15.9 min CN=WQ Runoff=3.24 cfs 0.344 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=182,559 sf 0.00% Impervious Runoff Depth=0.15"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.31 cfs 0.053 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=2.40"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.12 cfs 0.020 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=0.48"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=2.04 cfs 0.320 af

Subcatchment9.4S: Subcat 9.4 Runoff Area=120,449 sf 0.00% Impervious Runoff Depth=0.03"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.05 cfs 0.006 af

Subcatchment9.5S: Subcat 9.5 Runoff Area=549,211 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=2.75 cfs 0.413 af

Subcatchment9.6S: To Forebay North Runoff Area=18,612 sf 45.38% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=WQ Runoff=0.85 cfs 0.067 af

Subcatchment9.7S: To Inf Pond #1 Runoff Area=7,989 sf 0.00% Impervious Runoff Depth=0.05"
Tc=6.0 min CN=WQ Runoff=0.01 cfs 0.001 af

Subcatchment9.8S: To Forebay South Runoff Area=27,437 sf 34.98% Impervious Runoff Depth=1.60"
Flow Length=143' Tc=14.0 min CN=WQ Runoff=0.79 cfs 0.084 af

Subcatchment9.9S: To Inf Pond #2 Runoff Area=4,076 sf 0.00% Impervious Runoff Depth=0.64"
Tc=6.0 min CN=61 Runoff=0.05 cfs 0.005 af

Reach #100: Analysis Point #100 Inflow=0.58 cfs 0.050 af
Outflow=0.58 cfs 0.050 af

Reach #200: Analysis Point #200 Inflow=3.08 cfs 0.423 af
Outflow=3.08 cfs 0.423 af

Reach #300: Analysis Point #300 Inflow=0.81 cfs 0.062 af
Outflow=0.81 cfs 0.062 af

Reach #400: Analysis Point #400 Inflow=4.73 cfs 0.548 af
Outflow=4.73 cfs 0.548 af

Reach #500: Analysis Point #500 Inflow=3.20 cfs 0.299 af
Outflow=3.20 cfs 0.299 af

Reach #600: Analysis Point #600 Inflow=0.99 cfs 0.087 af
Outflow=0.99 cfs 0.087 af

Reach #700: Analysis Point #700 Inflow=1.65 cfs 0.167 af
Outflow=1.65 cfs 0.167 af

Reach #800: Analysis Point #800 Inflow=4.87 cfs 0.595 af
Outflow=4.87 cfs 0.595 af

Reach #900: Analysis Point #900 Inflow=7.14 cfs 1.154 af
Outflow=7.14 cfs 1.154 af

Reach 1C: Culvert #1 Avg. Flow Depth=0.37' Max Vel=2.03 fps Inflow=3.00 cfs 0.406 af
24.0" Round Pipe w/ 9.0" inside fill x 2.00 n=0.069 L=19.0' S=0.0500 '/' Capacity=10.25 cfs Outflow=3.00 cfs 0.406 af

Reach 2C: Culvert #2 Avg. Flow Depth=0.30' Max Vel=1.29 fps Inflow=0.71 cfs 0.054 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=16.0' S=0.0250 '/' Capacity=4.88 cfs Outflow=0.71 cfs 0.054 af

Reach 3C: Culvert #3 Avg. Flow Depth=0.56' Max Vel=1.54 fps Inflow=4.51 cfs 0.511 af
36.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0167 '/' Capacity=27.30 cfs Outflow=4.51 cfs 0.511 af

Reach 4C: Culvert #4 Avg. Flow Depth=0.41' Max Vel=1.89 fps Inflow=2.90 cfs 0.267 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0389 '/' Capacity=12.17 cfs Outflow=2.90 cfs 0.267 af

Reach 5C: Culvert #5 Avg. Flow Depth=0.38' Max Vel=0.85 fps Inflow=0.62 cfs 0.055 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=18.0' S=0.0083 '/' Capacity=2.82 cfs Outflow=0.62 cfs 0.055 af

Reach 6C: Culvert #6 Avg. Flow Depth=0.31' Max Vel=1.33 fps Inflow=1.57 cfs 0.156 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0250 '/' Capacity=9.76 cfs Outflow=1.57 cfs 0.156 af

Reach 7C: Culvert #7 Avg. Flow Depth=0.47' Max Vel=1.35 fps Inflow=4.71 cfs 0.562 af
30.0" Round Pipe w/ 10.0" inside fill x 3.00 n=0.069 L=19.0' S=0.0158 '/' Capacity=17.48 cfs Outflow=4.71 cfs 0.562 af

Reach 8C: Culvert #8 Avg. Flow Depth=0.28' Max Vel=0.60 fps Inflow=0.31 cfs 0.053 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=17.0' S=0.0059 '/' Capacity=2.37 cfs Outflow=0.31 cfs 0.053 af

Reach GS1: Grass Swale Avg. Flow Depth=0.16' Max Vel=1.95 fps Inflow=0.22 cfs 0.017 af
n=0.035 L=219.0' S=0.0447 '/' Capacity=20.76 cfs Outflow=0.21 cfs 0.017 af

Reach GS10: Grass Swale Avg. Flow Depth=0.18' Max Vel=0.98 fps Inflow=0.12 cfs 0.020 af
n=0.035 L=213.0' S=0.0103 '/' Capacity=9.97 cfs Outflow=0.12 cfs 0.020 af

Reach GS2: Grass Swale Avg. Flow Depth=0.12' Max Vel=1.40 fps Inflow=0.10 cfs 0.008 af
n=0.035 L=62.0' S=0.0323 '/' Capacity=17.62 cfs Outflow=0.10 cfs 0.008 af

Reach GS3: Grass Swale Avg. Flow Depth=0.32' Max Vel=0.76 fps Inflow=0.25 cfs 0.019 af
n=0.035 L=168.0' S=0.0030 '/' Capacity=5.35 cfs Outflow=0.22 cfs 0.019 af

Reach GS4: Grass Swale Avg. Flow Depth=0.25' Max Vel=0.77 fps Inflow=0.17 cfs 0.013 af
n=0.035 L=125.0' S=0.0040 '/' Capacity=6.21 cfs Outflow=0.16 cfs 0.013 af

Reach GS5: Grass Swale Avg. Flow Depth=0.19' Max Vel=1.58 fps Inflow=0.22 cfs 0.017 af
n=0.035 L=199.0' S=0.0241 '/' Capacity=15.24 cfs Outflow=0.21 cfs 0.017 af

Reach GS6: Grass Swale Avg. Flow Depth=0.23' Max Vel=2.21 fps Inflow=0.42 cfs 0.032 af
n=0.035 L=193.0' S=0.0363 '/' Capacity=18.69 cfs Outflow=0.41 cfs 0.032 af

Reach GS7: Grass Swale Avg. Flow Depth=0.22' Max Vel=0.74 fps Inflow=0.13 cfs 0.010 af
n=0.035 L=114.0' S=0.0044 '/' Capacity=6.50 cfs Outflow=0.13 cfs 0.010 af

Reach GS8: Grass Swale Avg. Flow Depth=0.24' Max Vel=1.26 fps Inflow=0.24 cfs 0.018 af
n=0.035 L=87.0' S=0.0115 '/' Capacity=10.52 cfs Outflow=0.24 cfs 0.018 af

Reach GS9: Grass Swale Avg. Flow Depth=0.20' Max Vel=1.15 fps Inflow=0.18 cfs 0.014 af
n=0.035 L=128.0' S=0.0117 '/' Capacity=10.62 cfs Outflow=0.17 cfs 0.014 af

Pond 9C: Storage Culvert #9 Peak Elev=17.84' Storage=75 cf Inflow=2.04 cfs 0.320 af
30.0" Round Culvert w/ 6.0" inside fill n=0.012 L=43.0' S=0.0419 '/' Outflow=2.03 cfs 0.319 af

Pond BP1: Bioretention Pond North Peak Elev=19.98' Storage=463 cf Inflow=0.81 cfs 0.049 af
Discarded=0.25 cfs 0.049 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.049 af

Pond BP2: Bioretention Pond South Peak Elev=18.70' Storage=891 cf Inflow=0.81 cfs 0.068 af
Discarded=0.17 cfs 0.068 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.068 af

Pond FB1: Forebay North Peak Elev=21.92' Storage=929 cf Inflow=0.85 cfs 0.067 af
Outflow=0.81 cfs 0.049 af

Pond FB2: Forebay South Peak Elev=20.62' Storage=1,019 cf Inflow=0.79 cfs 0.084 af
Outflow=0.77 cfs 0.063 af

Pond IP1: Infiltration Pond #1 Peak Elev=20.24' Storage=2,070 cf Inflow=0.95 cfs 0.077 af
Discarded=0.03 cfs 0.077 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.077 af

Total Runoff Area = 64.653 ac Runoff Volume = 3.620 af Average Runoff Depth = 0.67"
95.95% Pervious = 62.038 ac 4.05% Impervious = 2.615 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 37.63% Impervious Runoff Depth=2.09"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=0.89 cfs 0.081 af

Subcatchment2.1S: Subcat #2.1 Runoff Area=326,721 sf 15.53% Impervious Runoff Depth=1.22"
Flow Length=1,094' Tc=25.8 min CN=WQ Runoff=5.28 cfs 0.762 af

Subcatchment2.2S: Subcat #2.2 Runoff Area=4,234 sf 6.78% Impervious Runoff Depth=3.62"
Tc=6.0 min CN=WQ Runoff=0.37 cfs 0.029 af

Subcatchment3.1S: Subcat #3.1 Runoff Area=25,804 sf 0.00% Impervious Runoff Depth=2.41"
Tc=6.0 min CN=WQ Runoff=1.66 cfs 0.119 af

Subcatchment3.2S: Subcat #3.2 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=4.10"
Tc=6.0 min CN=WQ Runoff=0.16 cfs 0.013 af

Subcatchment4.1S: Subcat #4.1 Runoff Area=316,864 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=876' Tc=20.3 min CN=WQ Runoff=10.19 cfs 1.144 af

Subcatchment4.2S: Subcat #4.2 Runoff Area=3,959 sf 0.00% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=WQ Runoff=0.41 cfs 0.032 af

Subcatchment4.3S: Subcat #4.3 Runoff Area=2,703 sf 0.00% Impervious Runoff Depth=4.20"
Tc=6.0 min CN=WQ Runoff=0.28 cfs 0.022 af

Subcatchment4.4S: Subcat #4.4 Runoff Area=1,052 sf 0.00% Impervious Runoff Depth=3.66"
Tc=6.0 min CN=WQ Runoff=0.10 cfs 0.007 af

Subcatchment5.1S: Subcat #5.1 Runoff Area=123,988 sf 0.00% Impervious Runoff Depth=2.45"
Flow Length=493' Tc=11.7 min CN=WQ Runoff=6.69 cfs 0.581 af

Subcatchment5.2S: Subcat #5.2 Runoff Area=3,669 sf 0.00% Impervious Runoff Depth=4.07"
Tc=6.0 min CN=WQ Runoff=0.37 cfs 0.029 af

Subcatchment5.3S: Subcat #5.3 Runoff Area=3,398 sf 0.00% Impervious Runoff Depth=3.85"
Tc=6.0 min CN=WQ Runoff=0.32 cfs 0.025 af

Subcatchment6.1S: Subcat #6.1 Runoff Area=26,066 sf 0.00% Impervious Runoff Depth=2.41"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=1.45 cfs 0.120 af

Subcatchment6.2S: Subcat #6.2 Runoff Area=6,843 sf 0.00% Impervious Runoff Depth=4.12"
Tc=6.0 min CN=WQ Runoff=0.70 cfs 0.054 af

Subcatchment7.1S: Subcat #7.1 Runoff Area=96,251 sf 0.00% Impervious Runoff Depth=1.86"
Flow Length=614' Tc=14.8 min CN=WQ Runoff=3.53 cfs 0.342 af

Subcatchment7.2S: Subcat #7.2 Runoff Area=2,164 sf 0.00% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=WQ Runoff=0.22 cfs 0.017 af

Subcatchment8.1S: Subcat #8.1 Runoff Area=404,198 sf 1.38% Impervious Runoff Depth=1.50"
Flow Length=1,304' Tc=24.3 min CN=WQ Runoff=9.88 cfs 1.159 af

Subcatchment8.2S: Subcat #8.2 Runoff Area=3,781 sf 0.00% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=WQ Runoff=0.40 cfs 0.031 af

Subcatchment8.3S: Subcat #8.3 Runoff Area=3,011 sf 0.00% Impervious Runoff Depth=4.01"
Tc=6.0 min CN=WQ Runoff=0.30 cfs 0.023 af

Subcatchment9.10S: Tennis Court Area Runoff Area=16,757 sf 62.24% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=WQ Runoff=1.58 cfs 0.127 af

Subcatchment9.11S: East Runoff Area=161,413 sf 5.11% Impervious Runoff Depth=2.34"
Flow Length=450' Tc=15.9 min CN=WQ Runoff=7.26 cfs 0.723 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=182,559 sf 0.00% Impervious Runoff Depth=0.30"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.55 cfs 0.104 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=4.02"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.20 cfs 0.033 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=0.97"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=4.25 cfs 0.647 af

Subcatchment9.4S: Subcat 9.4 Runoff Area=120,449 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.08 cfs 0.016 af

Subcatchment9.5S: Subcat 9.5 Runoff Area=549,211 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=6.41 cfs 0.918 af

Subcatchment9.6S: To Forebay North Runoff Area=18,612 sf 45.38% Impervious Runoff Depth=3.06"
Tc=6.0 min CN=WQ Runoff=1.33 cfs 0.109 af

Subcatchment9.7S: To Inf Pond #1 Runoff Area=7,989 sf 0.00% Impervious Runoff Depth=0.33"
Tc=6.0 min CN=WQ Runoff=0.02 cfs 0.005 af

Subcatchment9.8S: To Forebay South Runoff Area=27,437 sf 34.98% Impervious Runoff Depth=2.84"
Flow Length=143' Tc=14.0 min CN=WQ Runoff=1.46 cfs 0.149 af

Subcatchment9.9S: To Inf Pond #2 Runoff Area=4,076 sf 0.00% Impervious Runoff Depth=1.68"
Tc=6.0 min CN=61 Runoff=0.17 cfs 0.013 af

Reach #100: Analysis Point #100 Inflow=0.89 cfs 0.081 af
Outflow=0.89 cfs 0.081 af

Reach #200: Analysis Point #200 Inflow=5.42 cfs 0.791 af
Outflow=5.42 cfs 0.791 af

Reach #300: Analysis Point #300 Inflow=1.82 cfs 0.132 af
Outflow=1.82 cfs 0.132 af

Reach #400: Analysis Point #400 Inflow=10.56 cfs 1.204 af
Outflow=10.56 cfs 1.204 af

Reach #500: Analysis Point #500 Inflow=7.22 cfs 0.635 af
Outflow=7.22 cfs 0.635 af

Reach #600: Analysis Point #600 Inflow=2.06 cfs 0.174 af
Outflow=2.06 cfs 0.174 af

Reach #700: Analysis Point #700 Inflow=3.67 cfs 0.359 af
Outflow=3.67 cfs 0.359 af

Reach #800: Analysis Point #800 Inflow=10.15 cfs 1.213 af
Outflow=10.15 cfs 1.213 af

Reach #900: Analysis Point #900 Inflow=15.63 cfs 2.453 af
Outflow=15.63 cfs 2.453 af

Reach 1C: Culvert #1 Avg. Flow Depth=0.55' Max Vel=2.42 fps Inflow=5.28 cfs 0.762 af
24.0" Round Pipe w/ 9.0" inside fill x 2.00 n=0.069 L=19.0' S=0.0500 '/' Capacity=10.25 cfs Outflow=5.28 cfs 0.762 af

Reach 2C: Culvert #2 Avg. Flow Depth=0.51' Max Vel=1.69 fps Inflow=1.66 cfs 0.119 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=16.0' S=0.0250 '/' Capacity=4.88 cfs Outflow=1.66 cfs 0.119 af

Reach 3C: Culvert #3 Avg. Flow Depth=0.94' Max Vel=1.98 fps Inflow=10.19 cfs 1.144 af
36.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0167 '/' Capacity=27.30 cfs Outflow=10.19 cfs 1.144 af

Reach 4C: Culvert #4 Avg. Flow Depth=0.71' Max Vel=2.42 fps Inflow=6.69 cfs 0.581 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0389 '/' Capacity=12.17 cfs Outflow=6.69 cfs 0.581 af

Reach 5C: Culvert #5 Avg. Flow Depth=0.68' Max Vel=1.10 fps Inflow=1.45 cfs 0.120 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=18.0' S=0.0083 '/' Capacity=2.82 cfs Outflow=1.45 cfs 0.120 af

Reach 6C: Culvert #6 Avg. Flow Depth=0.53' Max Vel=1.72 fps Inflow=3.53 cfs 0.342 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0250 '/' Capacity=9.76 cfs Outflow=3.53 cfs 0.342 af

Reach 7C: Culvert #7 Avg. Flow Depth=0.80' Max Vel=1.69 fps Inflow=9.88 cfs 1.159 af
30.0" Round Pipe w/ 10.0" inside fill x 3.00 n=0.069 L=19.0' S=0.0158 '/' Capacity=17.48 cfs Outflow=9.88 cfs 1.159 af

Reach 8C: Culvert #8 Avg. Flow Depth=0.40' Max Vel=0.73 fps Inflow=0.55 cfs 0.104 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=17.0' S=0.0059 '/' Capacity=2.37 cfs Outflow=0.55 cfs 0.104 af

Reach GS1: Grass Swale Avg. Flow Depth=0.21' Max Vel=2.30 fps Inflow=0.37 cfs 0.029 af
n=0.035 L=219.0' S=0.0447 '/' Capacity=20.76 cfs Outflow=0.36 cfs 0.029 af

Reach GS10: Grass Swale Avg. Flow Depth=0.22' Max Vel=1.14 fps Inflow=0.20 cfs 0.033 af
n=0.035 L=213.0' S=0.0103 '/' Capacity=9.97 cfs Outflow=0.20 cfs 0.033 af

Reach GS2: Grass Swale Avg. Flow Depth=0.16' Max Vel=1.62 fps Inflow=0.16 cfs 0.013 af
n=0.035 L=62.0' S=0.0323 '/' Capacity=17.62 cfs Outflow=0.16 cfs 0.013 af

Reach GS3: Grass Swale Avg. Flow Depth=0.41' Max Vel=0.88 fps Inflow=0.41 cfs 0.032 af
n=0.035 L=168.0' S=0.0030 '/' Capacity=5.35 cfs Outflow=0.38 cfs 0.032 af

Reach GS4: Grass Swale Avg. Flow Depth=0.32' Max Vel=0.89 fps Inflow=0.28 cfs 0.022 af
n=0.035 L=125.0' S=0.0040 '/' Capacity=6.21 cfs Outflow=0.27 cfs 0.022 af

Reach GS5: Grass Swale Avg. Flow Depth=0.24' Max Vel=1.84 fps Inflow=0.37 cfs 0.029 af
n=0.035 L=199.0' S=0.0241 '/' Capacity=15.24 cfs Outflow=0.36 cfs 0.029 af

Reach GS6: Grass Swale Avg. Flow Depth=0.30' Max Vel=2.56 fps Inflow=0.70 cfs 0.054 af
n=0.035 L=193.0' S=0.0363 '/' Capacity=18.69 cfs Outflow=0.69 cfs 0.054 af

Reach GS7: Grass Swale Avg. Flow Depth=0.28' Max Vel=0.86 fps Inflow=0.22 cfs 0.017 af
n=0.035 L=114.0' S=0.0044 '/' Capacity=6.50 cfs Outflow=0.21 cfs 0.017 af

Reach GS8: Grass Swale Avg. Flow Depth=0.30' Max Vel=1.45 fps Inflow=0.40 cfs 0.031 af
n=0.035 L=87.0' S=0.0115 '/' Capacity=10.52 cfs Outflow=0.39 cfs 0.031 af

Reach GS9: Grass Swale Avg. Flow Depth=0.26' Max Vel=1.34 fps Inflow=0.30 cfs 0.023 af
n=0.035 L=128.0' S=0.0117 '/' Capacity=10.62 cfs Outflow=0.29 cfs 0.023 af

Pond 9C: Storage Culvert #9 Peak Elev=18.09' Storage=117 cf Inflow=4.25 cfs 0.647 af
30.0" Round Culvert w/ 6.0" inside fill n=0.012 L=43.0' S=0.0419 '/' Outflow=4.24 cfs 0.646 af

Pond BP1: Bioretention Pond North Peak Elev=20.65' Storage=1,156 cf Inflow=1.31 cfs 0.095 af
Discarded=0.25 cfs 0.095 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.095 af

Pond BP2: Bioretention Pond South Peak Elev=20.09' Storage=2,497 cf Inflow=1.54 cfs 0.142 af
Discarded=0.18 cfs 0.142 af Primary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.142 af

Pond FB1: Forebay North Peak Elev=21.97' Storage=971 cf Inflow=1.33 cfs 0.109 af
Outflow=1.28 cfs 0.090 af

Pond FB2: Forebay South Peak Elev=20.68' Storage=1,084 cf Inflow=1.46 cfs 0.149 af
Outflow=1.43 cfs 0.129 af

Pond IP1: Infiltration Pond #1 Peak Elev=20.81' Storage=3,290 cf Inflow=1.58 cfs 0.127 af
Discarded=0.03 cfs 0.114 af Primary=0.08 cfs 0.013 af Outflow=0.11 cfs 0.127 af

Total Runoff Area = 64.653 ac Runoff Volume = 7.435 af Average Runoff Depth = 1.38"
95.95% Pervious = 62.038 ac 4.05% Impervious = 2.615 ac

Summary for Subcatchment 1S: Subcat #1

Runoff = 0.89 cfs @ 12.11 hrs, Volume= 0.081 af, Depth= 2.09"
Routed to Reach #100 : Analysis Point #100

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
8,491	30	Woods, Good, HSG A
3,640	39	>75% Grass cover, Good, HSG A
491	61	>75% Grass cover, Good, HSG B
6,692	98	Paved parking, HSG A
924	98	Paved parking, HSG B
20,238		Weighted Average
12,622		62.37% Pervious Area
7,616		37.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0360	0.65		**Sheet Flow, Sheet** n= 0.030 P2= 2.92"
1.0	68	0.0250	1.11		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
5.9	272	0.0240	0.77		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
8.2	390	Total			

Summary for Subcatchment 2.1S: Subcat #2.1

Runoff = 5.28 cfs @ 12.36 hrs, Volume= 0.762 af, Depth= 1.22"
Routed to Reach 1C : Culvert #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
109,286	30	Woods, Good, HSG A
10,494	55	Woods, Good, HSG B
15,035	70	Woods, Good, HSG C
115,682	39	>75% Grass cover, Good, HSG A
25,491	61	>75% Grass cover, Good, HSG B
30,156	98	Paved parking, HSG A
15,186	98	Paved parking, HSG B
5,391	98	Water Surface, HSG A
326,721		Weighted Average
275,988		84.47% Pervious Area
50,733		15.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0750	0.22		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
0.5	20	0.0100	0.72		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 2.92"
19.5	820	0.0100	0.70		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
3.5	224	0.0468	1.08		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
25.8	1,094	Total			

Summary for Subcatchment 2.2S: Subcat #2.2

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 3.62"
Routed to Reach GS1 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
1,797	61	>75% Grass cover, Good, HSG B
2,150	96	Gravel surface, HSG B
287	98	Paved parking, HSG B
4,234		Weighted Average
3,947		93.22% Pervious Area
287		6.78% Impervious Area

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

Summary for Subcatchment 3.1S: Subcat #3.1

Runoff = 1.66 cfs @ 12.09 hrs, Volume= 0.119 af, Depth= 2.41"
Routed to Reach 2C : Culvert #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
111	55	Woods, Good, HSG B
25,693	70	Woods, Good, HSG C
25,804		Weighted Average
25,804		100.00% Pervious Area

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

Summary for Subcatchment 3.2S: Subcat #3.2

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth= 4.10"
Routed to Reach GS2 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
271	61	>75% Grass cover, Good, HSG B
271	74	>75% Grass cover, Good, HSG C
690	96	Gravel surface, HSG B
404	96	Gravel surface, HSG C
1,636		Weighted Average
1,636		100.00% Pervious Area

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

Summary for Subcatchment 4.1S: Subcat #4.1

Runoff = 10.19 cfs @ 12.29 hrs, Volume= 1.144 af, Depth= 1.89"
Routed to Reach 3C : Culvert #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
148,274	70	Woods, Good, HSG C
92,420	39	>75% Grass cover, Good, HSG A
76,170	74	>75% Grass cover, Good, HSG C
316,864		Weighted Average
316,864		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
4.4	373	0.0400	1.40		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
10.0	453	0.0230	0.76		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
20.3	876	Total			

Summary for Subcatchment 4.2S: Subcat #4.2

Runoff = 0.41 cfs @ 12.09 hrs, Volume= 0.032 af, Depth= 4.18"
Routed to Reach GS3 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
1,482	74	>75% Grass cover, Good, HSG C
2,477	96	Gravel surface, HSG C
3,959		Weighted Average
3,959		100.00% Pervious Area

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

Summary for Subcatchment 4.3S: Subcat #4.3

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.022 af, Depth= 4.20"
Routed to Reach GS4 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
998	74	>75% Grass cover, Good, HSG C
1,705	96	Gravel surface, HSG C
2,703		Weighted Average
2,703		100.00% Pervious Area

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

Summary for Subcatchment 4.4S: Subcat #4.4

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 3.66"
Routed to Reach #400 : Analysis Point #400

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
265	61	>75% Grass cover, Good, HSG B
244	74	>75% Grass cover, Good, HSG C
290	96	Gravel surface, HSG B
253	96	Gravel surface, HSG C
1,052		Weighted Average
1,052		100.00% Pervious Area

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

Summary for Subcatchment 5.1S: Subcat #5.1

Runoff = 6.69 cfs @ 12.17 hrs, Volume= 0.581 af, Depth= 2.45"
Routed to Reach 4C : Culvert #4

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
1,241	55	Woods, Good, HSG B
106,227	70	Woods, Good, HSG C
16,520	74	>75% Grass cover, Good, HSG C
123,988		Weighted Average
123,988		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0600	0.22		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
1.3	153	0.0780	1.95		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
6.6	290	0.0216	0.73		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
11.7	493	Total			

Summary for Subcatchment 5.2S: Subcat #5.2

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 4.07"
Routed to Reach GS5 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
344	61	>75% Grass cover, Good, HSG B
1,055	74	>75% Grass cover, Good, HSG C
950	96	Gravel surface, HSG B
1,320	96	Gravel surface, HSG C
3,669		Weighted Average
3,669		100.00% Pervious Area

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

Summary for Subcatchment 5.3S: Subcat #5.3

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.025 af, Depth= 3.85"
Routed to Reach #500 : Analysis Point #500

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
782	61	>75% Grass cover, Good, HSG B
618	74	>75% Grass cover, Good, HSG C
1,224	96	Gravel surface, HSG B
774	96	Gravel surface, HSG C
3,398		Weighted Average
3,398		100.00% Pervious Area

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

Summary for Subcatchment 6.1S: Subcat #6.1

Runoff = 1.45 cfs @ 12.15 hrs, Volume= 0.120 af, Depth= 2.41"
Routed to Reach 5C : Culvert #5

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
0	30	Woods, Good, HSG A
0	55	Woods, Good, HSG B
26,066	70	Woods, Good, HSG C
0	39	>75% Grass cover, Good, HSG A
0	74	>75% Grass cover, Good, HSG C
26,066		Weighted Average
26,066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1040	0.12		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 2.92"
3.6	256	0.0560	1.18		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
10.3	306	Total			

Summary for Subcatchment 6.2S: Subcat #6.2

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 4.12"
Routed to Reach GS6 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
586	61	>75% Grass cover, Good, HSG B
1,887	74	>75% Grass cover, Good, HSG C
1,182	96	Gravel surface, HSG B
3,188	96	Gravel surface, HSG C
6,843		Weighted Average
6,843		100.00% Pervious Area

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

Summary for Subcatchment 7.1S: Subcat #7.1

Runoff = 3.53 cfs @ 12.21 hrs, Volume= 0.342 af, Depth= 1.86"
Routed to Reach 6C : Culvert #6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
13,987	30	Woods, Good, HSG A
986	55	Woods, Good, HSG B
40,905	70	Woods, Good, HSG C
13,592	39	>75% Grass cover, Good, HSG A
26,781	74	>75% Grass cover, Good, HSG C
96,251		Weighted Average
96,251		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.0200	0.14		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
8.9	564	0.0451	1.06		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
14.8	614	Total			

Summary for Subcatchment 7.2S: Subcat #7.2

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 4.16"
Routed to Reach GS7 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
834	74	>75% Grass cover, Good, HSG C
1,330	96	Gravel surface, HSG C
2,164		Weighted Average
2,164		100.00% Pervious Area

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

Summary for Subcatchment 8.1S: Subcat #8.1

Runoff = 9.88 cfs @ 12.34 hrs, Volume= 1.159 af, Depth= 1.50"
Routed to Reach 7C : Culvert #7

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
39,987	30	Brush, Good, HSG A
135,768	30	Woods, Good, HSG A
1,927	70	Woods, Good, HSG C
18,267	39	>75% Grass cover, Good, HSG A
202,657	74	>75% Grass cover, Good, HSG C
5,592	98	Paved parking, HSG A
404,198		Weighted Average
398,606		98.62% Pervious Area
5,592		1.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
8.1	757	0.0490	1.55		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
11.7	497	0.0103	0.71		**Shallow Concentrated Flow, SCF thru brush** Short Grass Pasture Kv= 7.0 fps
24.3	1,304	Total			

Summary for Subcatchment 8.2S: Subcat #8.2

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Depth= 4.25"
Routed to Reach GS8 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
1,301	74	>75% Grass cover, Good, HSG C
2,480	96	Gravel surface, HSG C
3,781		Weighted Average
3,781		100.00% Pervious Area

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

Summary for Subcatchment 8.3S: Subcat #8.3

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 4.01"
Routed to Reach GS9 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
1,358	74	>75% Grass cover, Good, HSG C
1,653	96	Gravel surface, HSG C
3,011		Weighted Average
3,011		100.00% Pervious Area

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

Summary for Subcatchment 9.10S: Tennis Court Area

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.127 af, Depth= 3.97"
Routed to Pond IP1 : Infiltration Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
145	39	>75% Grass cover, Good, HSG A
5,087	61	>75% Grass cover, Good, HSG B
1,095	74	>75% Grass cover, Good, HSG C
2,444	98	Paved parking, HSG B
7,086	98	Paved parking, HSG C
900	98	Roofs, HSG B
16,757		Weighted Average
6,327		37.76% Pervious Area
10,430		62.24% Impervious Area

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

Summary for Subcatchment 9.11S: East

Runoff = 7.26 cfs @ 12.22 hrs, Volume= 0.723 af, Depth= 2.34"
Routed to Reach #900 : Analysis Point #900

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
9,598	30	Woods, Good, HSG A
12,887	55	Woods, Good, HSG B
94,799	70	Woods, Good, HSG C
488	39	>75% Grass cover, Good, HSG A
8,101	61	>75% Grass cover, Good, HSG B
27,299	74	>75% Grass cover, Good, HSG C
1,125	98	Paved parking, HSG B
4,728	98	Paved parking, HSG C
1,512	98	Roofs, HSG B
876	98	Roofs, HSG C
161,413		Weighted Average
153,172		94.89% Pervious Area
8,241		5.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0100	0.11		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
1.0	109	0.0726	1.89		**Shallow Concentrated Flow, SCF thru grass** Short Grass Pasture Kv= 7.0 fps
7.1	291	0.0188	0.69		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
15.9	450	Total			

Summary for Subcatchment 9.1S: Subcat #9.1

Runoff = 0.55 cfs @ 12.62 hrs, Volume= 0.104 af, Depth= 0.30"
Routed to Reach 8C : Culvert #8

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
164,417	30	Woods, Good, HSG A
3,836	55	Woods, Good, HSG B
3,626	70	Woods, Good, HSG C
3,743	39	>75% Grass cover, Good, HSG A
6,937	96	Gravel surface, HSG A
182,559		Weighted Average
182,559		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0080	0.10		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
37.1	996	0.0080	0.45		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
45.6	1,046	Total			

Summary for Subcatchment 9.2S: Subcat #9.2

Runoff = 0.20 cfs @ 12.61 hrs, Volume= 0.033 af, Depth= 4.02"
Routed to Reach GS10 : Grass Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
805	61	>75% Grass cover, Good, HSG B
727	74	>75% Grass cover, Good, HSG C
1,626	96	Gravel surface, HSG B
1,151	96	Gravel surface, HSG C
4,309		Weighted Average
4,309		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0080	0.10		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.92"
37.1	996	0.0080	0.45		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
45.6	1,046	Total			

Summary for Subcatchment 9.3S: Subcat #9.3

Runoff = 4.25 cfs @ 12.54 hrs, Volume= 0.647 af, Depth= 0.97"
Routed to Pond 9C : Storage Culvert #9

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
227,219	30	Woods, Good, HSG A
2,175	55	Woods, Good, HSG B
101,339	70	Woods, Good, HSG C
12,988	98	Paved parking, HSG A
1,168	96	Gravel surface, HSG A
2,011	96	Gravel surface, HSG C
346,900		Weighted Average
333,912		96.26% Pervious Area
12,988		3.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	50	0.0250	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 2.92"
27.8	1,143	0.0188	0.69		**Shallow Concentrated Flow, SCF thru woods** Woodland Kv= 5.0 fps
39.6	1,193	Total			

Summary for Subcatchment 9.4S: Subcat 9.4

Runoff = 0.08 cfs @ 12.28 hrs, Volume= 0.016 af, Depth= 0.07"
Routed to Reach #900 : Analysis Point #900

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
45,005	30	Brush, Good, HSG A
74,437	30	Woods, Good, HSG A
1,007	96	Gravel surface, HSG B
120,449		Weighted Average
120,449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0140	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.92"
6.7	485	0.0590	1.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.6	535	Total			

Summary for Subcatchment 9.5S: Subcat 9.5

Runoff = 6.41 cfs @ 12.52 hrs, Volume= 0.918 af, Depth= 0.87"
Routed to Reach #900 : Analysis Point #900

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
214,865	30	Brush, Good, HSG A
21,423	65	Brush, Good, HSG C
136,159	30	Woods, Good, HSG A
12,958	55	Woods, Good, HSG B
155,721	70	Woods, Good, HSG C
2,804	77	Woods, Good, HSG D
3,149	96	Gravel surface, HSG B
2,132	96	Gravel surface, HSG C
549,211		Weighted Average
549,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	50	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.92"
19.0	996	0.0306	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
36.0	1,046	Total			

Summary for Subcatchment 9.6S: To Forebay North

Runoff = 1.33 cfs @ 12.08 hrs, Volume= 0.109 af, Depth= 3.06"
Routed to Pond FB1 : Forebay North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
3,169	30	Woods, Good, HSG A
2,117	70	Woods, Good, HSG C
3,637	39	>75% Grass cover, Good, HSG A
5,247	98	Paved parking, HSG A
1,111	96	Gravel surface, HSG A
131	96	Gravel surface, HSG B
2,870	98	Roofs, HSG A
330	98	Roofs, HSG C
18,612		Weighted Average
10,165		54.62% Pervious Area
8,447		45.38% Impervious Area

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

Summary for Subcatchment 9.7S: To Inf Pond #1

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 0.33"
Routed to Pond BP1 : Bioretention Pond North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
2,158	30	Woods, Good, HSG A
5,290	39	>75% Grass cover, Good, HSG A
541	61	>75% Grass cover, Good, HSG B
7,989		Weighted Average
7,989		100.00% Pervious Area

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

Summary for Subcatchment 9.8S: To Forebay South

Runoff = 1.46 cfs @ 12.19 hrs, Volume= 0.149 af, Depth= 2.84"
Routed to Pond FB2 : Forebay South

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
2,229	30	Woods, Good, HSG A
1,698	55	Woods, Good, HSG B
699	70	Woods, Good, HSG C
763	39	>75% Grass cover, Good, HSG A
10,126	61	>75% Grass cover, Good, HSG B
2,325	74	>75% Grass cover, Good, HSG C
263	98	Paved parking, HSG A
6,379	98	Paved parking, HSG B
1,447	98	Paved parking, HSG C
1,508	98	Roofs, HSG B
27,437		Weighted Average
17,840		65.02% Pervious Area
9,597		34.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	50	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.92"
1.1	93	0.0376	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.0	143	Total			

Summary for Subcatchment 9.9S: To Inf Pond #2

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.013 af, Depth= 1.68"
Routed to Pond BP2 : Bioretention Pond South

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.50"

Area (sf)	CN	Description
4,076	61	>75% Grass cover, Good, HSG B
4,076		100.00% Pervious Area

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

Summary for Reach #100: Analysis Point #100

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.465 ac, 37.63% Impervious, Inflow Depth = 2.09" for 10-YR event
Inflow = 0.89 cfs @ 12.11 hrs, Volume= 0.081 af
Outflow = 0.89 cfs @ 12.11 hrs, Volume= 0.081 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 #200: Analysis Point #200

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.598 ac, 15.42% Impervious, Inflow Depth = 1.25" for 10-YR event
Inflow = 5.42 cfs @ 12.36 hrs, Volume= 0.791 af
Outflow = 5.42 cfs @ 12.36 hrs, Volume= 0.791 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 #300: Analysis Point #300

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.630 ac, 0.00% Impervious, Inflow Depth = 2.51" for 10-YR event
Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.132 af
Outflow = 1.82 cfs @ 12.09 hrs, Volume= 0.132 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 #400: Analysis Point #400

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.451 ac, 0.00% Impervious, Inflow Depth = 1.94" for 10-YR event
Inflow = 10.56 cfs @ 12.29 hrs, Volume= 1.204 af
Outflow = 10.56 cfs @ 12.29 hrs, Volume= 1.204 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 #500: Analysis Point #500

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.009 ac, 0.00% Impervious, Inflow Depth = 2.53" for 10-YR event
Inflow = 7.22 cfs @ 12.16 hrs, Volume= 0.635 af
Outflow = 7.22 cfs @ 12.16 hrs, Volume= 0.635 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 #600: Analysis Point #600

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.755 ac, 0.00% Impervious, Inflow Depth = 2.77" for 10-YR event
Inflow = 2.06 cfs @ 12.13 hrs, Volume= 0.174 af
Outflow = 2.06 cfs @ 12.13 hrs, Volume= 0.174 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 #700: Analysis Point #700

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.259 ac, 0.00% Impervious, Inflow Depth = 1.91" for 10-YR event
Inflow = 3.67 cfs @ 12.21 hrs, Volume= 0.359 af
Outflow = 3.67 cfs @ 12.21 hrs, Volume= 0.359 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 #800: Analysis Point #800

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 9.435 ac, 1.36% Impervious, Inflow Depth = 1.54" for 10-YR event
Inflow = 10.15 cfs @ 12.34 hrs, Volume= 1.213 af
Outflow = 10.15 cfs @ 12.34 hrs, Volume= 1.213 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 #900: Analysis Point #900

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 33.051 ac, 3.45% Impervious, Inflow Depth = 0.89" for 10-YR event
Inflow = 15.63 cfs @ 12.44 hrs, Volume= 2.453 af
Outflow = 15.63 cfs @ 12.44 hrs, Volume= 2.453 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 1C: Culvert #1

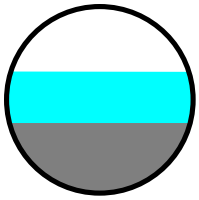
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 7.500 ac, 15.53% Impervious, Inflow Depth = 1.22" for 10-YR event
Inflow = 5.28 cfs @ 12.36 hrs, Volume= 0.762 af
Outflow = 5.28 cfs @ 12.36 hrs, Volume= 0.762 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #200 : Analysis Point #200

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 0.4 min

Peak Storage= 41 cf @ 12.36 hrs
Average Depth at Peak Storage= 1.30' above invert (0.55' above fill) , Surface Width= 3.81'
Bank-Full Depth= 2.00' above invert (1.25' above fill) Flow Area= 4.1 sf, Capacity= 10.25 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
24.0" Round Pipe w/ 9.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 19.0' Slope= 0.0500 '/' (101 Elevation Intervals)
Inlet Invert= 63.85', Outlet Invert= 62.90'



Summary for Reach 2C: Culvert #2

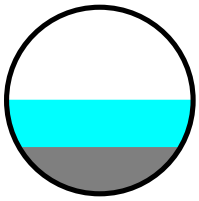
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.592 ac, 0.00% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 1.66 cfs @ 12.09 hrs, Volume= 0.119 af
Outflow = 1.66 cfs @ 12.09 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #300 : Analysis Point #300

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.69 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 0.5 min

Peak Storage= 16 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.01' above invert (0.51' above fill) , Surface Width= 2.00'
Bank-Full Depth= 2.00' above invert (1.50' above fill) Flow Area= 2.5 sf, Capacity= 4.88 cfs

24.0" Round Pipe w/ 6.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 16.0' Slope= 0.0250 '/'
Inlet Invert= 61.00', Outlet Invert= 60.60'



Summary for Reach 3C: Culvert #3

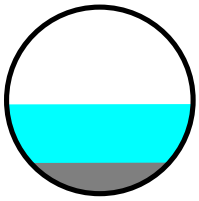
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 7.274 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-YR event
Inflow = 10.19 cfs @ 12.29 hrs, Volume= 1.144 af
Outflow = 10.19 cfs @ 12.29 hrs, Volume= 1.144 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #400 : Analysis Point #400

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.98 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 0.4 min

Peak Storage= 93 cf @ 12.29 hrs
Average Depth at Peak Storage= 1.44' above invert (0.94' above fill) , Surface Width= 6.00'
Bank-Full Depth= 3.00' above invert (2.50' above fill) Flow Area= 12.6 sf, Capacity= 27.30 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
36.0" Round Pipe w/ 6.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 18.0' Slope= 0.0167 '/' (101 Elevation Intervals)
Inlet Invert= 56.40', Outlet Invert= 56.10'



Summary for Reach 4C: Culvert #4

[52] Hint: Inlet/Outlet conditions not evaluated

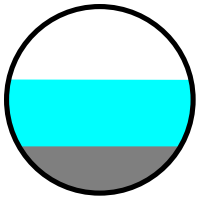
Inflow Area = 2.846 ac, 0.00% Impervious, Inflow Depth = 2.45" for 10-YR event
Inflow = 6.69 cfs @ 12.17 hrs, Volume= 0.581 af
Outflow = 6.69 cfs @ 12.17 hrs, Volume= 0.581 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #500 : Analysis Point #500

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 0.4 min

Peak Storage= 50 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.21' above invert (0.71' above fill) , Surface Width= 3.91'
Bank-Full Depth= 2.00' above invert (1.50' above fill) Flow Area= 5.1 sf, Capacity= 12.17 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
24.0" Round Pipe w/ 6.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 18.0' Slope= 0.0389 '/'

Inlet Invert= 51.60', Outlet Invert= 50.90'



Summary for Reach 5C: Culvert #5

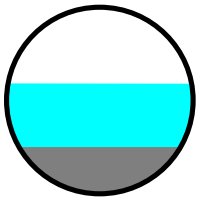
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.598 ac, 0.00% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 1.45 cfs @ 12.15 hrs, Volume= 0.120 af
Outflow = 1.45 cfs @ 12.15 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.2 min
Routed to Reach #600 : Analysis Point #600

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 0.8 min

Peak Storage= 24 cf @ 12.15 hrs
Average Depth at Peak Storage= 1.18' above invert (0.68' above fill) , Surface Width= 1.97'
Bank-Full Depth= 2.00' above invert (1.50' above fill) Flow Area= 2.5 sf, Capacity= 2.82 cfs

24.0" Round Pipe w/ 6.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 18.0' Slope= 0.0083 '/'
Inlet Invert= 39.50', Outlet Invert= 39.35'



Summary for Reach 6C: Culvert #6

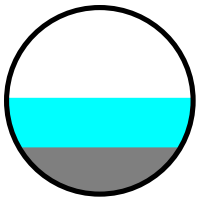
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 2.210 ac, 0.00% Impervious, Inflow Depth = 1.86" for 10-YR event
Inflow = 3.53 cfs @ 12.21 hrs, Volume= 0.342 af
Outflow = 3.53 cfs @ 12.21 hrs, Volume= 0.342 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #700 : Analysis Point #700

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.72 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 0.5 min

Peak Storage= 37 cf @ 12.21 hrs
Average Depth at Peak Storage= 1.03' above invert (0.53' above fill) , Surface Width= 4.00'
Bank-Full Depth= 2.00' above invert (1.50' above fill) Flow Area= 5.1 sf, Capacity= 9.76 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
24.0" Round Pipe w/ 6.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 18.0' Slope= 0.0250 '/'
Inlet Invert= 37.60', Outlet Invert= 37.15'



Summary for Reach 7C: Culvert #7

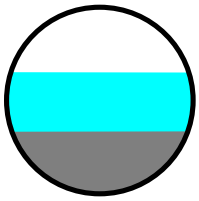
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 9.279 ac, 1.38% Impervious, Inflow Depth = 1.50" for 10-YR event
Inflow = 9.88 cfs @ 12.34 hrs, Volume= 1.159 af
Outflow = 9.88 cfs @ 12.34 hrs, Volume= 1.159 af, Atten= 0%, Lag= 0.1 min
Routed to Reach #800 : Analysis Point #800

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.69 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 0.7 min

Peak Storage= 111 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.63' above invert (0.80' above fill) , Surface Width= 7.15'
Bank-Full Depth= 2.50' above invert (1.67' above fill) Flow Area= 10.4 sf, Capacity= 17.48 cfs

A factor of 3.00 has been applied to the storage and discharge capacity
30.0" Round Pipe w/ 10.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 19.0' Slope= 0.0158 '/' (101 Elevation Intervals)
Inlet Invert= 36.37', Outlet Invert= 36.07'



Summary for Reach 8C: Culvert #8

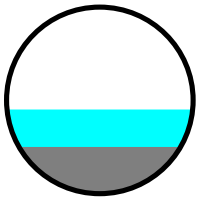
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 4.191 ac, 0.00% Impervious, Inflow Depth = 0.30" for 10-YR event
Inflow = 0.55 cfs @ 12.62 hrs, Volume= 0.104 af
Outflow = 0.55 cfs @ 12.62 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.2 min
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.73 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 1.1 min

Peak Storage= 13 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.90' above invert (0.40' above fill) , Surface Width= 1.99'
Bank-Full Depth= 2.00' above invert (1.50' above fill) Flow Area= 2.5 sf, Capacity= 2.37 cfs

24.0" Round Pipe w/ 6.0" inside fill
n= 0.069 Riprap, 6-inch
Length= 17.0' Slope= 0.0059 '/'
Inlet Invert= 30.20', Outlet Invert= 30.10'



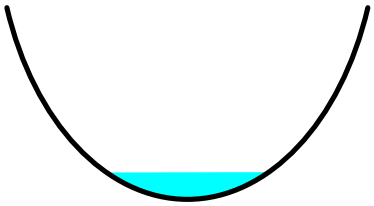
Summary for Reach GS1: Grass Swale

Inflow Area = 0.097 ac, 6.78% Impervious, Inflow Depth = 3.62" for 10-YR event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.36 cfs @ 12.11 hrs, Volume= 0.029 af, Atten= 3%, Lag= 1.1 min
Routed to Reach #200 : Analysis Point #200

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 4.8 min

Peak Storage= 35 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 1.12'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 20.76 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 219.0' Slope= 0.0447 '/'
Inlet Invert= 74.30', Outlet Invert= 64.50'



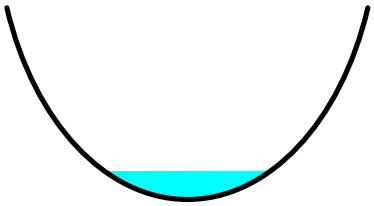
Summary for Reach GS10: Grass Swale

Inflow Area = 0.099 ac, 0.00% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 0.20 cfs @ 12.61 hrs, Volume= 0.033 af
Outflow = 0.20 cfs @ 12.64 hrs, Volume= 0.033 af, Atten= 1%, Lag= 1.6 min
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.14 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.45 fps, Avg. Travel Time= 7.8 min

Peak Storage= 37 cf @ 12.64 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 1.16'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 9.97 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 213.0' Slope= 0.0103 '/'
Inlet Invert= 38.00', Outlet Invert= 35.80'



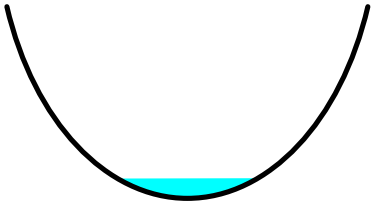
Summary for Reach GS2: Grass Swale

Inflow Area = 0.038 ac, 0.00% Impervious, Inflow Depth = 4.10" for 10-YR event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.4 min
Routed to Reach #300 : Analysis Point #300

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.62 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.54 fps, Avg. Travel Time= 1.9 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 0.97'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 17.62 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 62.0' Slope= 0.0323 '/'
Inlet Invert= 64.50', Outlet Invert= 62.50'



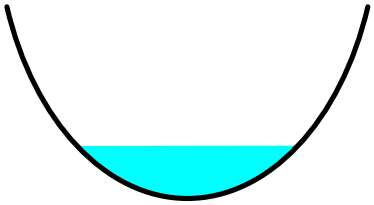
Summary for Reach GS3: Grass Swale

Inflow Area = 0.091 ac, 0.00% Impervious, Inflow Depth = 4.18" for 10-YR event
Inflow = 0.41 cfs @ 12.09 hrs, Volume= 0.032 af
Outflow = 0.38 cfs @ 12.12 hrs, Volume= 0.032 af, Atten= 8%, Lag= 2.0 min
Routed to Reach #400 : Analysis Point #400

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.88 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 9.9 min

Peak Storage= 72 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 1.57'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 5.35 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 168.0' Slope= 0.0030 '/'
Inlet Invert= 60.50', Outlet Invert= 60.00'



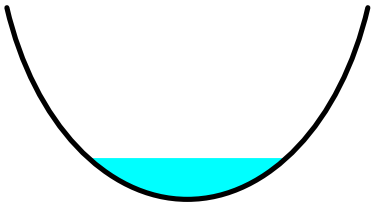
Summary for Reach GS4: Grass Swale

Inflow Area = 0.062 ac, 0.00% Impervious, Inflow Depth = 4.20" for 10-YR event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.022 af
Outflow = 0.27 cfs @ 12.11 hrs, Volume= 0.022 af, Atten= 5%, Lag= 1.6 min
Routed to Reach #400 : Analysis Point #400

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.89 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 7.2 min

Peak Storage= 38 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 1.39'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 6.21 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 125.0' Slope= 0.0040 '/'
Inlet Invert= 60.50', Outlet Invert= 60.00'



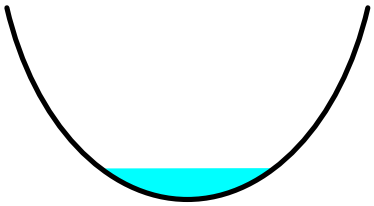
Summary for Reach GS5: Grass Swale

Inflow Area = 0.084 ac, 0.00% Impervious, Inflow Depth = 4.07" for 10-YR event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.36 cfs @ 12.11 hrs, Volume= 0.029 af, Atten= 3%, Lag= 1.3 min
Routed to Reach #500 : Analysis Point #500

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.84 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 5.5 min

Peak Storage= 39 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 1.21'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 15.24 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 199.0' Slope= 0.0241 '/'
Inlet Invert= 57.50', Outlet Invert= 52.70'



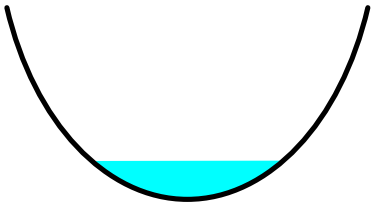
Summary for Reach GS6: Grass Swale

Inflow Area = 0.157 ac, 0.00% Impervious, Inflow Depth = 4.12" for 10-YR event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.054 af
Outflow = 0.69 cfs @ 12.10 hrs, Volume= 0.054 af, Atten= 2%, Lag= 0.9 min
Routed to Reach #600 : Analysis Point #600

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.56 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.83 fps, Avg. Travel Time= 3.9 min

Peak Storage= 52 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 1.34'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 18.69 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 193.0' Slope= 0.0363 '/'
Inlet Invert= 49.00', Outlet Invert= 42.00'



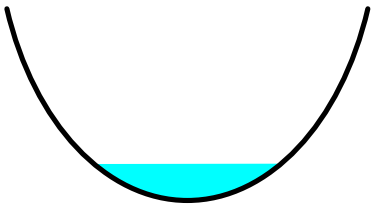
Summary for Reach GS7: Grass Swale

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth = 4.16" for 10-YR event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.21 cfs @ 12.11 hrs, Volume= 0.017 af, Atten= 4%, Lag= 1.5 min
Routed to Reach #700 : Analysis Point #700

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.86 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 6.8 min

Peak Storage= 28 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 1.31'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 6.50 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 114.0' Slope= 0.0044 '/'
Inlet Invert= 38.50', Outlet Invert= 38.00'



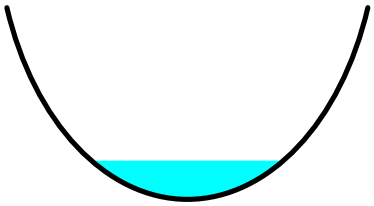
Summary for Reach GS8: Grass Swale

Inflow Area = 0.087 ac, 0.00% Impervious, Inflow Depth = 4.25" for 10-YR event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af
Outflow = 0.39 cfs @ 12.10 hrs, Volume= 0.031 af, Atten= 1%, Lag= 0.7 min
Routed to Reach #800 : Analysis Point #800

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.45 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 3.1 min

Peak Storage= 24 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 1.35'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 10.52 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 87.0' Slope= 0.0115 '/'
Inlet Invert= 37.50', Outlet Invert= 36.50'



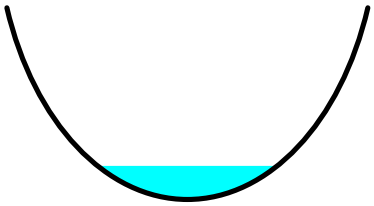
Summary for Reach GS9: Grass Swale

Inflow Area = 0.069 ac, 0.00% Impervious, Inflow Depth = 4.01" for 10-YR event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.29 cfs @ 12.10 hrs, Volume= 0.023 af, Atten= 3%, Lag= 1.1 min
Routed to Reach #800 : Analysis Point #800

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.34 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 4.9 min

Peak Storage= 28 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 1.25'
Bank-Full Depth= 1.50' Flow Area= 3.0 sf, Capacity= 10.62 cfs

3.00' x 1.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 128.0' Slope= 0.0117 '/'
Inlet Invert= 38.00', Outlet Invert= 36.50'



Summary for Pond 9C: Storage Culvert #9

Inflow Area = 7.964 ac, 3.74% Impervious, Inflow Depth = 0.97" for 10-YR event
Inflow = 4.25 cfs @ 12.54 hrs, Volume= 0.647 af
Outflow = 4.24 cfs @ 12.55 hrs, Volume= 0.646 af, Atten= 0%, Lag= 0.5 min
Primary = 4.24 cfs @ 12.55 hrs, Volume= 0.646 af
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 18.09' @ 12.55 hrs Surf.Area= 185 sf Storage= 117 cf
Flood Elev= 24.00' Surf.Area= 7,069 sf Storage= 13,754 cf

Plug-Flow detention time= 1.8 min calculated for 0.646 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (858.8 - 857.6)

Volume	Invert	Avail.Storage	Storage Description
#1	16.80'	13,754 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.80	1	0	0
17.00	31	3	3
18.00	163	97	100
19.00	391	277	377
20.00	874	633	1,010
21.00	1,587	1,231	2,240
22.00	2,562	2,075	4,315
23.00	4,624	3,593	7,908
24.00	7,069	5,847	13,754

Device	Routing	Invert	Outlet Devices
#1	Primary	17.40'	**30.0" Round Culvert w/ 6.0" inside fill** L= 43.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 16.90' / 15.10' S= 0.0419 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.21 sf

Primary OutFlow Max=4.24 cfs @ 12.55 hrs HW=18.09' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.24 cfs @ 2.62 fps)

Summary for Pond BP1: Bioretention Pond North

Inflow Area = 0.611 ac, 31.75% Impervious, Inflow Depth = 1.87" for 10-YR event
Inflow = 1.31 cfs @ 12.11 hrs, Volume= 0.095 af
Outflow = 0.25 cfs @ 11.81 hrs, Volume= 0.095 af, Atten= 81%, Lag= 0.0 min
Discarded = 0.25 cfs @ 11.81 hrs, Volume= 0.095 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 20.65' @ 12.58 hrs Surf.Area= 2,688 sf Storage= 1,156 cf
Flood Elev= 22.20' Surf.Area= 3,168 sf Storage= 3,783 cf

Plug-Flow detention time= 29.0 min calculated for 0.095 af (100% of inflow)

Center-of-Mass det. time= 28.9 min (860.0 - 831.1)

Volume	Invert	Avail.Storage	Storage Description
#1	19.55'	3,783 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.55	2,688	0.0	0	0	2,688
20.55	2,688	40.0	1,075	1,075	2,872
21.55	2,688	30.0	806	1,882	3,056
22.00	3,018	100.0	1,283	3,165	3,396
22.20	3,168	100.0	619	3,783	3,551

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.55'	**4.002 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	21.85'	**8.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.25 cfs @ 11.81 hrs HW=19.58' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=19.55' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond BP2: Bioretention Pond South

Inflow Area = 0.723 ac, 30.45% Impervious, Inflow Depth = 2.35" for 10-YR event
Inflow = 1.54 cfs @ 12.21 hrs, Volume= 0.142 af
Outflow = 0.18 cfs @ 13.35 hrs, Volume= 0.142 af, Atten= 88%, Lag= 68.0 min
Discarded = 0.18 cfs @ 13.35 hrs, Volume= 0.142 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 20.09' @ 13.35 hrs Surf.Area= 2,787 sf Storage= 2,497 cf
Flood Elev= 21.00' Surf.Area= 3,414 sf Storage= 5,306 cf

Plug-Flow detention time= 128.2 min calculated for 0.142 af (100% of inflow)
Center-of-Mass det. time= 128.2 min (975.5 - 847.3)

Volume	Invert	Avail.Storage	Storage Description
#1	17.85'	5,306 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.85	2,629	0.0	0	0	2,629
18.85	2,629	40.0	1,052	1,052	2,811
19.85	2,629	30.0	789	1,840	2,993
20.00	2,727	100.0	402	2,242	3,094
21.00	3,414	100.0	3,064	5,306	3,809

Device	Routing	Invert	Outlet Devices
#1	Discarded	17.85'	**2.838 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	20.80'	**8.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.18 cfs @ 13.35 hrs HW=20.09' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=17.85' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond FB1: Forebay North

Inflow Area = 0.427 ac, 45.38% Impervious, Inflow Depth = 3.06" for 10-YR event
Inflow = 1.33 cfs @ 12.08 hrs, Volume= 0.109 af
Outflow = 1.28 cfs @ 12.11 hrs, Volume= 0.090 af, Atten= 4%, Lag= 1.3 min
Primary = 1.28 cfs @ 12.11 hrs, Volume= 0.090 af
Routed to Pond BP1 : Bioretention Pond North

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 21.97' @ 12.11 hrs Surf.Area= 959 sf Storage= 971 cf
Flood Elev= 22.20' Surf.Area= 1,075 sf Storage= 1,208 cf

Plug-Flow detention time= 135.8 min calculated for 0.090 af (83% of inflow)
Center-of-Mass det. time= 62.7 min (824.7 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	20.20'	1,208 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
20.20	186	0	0	186
21.00	515	269	269	519
22.00	976	733	1,003	990
22.20	1,075	205	1,208	1,091

Device	Routing	Invert	Outlet Devices
#1	Primary	21.80'	**8.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65
2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.28 cfs @ 12.11 hrs HW=21.97' TW=20.03' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 1.28 cfs @ 0.96 fps)

Summary for Pond FB2: Forebay South

Inflow Area = 0.630 ac, 34.98% Impervious, Inflow Depth = 2.84" for 10-YR event
Inflow = 1.46 cfs @ 12.19 hrs, Volume= 0.149 af
Outflow = 1.43 cfs @ 12.22 hrs, Volume= 0.129 af, Atten= 2%, Lag= 1.7 min
Primary = 1.43 cfs @ 12.22 hrs, Volume= 0.129 af
Routed to Pond BP2 : Bioretention Pond South

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 20.68' @ 12.22 hrs Surf.Area= 1,084 sf Storage= 1,084 cf
Flood Elev= 21.00' Surf.Area= 1,289 sf Storage= 1,463 cf

Plug-Flow detention time= 116.0 min calculated for 0.129 af (86% of inflow)
Center-of-Mass det. time= 51.6 min (845.5 - 793.9)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	1,463 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.00	283	0	0	283
20.00	707	479	479	714
21.00	1,289	984	1,463	1,306

Device	Routing	Invert	Outlet Devices
#1	Primary	20.50'	**8.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.43 cfs @ 12.22 hrs HW=20.68' TW=18.81' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 1.43 cfs @ 0.99 fps)

Summary for Pond IP1: Infiltration Pond #1

Inflow Area = 0.385 ac, 62.24% Impervious, Inflow Depth = 3.97" for 10-YR event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.127 af
Outflow = 0.11 cfs @ 13.49 hrs, Volume= 0.127 af, Atten= 93%, Lag= 84.1 min
Discarded = 0.03 cfs @ 13.49 hrs, Volume= 0.114 af
Primary = 0.08 cfs @ 13.49 hrs, Volume= 0.013 af
Routed to Reach #900 : Analysis Point #900

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 20.81' @ 13.49 hrs Surf.Area= 2,321 sf Storage= 3,290 cf
Flood Elev= 22.50' Surf.Area= 3,000 sf Storage= 3,797 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,007.7 min (1,773.6 - 765.9)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	3,797 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.00	1,362	0	0
20.00	1,858	1,610	1,610
20.80	2,288	1,658	3,268
21.00	3,000	529	3,797

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.00'	**0.559 in/hr Exfiltration over Surface area**
#2	Primary	20.80'	**35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 13.49 hrs HW=20.81' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.08 cfs @ 13.49 hrs HW=20.81' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.26 fps)

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat #1 Runoff Area=20,238 sf 37.63% Impervious Runoff Depth=2.81"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=1.16 cfs 0.109 af

Subcatchment2.1S: Subcat #2.1 Runoff Area=326,721 sf 15.53% Impervious Runoff Depth=1.82"
Flow Length=1,094' Tc=25.8 min CN=WQ Runoff=7.71 cfs 1.135 af

Subcatchment2.2S: Subcat #2.2 Runoff Area=4,234 sf 6.78% Impervious Runoff Depth=4.87"
Tc=6.0 min CN=WQ Runoff=0.50 cfs 0.039 af

Subcatchment3.1S: Subcat #3.1 Runoff Area=25,804 sf 0.00% Impervious Runoff Depth=3.57"
Tc=6.0 min CN=WQ Runoff=2.48 cfs 0.176 af

Subcatchment3.2S: Subcat #3.2 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=5.43"
Tc=6.0 min CN=WQ Runoff=0.22 cfs 0.017 af

Subcatchment4.1S: Subcat #4.1 Runoff Area=316,864 sf 0.00% Impervious Runoff Depth=2.85"
Flow Length=876' Tc=20.3 min CN=WQ Runoff=15.55 cfs 1.730 af

Subcatchment4.2S: Subcat #4.2 Runoff Area=3,959 sf 0.00% Impervious Runoff Depth=5.55"
Tc=6.0 min CN=WQ Runoff=0.54 cfs 0.042 af

Subcatchment4.3S: Subcat #4.3 Runoff Area=2,703 sf 0.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=WQ Runoff=0.37 cfs 0.029 af

Subcatchment4.4S: Subcat #4.4 Runoff Area=1,052 sf 0.00% Impervious Runoff Depth=4.94"
Tc=6.0 min CN=WQ Runoff=0.13 cfs 0.010 af

Subcatchment5.1S: Subcat #5.1 Runoff Area=123,988 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=493' Tc=11.7 min CN=WQ Runoff=9.99 cfs 0.858 af

Subcatchment5.2S: Subcat #5.2 Runoff Area=3,669 sf 0.00% Impervious Runoff Depth=5.41"
Tc=6.0 min CN=WQ Runoff=0.49 cfs 0.038 af

Subcatchment5.3S: Subcat #5.3 Runoff Area=3,398 sf 0.00% Impervious Runoff Depth=5.15"
Tc=6.0 min CN=WQ Runoff=0.43 cfs 0.033 af

Subcatchment6.1S: Subcat #6.1 Runoff Area=26,066 sf 0.00% Impervious Runoff Depth=3.58"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=2.17 cfs 0.178 af

Subcatchment6.2S: Subcat #6.2 Runoff Area=6,843 sf 0.00% Impervious Runoff Depth=5.47"
Tc=6.0 min CN=WQ Runoff=0.92 cfs 0.072 af

Subcatchment7.1S: Subcat #7.1 Runoff Area=96,251 sf 0.00% Impervious Runoff Depth=2.79"
Flow Length=614' Tc=14.8 min CN=WQ Runoff=5.29 cfs 0.514 af

Subcatchment7.2S: Subcat #7.2 Runoff Area=2,164 sf 0.00% Impervious Runoff Depth=5.52"
Tc=6.0 min CN=WQ Runoff=0.30 cfs 0.023 af

Subcatchment8.1S: Subcat #8.1 Runoff Area=404,198 sf 1.38% Impervious Runoff Depth=2.24"
Flow Length=1,304' Tc=24.3 min CN=WQ Runoff=14.32 cfs 1.730 af

Subcatchment8.2S: Subcat #8.2 Runoff Area=3,781 sf 0.00% Impervious Runoff Depth=5.62"
Tc=6.0 min CN=WQ Runoff=0.52 cfs 0.041 af

Subcatchment8.3S: Subcat #8.3 Runoff Area=3,011 sf 0.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=WQ Runoff=0.40 cfs 0.031 af

Subcatchment9.10S: Tennis Court Area Runoff Area=16,757 sf 62.24% Impervious Runoff Depth=5.25"
Tc=6.0 min CN=WQ Runoff=2.10 cfs 0.168 af

Subcatchment9.11S: East Runoff Area=161,413 sf 5.11% Impervious Runoff Depth=3.43"
Flow Length=450' Tc=15.9 min CN=WQ Runoff=10.78 cfs 1.061 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=182,559 sf 0.00% Impervious Runoff Depth=0.56"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.77 cfs 0.195 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=5.34"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.26 cfs 0.044 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=1.50"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=6.15 cfs 0.997 af

Subcatchment9.4S: Subcat 9.4 Runoff Area=120,449 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.10 cfs 0.059 af

Subcatchment9.5S: Subcat 9.5 Runoff Area=549,211 sf 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=9.63 cfs 1.468 af

Subcatchment9.6S: To Forebay North Runoff Area=18,612 sf 45.38% Impervious Runoff Depth=4.07"
Tc=6.0 min CN=WQ Runoff=1.74 cfs 0.145 af

Subcatchment9.7S: To Inf Pond #1 Runoff Area=7,989 sf 0.00% Impervious Runoff Depth=0.73"
Tc=6.0 min CN=WQ Runoff=0.08 cfs 0.011 af

Subcatchment9.8S: To Forebay South Runoff Area=27,437 sf 34.98% Impervious Runoff Depth=3.93"
Flow Length=143' Tc=14.0 min CN=WQ Runoff=2.04 cfs 0.206 af

Subcatchment9.9S: To Inf Pond #2 Runoff Area=4,076 sf 0.00% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=61 Runoff=0.29 cfs 0.021 af

Reach #100: Analysis Point #100 Inflow=1.16 cfs 0.109 af
Outflow=1.16 cfs 0.109 af

Reach #200: Analysis Point #200 Inflow=7.90 cfs 1.174 af
Outflow=7.90 cfs 1.174 af

Reach #300: Analysis Point #300 Inflow=2.69 cfs 0.193 af
Outflow=2.69 cfs 0.193 af

Reach #400: Analysis Point #400 Inflow=16.03 cfs 1.811 af
Outflow=16.03 cfs 1.811 af

Reach #500: Analysis Point #500 Inflow=10.69 cfs 0.930 af
Outflow=10.69 cfs 0.930 af

Reach #600: Analysis Point #600 Inflow=2.98 cfs 0.250 af
Outflow=2.98 cfs 0.250 af

Reach #700: Analysis Point #700 Inflow=5.48 cfs 0.537 af
Outflow=5.48 cfs 0.537 af

Reach #800: Analysis Point #800 Inflow=14.68 cfs 1.801 af
Outflow=14.68 cfs 1.801 af

Reach #900: Analysis Point #900 Inflow=23.64 cfs 3.873 af
Outflow=23.64 cfs 3.873 af

Reach 1C: Culvert #1 Avg. Flow Depth=0.74' Max Vel=2.68 fps Inflow=7.71 cfs 1.135 af
24.0" Round Pipe w/ 9.0" inside fill x 2.00 n=0.069 L=19.0' S=0.0500 '/' Capacity=10.25 cfs Outflow=7.72 cfs 1.135 af

Reach 2C: Culvert #2 Avg. Flow Depth=0.67' Max Vel=1.90 fps Inflow=2.48 cfs 0.176 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=16.0' S=0.0250 '/' Capacity=4.88 cfs Outflow=2.48 cfs 0.176 af

Reach 3C: Culvert #3 Avg. Flow Depth=1.25' Max Vel=2.22 fps Inflow=15.55 cfs 1.730 af
36.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0167 '/' Capacity=27.30 cfs Outflow=15.54 cfs 1.730 af

Reach 4C: Culvert #4 Avg. Flow Depth=0.98' Max Vel=2.66 fps Inflow=9.99 cfs 0.858 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0389 '/' Capacity=12.17 cfs Outflow=9.99 cfs 0.858 af

Reach 5C: Culvert #5 Avg. Flow Depth=0.93' Max Vel=1.22 fps Inflow=2.17 cfs 0.178 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=18.0' S=0.0083 '/' Capacity=2.82 cfs Outflow=2.17 cfs 0.178 af

Reach 6C: Culvert #6 Avg. Flow Depth=0.71' Max Vel=1.93 fps Inflow=5.29 cfs 0.514 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0250 '/' Capacity=9.76 cfs Outflow=5.29 cfs 0.514 af

Reach 7C: Culvert #7 Avg. Flow Depth=1.07' Max Vel=1.85 fps Inflow=14.32 cfs 1.730 af
30.0" Round Pipe w/ 10.0" inside fill x 3.00 n=0.069 L=19.0' S=0.0158 '/' Capacity=17.48 cfs Outflow=14.32 cfs 1.730 af

Reach 8C: Culvert #8 Avg. Flow Depth=0.50' Max Vel=0.81 fps Inflow=0.77 cfs 0.195 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=17.0' S=0.0059 '/' Capacity=2.37 cfs Outflow=0.77 cfs 0.195 af

Reach GS1: Grass Swale Avg. Flow Depth=0.24' Max Vel=2.51 fps Inflow=0.50 cfs 0.039 af
n=0.035 L=219.0' S=0.0447 '/' Capacity=20.76 cfs Outflow=0.49 cfs 0.039 af

Reach GS10: Grass Swale Avg. Flow Depth=0.26' Max Vel=1.24 fps Inflow=0.26 cfs 0.044 af
n=0.035 L=213.0' S=0.0103 '/' Capacity=9.97 cfs Outflow=0.26 cfs 0.044 af

Reach GS2: Grass Swale Avg. Flow Depth=0.18' Max Vel=1.76 fps Inflow=0.22 cfs 0.017 af
n=0.035 L=62.0' S=0.0323 '/' Capacity=17.62 cfs Outflow=0.22 cfs 0.017 af

Reach GS3: Grass Swale Avg. Flow Depth=0.47' Max Vel=0.96 fps Inflow=0.54 cfs 0.042 af
n=0.035 L=168.0' S=0.0030 '/' Capacity=5.35 cfs Outflow=0.51 cfs 0.042 af

Reach GS4: Grass Swale Avg. Flow Depth=0.37' Max Vel=0.97 fps Inflow=0.37 cfs 0.029 af
n=0.035 L=125.0' S=0.0040 '/' Capacity=6.21 cfs Outflow=0.36 cfs 0.029 af

Reach GS5: Grass Swale Avg. Flow Depth=0.28' Max Vel=1.99 fps Inflow=0.49 cfs 0.038 af
n=0.035 L=199.0' S=0.0241 '/' Capacity=15.24 cfs Outflow=0.48 cfs 0.038 af

Reach GS6: Grass Swale Avg. Flow Depth=0.34' Max Vel=2.77 fps Inflow=0.92 cfs 0.072 af
n=0.035 L=193.0' S=0.0363 '/' Capacity=18.69 cfs Outflow=0.91 cfs 0.072 af

Reach GS7: Grass Swale Avg. Flow Depth=0.33' Max Vel=0.94 fps Inflow=0.30 cfs 0.023 af
n=0.035 L=114.0' S=0.0044 '/' Capacity=6.50 cfs Outflow=0.28 cfs 0.023 af

Reach GS8: Grass Swale Avg. Flow Depth=0.35' Max Vel=1.57 fps Inflow=0.52 cfs 0.041 af
n=0.035 L=87.0' S=0.0115 '/' Capacity=10.52 cfs Outflow=0.52 cfs 0.041 af

Reach GS9: Grass Swale Avg. Flow Depth=0.30' Max Vel=1.46 fps Inflow=0.40 cfs 0.031 af
n=0.035 L=128.0' S=0.0117 '/' Capacity=10.62 cfs Outflow=0.39 cfs 0.031 af

Pond 9C: Storage Culvert #9 Peak Elev=18.28' Storage=155 cf Inflow=6.15 cfs 0.997 af
30.0" Round Culvert w/ 6.0" inside fill n=0.012 L=43.0' S=0.0419 '/' Outflow=6.15 cfs 0.996 af

Pond BP1: Bioretention Pond North Peak Elev=21.51' Storage=1,850 cf Inflow=1.77 cfs 0.137 af
Discarded=0.25 cfs 0.137 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.137 af

Pond BP2: Bioretention Pond South Peak Elev=20.58' Storage=3,948 cf Inflow=2.18 cfs 0.206 af
Discarded=0.20 cfs 0.206 af Primary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.206 af

Pond FB1: Forebay North Peak Elev=22.00' Storage=1,004 cf Inflow=1.74 cfs 0.145 af
Outflow=1.69 cfs 0.126 af

Pond FB2: Forebay South Peak Elev=20.72' Storage=1,133 cf Inflow=2.04 cfs 0.206 af
Outflow=2.01 cfs 0.186 af

Pond IP1: Infiltration Pond #1 Peak Elev=20.84' Storage=3,368 cf Inflow=2.10 cfs 0.168 af
Discarded=0.03 cfs 0.119 af Primary=0.81 cfs 0.050 af Outflow=0.84 cfs 0.168 af

Total Runoff Area = 64.653 ac Runoff Volume = 11.180 af Average Runoff Depth = 2.08"
95.95% Pervious = 62.038 ac 4.05% Impervious = 2.615 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcat#1 Runoff Area=20,238 sf 37.63% Impervious Runoff Depth=3.56"
Flow Length=390' Tc=8.2 min CN=WQ Runoff=1.44 cfs 0.138 af

Subcatchment2.1S: Subcat#2.1 Runoff Area=326,721 sf 15.53% Impervious Runoff Depth=2.47"
Flow Length=1,094' Tc=25.8 min CN=WQ Runoff=10.59 cfs 1.544 af

Subcatchment2.2S: Subcat#2.2 Runoff Area=4,234 sf 6.78% Impervious Runoff Depth=6.08"
Tc=6.0 min CN=WQ Runoff=0.63 cfs 0.049 af

Subcatchment3.1S: Subcat#3.1 Runoff Area=25,804 sf 0.00% Impervious Runoff Depth=4.72"
Tc=6.0 min CN=WQ Runoff=3.28 cfs 0.233 af

Subcatchment3.2S: Subcat#3.2 Runoff Area=1,636 sf 0.00% Impervious Runoff Depth=6.70"
Tc=6.0 min CN=WQ Runoff=0.27 cfs 0.021 af

Subcatchment4.1S: Subcat#4.1 Runoff Area=316,864 sf 0.00% Impervious Runoff Depth=3.83"
Flow Length=876' Tc=20.3 min CN=WQ Runoff=21.13 cfs 2.324 af

Subcatchment4.2S: Subcat#4.2 Runoff Area=3,959 sf 0.00% Impervious Runoff Depth=6.84"
Tc=6.0 min CN=WQ Runoff=0.67 cfs 0.052 af

Subcatchment4.3S: Subcat#4.3 Runoff Area=2,703 sf 0.00% Impervious Runoff Depth=6.85"
Tc=6.0 min CN=WQ Runoff=0.46 cfs 0.035 af

Subcatchment4.4S: Subcat#4.4 Runoff Area=1,052 sf 0.00% Impervious Runoff Depth=6.17"
Tc=6.0 min CN=WQ Runoff=0.16 cfs 0.012 af

Subcatchment5.1S: Subcat#5.1 Runoff Area=123,988 sf 0.00% Impervious Runoff Depth=4.77"
Flow Length=493' Tc=11.7 min CN=WQ Runoff=13.19 cfs 1.131 af

Subcatchment5.2S: Subcat#5.2 Runoff Area=3,669 sf 0.00% Impervious Runoff Depth=6.68"
Tc=6.0 min CN=WQ Runoff=0.60 cfs 0.047 af

Subcatchment5.3S: Subcat#5.3 Runoff Area=3,398 sf 0.00% Impervious Runoff Depth=6.39"
Tc=6.0 min CN=WQ Runoff=0.53 cfs 0.042 af

Subcatchment6.1S: Subcat#6.1 Runoff Area=26,066 sf 0.00% Impervious Runoff Depth=4.72"
Flow Length=306' Tc=10.3 min CN=WQ Runoff=2.87 cfs 0.236 af

Subcatchment6.2S: Subcat#6.2 Runoff Area=6,843 sf 0.00% Impervious Runoff Depth=6.74"
Tc=6.0 min CN=WQ Runoff=1.13 cfs 0.088 af

Subcatchment7.1S: Subcat#7.1 Runoff Area=96,251 sf 0.00% Impervious Runoff Depth=3.74"
Flow Length=614' Tc=14.8 min CN=WQ Runoff=7.08 cfs 0.688 af

Subcatchment7.2S: Subcat#7.2 Runoff Area=2,164 sf 0.00% Impervious Runoff Depth=6.81"
Tc=6.0 min CN=WQ Runoff=0.36 cfs 0.028 af

Subcatchment8.1S: Subcat #8.1 Runoff Area=404,198 sf 1.38% Impervious Runoff Depth=3.01"
Flow Length=1,304' Tc=24.3 min CN=WQ Runoff=18.76 cfs 2.327 af

Subcatchment8.2S: Subcat #8.2 Runoff Area=3,781 sf 0.00% Impervious Runoff Depth=6.92"
Tc=6.0 min CN=WQ Runoff=0.64 cfs 0.050 af

Subcatchment8.3S: Subcat #8.3 Runoff Area=3,011 sf 0.00% Impervious Runoff Depth=6.64"
Tc=6.0 min CN=WQ Runoff=0.50 cfs 0.038 af

Subcatchment9.10S: Tennis Court Area Runoff Area=16,757 sf 62.24% Impervious Runoff Depth=6.48"
Tc=6.0 min CN=WQ Runoff=2.60 cfs 0.208 af

Subcatchment9.11S: East Runoff Area=161,413 sf 5.11% Impervious Runoff Depth=4.52"
Flow Length=450' Tc=15.9 min CN=WQ Runoff=14.22 cfs 1.396 af

Subcatchment9.1S: Subcat #9.1 Runoff Area=182,559 sf 0.00% Impervious Runoff Depth=0.92"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=1.20 cfs 0.322 af

Subcatchment9.2S: Subcat #9.2 Runoff Area=4,309 sf 0.00% Impervious Runoff Depth=6.60"
Flow Length=1,046' Slope=0.0080 '/' Tc=45.6 min CN=WQ Runoff=0.32 cfs 0.054 af

Subcatchment9.3S: Subcat #9.3 Runoff Area=346,900 sf 3.74% Impervious Runoff Depth=2.09"
Flow Length=1,193' Tc=39.6 min CN=WQ Runoff=8.21 cfs 1.389 af

Subcatchment9.4S: Subcat 9.4 Runoff Area=120,449 sf 0.00% Impervious Runoff Depth=0.55"
Flow Length=535' Tc=21.6 min CN=WQ Runoff=0.41 cfs 0.127 af

Subcatchment9.5S: Subcat 9.5 Runoff Area=549,211 sf 0.00% Impervious Runoff Depth=1.99"
Flow Length=1,046' Tc=36.0 min CN=WQ Runoff=13.13 cfs 2.088 af

Subcatchment9.6S: To Forebay North Runoff Area=18,612 sf 45.38% Impervious Runoff Depth=5.05"
Tc=6.0 min CN=WQ Runoff=2.16 cfs 0.180 af

Subcatchment9.7S: To Inf Pond #1 Runoff Area=7,989 sf 0.00% Impervious Runoff Depth=1.23"
Tc=6.0 min CN=WQ Runoff=0.18 cfs 0.019 af

Subcatchment9.8S: To Forebay South Runoff Area=27,437 sf 34.98% Impervious Runoff Depth=5.00"
Flow Length=143' Tc=14.0 min CN=WQ Runoff=2.61 cfs 0.262 af

Subcatchment9.9S: To Inf Pond #2 Runoff Area=4,076 sf 0.00% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=61 Runoff=0.40 cfs 0.029 af

Reach #100: Analysis Point #100 Inflow=1.44 cfs 0.138 af
Outflow=1.44 cfs 0.138 af

Reach #200: Analysis Point #200 Inflow=10.82 cfs 1.593 af
Outflow=10.82 cfs 1.593 af

Reach #300: Analysis Point #300 Inflow=3.54 cfs 0.254 af
Outflow=3.54 cfs 0.254 af

Reach #400: Analysis Point #400 Inflow=21.72 cfs 2.424 af
Outflow=21.72 cfs 2.424 af

Reach #500: Analysis Point #500 Inflow=14.06 cfs 1.220 af
Outflow=14.06 cfs 1.220 af

Reach #600: Analysis Point #600 Inflow=3.87 cfs 0.324 af
Outflow=3.87 cfs 0.324 af

Reach #700: Analysis Point #700 Inflow=7.31 cfs 0.716 af
Outflow=7.31 cfs 0.716 af

Reach #800: Analysis Point #800 Inflow=19.16 cfs 2.415 af
Outflow=19.16 cfs 2.415 af

Reach #900: Analysis Point #900 Inflow=31.56 cfs 5.478 af
Outflow=31.56 cfs 5.478 af

Reach 1C: Culvert #1 Avg. Flow Depth=1.04' Max Vel=2.80 fps Inflow=10.59 cfs 1.544 af
24.0" Round Pipe w/ 9.0" inside fill x 2.00 n=0.069 L=19.0' S=0.0500 '/' Capacity=10.25 cfs Outflow=10.58 cfs 1.544 af

Reach 2C: Culvert #2 Avg. Flow Depth=0.83' Max Vel=2.04 fps Inflow=3.28 cfs 0.233 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=16.0' S=0.0250 '/' Capacity=4.88 cfs Outflow=3.28 cfs 0.233 af

Reach 3C: Culvert #3 Avg. Flow Depth=1.57' Max Vel=2.38 fps Inflow=21.13 cfs 2.324 af
36.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0167 '/' Capacity=27.30 cfs Outflow=21.12 cfs 2.324 af

Reach 4C: Culvert #4 Avg. Flow Depth=1.50' Max Vel=2.73 fps Inflow=13.19 cfs 1.131 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0389 '/' Capacity=12.17 cfs Outflow=13.11 cfs 1.131 af

Reach 5C: Culvert #5 Avg. Flow Depth=1.23' Max Vel=1.26 fps Inflow=2.87 cfs 0.236 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=18.0' S=0.0083 '/' Capacity=2.82 cfs Outflow=2.87 cfs 0.236 af

Reach 6C: Culvert #6 Avg. Flow Depth=0.88' Max Vel=2.08 fps Inflow=7.08 cfs 0.688 af
24.0" Round Pipe w/ 6.0" inside fill x 2.00 n=0.069 L=18.0' S=0.0250 '/' Capacity=9.76 cfs Outflow=7.08 cfs 0.688 af

Reach 7C: Culvert #7 Avg. Flow Depth=1.53' Max Vel=1.90 fps Inflow=18.76 cfs 2.327 af
30.0" Round Pipe w/ 10.0" inside fill x 3.00 n=0.069 L=19.0' S=0.0158 '/' Capacity=17.48 cfs Outflow=18.73 cfs 2.327 af

Reach 8C: Culvert #8 Avg. Flow Depth=0.67' Max Vel=0.92 fps Inflow=1.20 cfs 0.322 af
24.0" Round Pipe w/ 6.0" inside fill n=0.069 L=17.0' S=0.0059 '/' Capacity=2.37 cfs Outflow=1.20 cfs 0.322 af

Reach GS1: Grass Swale Avg. Flow Depth=0.27' Max Vel=2.68 fps Inflow=0.63 cfs 0.049 af
n=0.035 L=219.0' S=0.0447 '/' Capacity=20.76 cfs Outflow=0.62 cfs 0.049 af

Reach GS10: Grass Swale Avg. Flow Depth=0.28' Max Vel=1.32 fps Inflow=0.32 cfs 0.054 af
n=0.035 L=213.0' S=0.0103 '/' Capacity=9.97 cfs Outflow=0.32 cfs 0.054 af

Reach GS2: Grass Swale Avg. Flow Depth=0.20' Max Vel=1.87 fps Inflow=0.27 cfs 0.021 af
n=0.035 L=62.0' S=0.0323 '/' Capacity=17.62 cfs Outflow=0.27 cfs 0.021 af

Reach GS3: Grass Swale Avg. Flow Depth=0.52' Max Vel=1.01 fps Inflow=0.67 cfs 0.052 af
n=0.035 L=168.0' S=0.0030 '/' Capacity=5.35 cfs Outflow=0.62 cfs 0.052 af

Reach GS4: Grass Swale Avg. Flow Depth=0.41' Max Vel=1.02 fps Inflow=0.46 cfs 0.035 af
n=0.035 L=125.0' S=0.0040 '/' Capacity=6.21 cfs Outflow=0.44 cfs 0.035 af

Reach GS5: Grass Swale Avg. Flow Depth=0.31' Max Vel=2.12 fps Inflow=0.60 cfs 0.047 af
n=0.035 L=199.0' S=0.0241 '/' Capacity=15.24 cfs Outflow=0.59 cfs 0.047 af

Reach GS6: Grass Swale Avg. Flow Depth=0.38' Max Vel=2.94 fps Inflow=1.13 cfs 0.088 af
n=0.035 L=193.0' S=0.0363 '/' Capacity=18.69 cfs Outflow=1.12 cfs 0.088 af

Reach GS7: Grass Swale Avg. Flow Depth=0.36' Max Vel=0.99 fps Inflow=0.36 cfs 0.028 af
n=0.035 L=114.0' S=0.0044 '/' Capacity=6.50 cfs Outflow=0.35 cfs 0.028 af

Reach GS8: Grass Swale Avg. Flow Depth=0.38' Max Vel=1.66 fps Inflow=0.64 cfs 0.050 af
n=0.035 L=87.0' S=0.0115 '/' Capacity=10.52 cfs Outflow=0.64 cfs 0.050 af

Reach GS9: Grass Swale Avg. Flow Depth=0.33' Max Vel=1.55 fps Inflow=0.50 cfs 0.038 af
n=0.035 L=128.0' S=0.0117 '/' Capacity=10.62 cfs Outflow=0.49 cfs 0.038 af

Pond 9C: Storage Culvert #9 Peak Elev=18.46' Storage=199 cf Inflow=8.21 cfs 1.389 af
30.0" Round Culvert w/ 6.0" inside fill n=0.012 L=43.0' S=0.0419 '/' Outflow=8.21 cfs 1.388 af

Pond BP1: Bioretention Pond North Peak Elev=21.82' Storage=2,619 cf Inflow=2.28 cfs 0.180 af
Discarded=0.27 cfs 0.180 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.180 af

Pond BP2: Bioretention Pond South Peak Elev=20.85' Storage=4,798 cf Inflow=2.82 cfs 0.270 af
Discarded=0.22 cfs 0.254 af Primary=0.20 cfs 0.016 af Outflow=0.42 cfs 0.270 af

Pond FB1: Forebay North Peak Elev=22.03' Storage=1,033 cf Inflow=2.16 cfs 0.180 af
Outflow=2.10 cfs 0.161 af

Pond FB2: Forebay South Peak Elev=20.85' Storage=1,276 cf Inflow=2.61 cfs 0.262 af
Outflow=2.58 cfs 0.242 af

Pond IP1: Infiltration Pond #1 Peak Elev=20.88' Storage=3,454 cf Inflow=2.60 cfs 0.208 af
Discarded=0.03 cfs 0.121 af Primary=2.00 cfs 0.087 af Outflow=2.03 cfs 0.208 af

Total Runoff Area = 64.653 ac Runoff Volume = 15.157 af Average Runoff Depth = 2.81"
95.95% Pervious = 62.038 ac 4.05% Impervious = 2.615 ac

Appendix III

Charts, Graphs, and Calculations

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.176 degrees North
Longitude	70.839 degrees West
Elevation	20 feet
Date/Time	Tue Apr 09 2024 15:33:29 GMT-0400 (Eastern Daylight Time)

Coastal and Great Bay Region (Add 15%)

2-Year = 3.65"
10-Year = 5.50"
25-Year = 6.95"
50-Year = 8.30"

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.55	2.00	2.61	2.88	**1yr**	2.31	2.77	3.17	3.90	4.47
2yr	0.32	0.49	0.61	0.81	1.02	1.29	**2yr**	0.88	1.17	1.50	1.92	2.46	3.17	3.52	**2yr**	2.80	3.39	3.89	4.62	5.26
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.45	1.86	2.39	3.09	4.00	4.52	**5yr**	3.54	4.34	4.97	5.84	6.60
10yr	0.40	0.64	0.80	1.10	1.42	1.86	**10yr**	1.23	1.70	2.19	2.84	3.68	4.78	5.45	**10yr**	4.23	5.24	5.99	6.97	7.84
25yr	0.47	0.74	0.94	1.30	1.73	2.28	**25yr**	1.49	2.10	2.71	3.55	4.64	6.04	7.00	**25yr**	5.35	6.73	7.67	8.82	9.85
50yr	0.52	0.83	1.07	1.49	2.01	2.68	**50yr**	1.74	2.47	3.20	4.21	5.52	7.22	8.45	**50yr**	6.39	8.13	9.25	10.55	11.71
100yr	0.58	0.95	1.22	1.72	2.34	3.15	**100yr**	2.02	2.91	3.77	4.99	6.57	8.63	10.21	**100yr**	7.64	9.82	11.16	12.61	13.94
200yr	0.65	1.06	1.37	1.97	2.72	3.70	**200yr**	2.35	3.42	4.46	5.94	7.84	10.32	12.34	**200yr**	9.13	11.87	13.47	15.09	16.59
500yr	0.76	1.26	1.64	2.38	3.33	4.58	**500yr**	2.88	4.25	5.55	7.44	9.89	13.08	15.87	**500yr**	11.58	15.26	17.29	19.13	20.89

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day
1yr	0.24	0.37	0.45	0.60	0.74	0.89	**1yr**	0.64	0.87	0.92	1.28	1.61	2.21	2.44	**1yr**	1.96	2.35	2.82	3.31	3.97
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.35	3.04	3.41	**2yr**	2.69	3.28	3.76	4.49	5.03
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.14	2.77	3.73	4.13	**5yr**	3.30	3.97	4.64	5.43	6.13
10yr	0.38	0.59	0.73	1.02	1.31	1.60	**10yr**	1.13	1.56	1.81	2.43	3.11	4.29	4.79	**10yr**	3.79	4.60	5.33	6.26	7.03
25yr	0.44	0.66	0.82	1.18	1.55	1.90	**25yr**	1.34	1.86	2.11	2.82	3.62	4.79	5.79	**25yr**	4.24	5.56	6.49	7.56	8.44
50yr	0.48	0.73	0.91	1.30	1.75	2.18	**50yr**	1.51	2.13	2.35	3.17	4.05	5.43	6.66	**50yr**	4.81	6.41	7.52	8.72	9.69
100yr	0.53	0.80	1.01	1.46	2.00	2.49	**100yr**	1.72	2.44	2.63	3.54	4.51	6.14	7.67	**100yr**	5.44	7.38	8.72	10.06	11.11
200yr	0.59	0.89	1.12	1.63	2.27	2.85	**200yr**	1.96	2.78	2.93	3.95	5.02	6.93	8.83	**200yr**	6.13	8.49	10.09	11.62	12.76
500yr	0.68	1.02	1.31	1.90	2.71	3.42	**500yr**	2.33	3.34	3.40	4.56	5.79	8.12	10.62	**500yr**	7.18	10.21	12.23	14.08	15.29

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day
1yr	0.28	0.43	0.53	0.71	0.88	1.08	**1yr**	0.76	1.06	1.24	1.74	2.22	2.93	3.11	**1yr**	2.59	2.99	3.49	4.29	4.89
2yr	0.33	0.51	0.63	0.85	1.05	1.25	**2yr**	0.91	1.22	1.48	1.96	2.51	3.34	3.65	**2yr**	2.96	3.51	4.03	4.78	5.52
5yr	0.39	0.61	0.75	1.03	1.32	1.59	**5yr**	1.14	1.56	1.86	2.51	3.22	4.27	4.90	**5yr**	3.78	4.71	5.31	6.28	7.05
10yr	0.46	0.71	0.87	1.22	1.58	1.93	**10yr**	1.36	1.89	2.25	3.07	3.89	5.25	6.13	**10yr**	4.64	5.89	6.74	7.72	8.61
25yr	0.56	0.85	1.06	1.51	1.99	2.50	**25yr**	1.72	2.44	2.90	4.00	5.02	7.30	8.25	**25yr**	6.46	7.93	9.06	10.17	11.22
50yr	0.65	0.99	1.23	1.77	2.38	3.03	**50yr**	2.05	2.96	3.52	4.88	6.12	9.06	10.35	**50yr**	8.01	9.95	11.34	12.52	13.73
100yr	0.76	1.14	1.43	2.07	2.84	3.66	**100yr**	2.45	3.58	4.28	5.98	7.46	11.23	12.99	**100yr**	9.94	12.49	14.20	15.43	16.81
200yr	0.88	1.33	1.68	2.43	3.39	4.45	**200yr**	2.93	4.35	5.21	7.34	9.09	13.96	16.31	**200yr**	12.36	15.68	17.80	19.02	20.60
500yr	1.08	1.61	2.07	3.01	4.28	5.73	**500yr**	3.69	5.60	6.74	9.62	11.83	18.62	22.06	**500yr**	16.48	21.21	24.02	25.09	26.96

Powered by ACIS Northeast Regional Climate Center

John P. Hayes III CSS, CWS,
7 Limestone Way
North Hampton, NH 03862
603-205-4396
johnphayes@comcast.net

2/7/24 **Job # 24-003**

Heath J. Todd
Apex Construction Inc.
361 Route 108 Unit 1
Somersworth NH 03878

Site Specific Soil Survey 2/6/24
Map M Lot 104-0-0
Back Road Dover, NH

Dear Heath,

This letter report presents the findings of a Site Specific Soil Survey conducted on the referenced property by John P. Hayes III on February 6, 2024. The soil survey was conducted in accordance with the New Hampshire Supplement of the Site-Specific Soil Mapping Standard For New Hampshire and Vermont, Special Publication # 3, Version 7.0 July 2021, published by the Society of Soil Scientist of Northern New England. Soil series information was also taken from the Soil Survey of Strafford County New Hampshire issued March 1973.

The property that is subject of the soil survey is located on the east side of Back Road, north of Issasc Lucas Circle,and northwest of the Piscataqua River, in Dover, NH. The parcel is approximately 20.7 acres in size. Only a portion of this parcel, where proposed house construction will take place,was mapped. The mapped area also includes a 20 foot wide access road that runs from Back Road out th the mapped area of the parcel. The plans used for the access road soil maps are 20 scale plans, where 1 inch equals 20 feet, with one foot contours. The plan used for the house construction area soil map ia a 30 scale plan, where 1 inch equals 30 feet, with one foot contours.

The purpose of the soil survey is to provide the client with soils information for urban and suburban or rural land planning. Soil characteristics on the property were evaluated through observation of numerous test pits, and hand auger probes conducted throughout the property. Slope phases were determined with the use of the topography provided on the plan. The Site-specific Soil Map Units identified are taken from the New Hampshire State-Wide Numerical Soils Legend, Issue #10 January 2011, and are briefly described below. Official Series Descriptions (OSD) for each of these soil series are enclosed with this report. The soil map units comply with the Range In Characteristics described in the OSD. Any limiting inclusions on the site, do not exceed 15 percent of any of the soil map units. Dissimilar inclusions, if any, will be noted in the report. Limits of the Site Specific mapping units are highlighted on the plan. The Hydrological Soil Groups for each of the soil series was determined using SSSNNE Publication No. 5 Ksat Values for New Hampshire Soils September 2009.

Portions of the soil map with the map unit denominator of P and VP contain poorly drained soils, and very poorly drained soils respectively. Portions of the soil map with the map unit 500, contain disturbed soils that have been excavated and/or regraded, that are well drained, and are loamy in texture. A Disturbed Soil Mapping Unit Supplement for New Hampshire DES AoT Site Specific Soil Maps is also included. This supplement explains the additional information given about each disturbed soil map units that are present on the site.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
26	**Windsor**	**A C**	**A**	The Windsor series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. These soils are located in the northern portion of the property. The soil texture is loamy sand over sand. These soils are deep to bedrock. Saturated hydraulic conductivity is high or very high. Some inclusions of moderately well drained Deerfield, and well drained Suffield soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 38 to 60 inches.
32	**Boxford (moderately well drained)**	**A B**	**C**	The Boxford series consists of very deep, moderately well drained soils that are formed in clayey marine sediments. These soils are located along the access road to the property. The soil texture is silt loam over silty clay loam.These soils are deep to moderately deep to bedrock. Saturated Hydraulic Conductivity is moderately high in the surface horizon and the upper part of the subsoil, and low to moderately low in the lower part of the subsoil and in the substratum. Some inclusions of the somewhat poorly drained component of the Boxford soils, and the somewhat poorly drained component of the Deerfield soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 15 to 30 inches.
33 P	**Scitico**	**A B**	**C**	The Scitico series consists of very deep, poorly drained soils formed in silty and clayey sediments. These soils are located in the wetland areas, along the access road to the property. The soil texture is silt loam over silty clay loam. These soils are deep to bedrock. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. Some inclusions of the somewhat poorly drained component may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 0 to 10 inches.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
34 P	**Wareham**	**B C D**	**C**	The Wareham series consists of very deep, poorly and drained sandy soils formed in outwash on plains, deltas, and terraces. These soils are located in the wetland along the western side of the proposed construction area of the property. The soil texture is loamy coarse sand over coarse sand. These soils are deep to bedrock. Permeability is rapid throughout these soils. Some inclusions of somewhat poorly drained Deerfield Variant and very poorly drained Scarboro soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 0 to 10 inches.
69	**Sutton (very stony)**	**A B C**	**B**	The Sutton series consists of very deep, moderately well drained loamy soils formed in melt-out till. These soils are located in the upland areas along the access road to the property. The soil texture is fine sandy loam over gravelly fine sandy loam that is firm in texture. These soils are moderately deep to bedrock. Saturated hydraulic conductivity is moderately high or high throughout the soil profile. Some inclusions of the well drained Chatfield, and moderately well drained Boxford soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 15 to 36 inches.
87 Rk	**Chatfield (well drained) (very stony)**	**B**	**B**	The Chatfield series consists of well drained soils formed in loamy melt-out till. These soils are located at the western end of the access road to the property. The soil texture is fine sandy loam over a gravelly loamy sand. They are moderately deep to bedrock. The saturated hydraulic conductivity is moderately high to high. Some inclusions of the moderately well drained Sutton or Boxford soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from none to 38 inches.
115 VP	**Scarboro**	**B C**	**D**	The Scarboro series consists of very deep, very poorly drained soils in sandy glaciofluvial deposits on outwash plains. These soils are located in the wetland area in the southeastern portion of the property. The soil texture consists of 4 to 16 inches of organic material over sand. These soils are deep to bedrock.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
115 VP	Scarboro	B C	D	Saturated hydraulic conductivity is high or very high. Some inclusions of poorly drained Wareham and very poorly drained Mabid soils may be present, but are less than 10 percent of the mapped area. These soils are semi permanantly to permanately saturated.
134 VP	Mabid	B C D E	D	The Maybid series consists of very deep, very poorly drained soils formed in lacustrine or marine sediments. These soils are located in the tidal wetland areas to the south and the east of the proposed construction area of the property. The soil texture is silt loam over silty clay. These soils are deep to bedrock. Saturated hydraulic conductivity is moderately high or high in the surface layer and very low to moderately high in the subsoil and substratum. Some inclusions very poorly drained Scarboro, or poorly drained Scitico soils may be present, but are less than 10 percent of the mapped area. These soils are semi permanantly to permanately saturated.
313	Deerfield	A B C D E	B	The Deerfield series consists of very deep, moderately well drained soils formed in glaciofluvial deposits. These soils are at the eastern end of the access road, and the western and central portion the proposed construction area of the property. The soil texture is loamy sand over sand. These soils are deep to bedrock. Saturated hydraulic conductivity is high or very high. Some inclusions of excessively drained Windsor, well drained Suffield, and the somewhat poorly drained Deerfield Variant, soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 15 to 38 inches.
327	Windsor Variant (clay subsoil)	B	C	The Windsor Variant (clay subsoil) consists of very deep, moderately well drained soils that have sandy soils that are underlain by silt and clay deposits. These soils are located in the northern central portion the proposed construction area of the property. The soil texture is loamy sand over silt and clay loam. These soils are deep to bedrock. Pearmeability of this soil is moderately slow. Some inclusions of excessively drained Windsor, well drained Suffield, and moderately well drained

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
327	**Windsor Variant (clay subsoil)**	**B**	**C**	Deerfield soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 24 to 40 inches.
500 (dbadb)	**Udorthents (loamy) (well drained)**	**A B**	**B**	Udorthents are disturbed soils that have been excavated and/or regraded, and are loamy in texture. These soils are located on eastern end of the access road to the property. These disturbed soils appear to be most likely derived from the surrounding Charlton and Sutton soil series with some crushed stone on top.The drainage class is well drained. These soils are deep to bedrock. Saturated hydraulic conductivity is moderately high or high throughout the soil profile. Estimated seasonal high water tables in these soils range from 38 to 50 inches.
536	**Suffield**	**A B C D E**	**C**	The Suffield series consists of very deep, well drained soils formed in lacustrine or marine sediments. These soils are at the southern and eastern portion of the proposed construction area of the property. The soil texture is silt loam. These soils are deep to bedrock. Permeability is moderate in the solum and slow or very slow in the substratum. Some inclusions of excessively drained Windsor, moderately well drained Deerfield and Boxford soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 38 to 50 inches.
538 P	**Squamscott**	**A**	**C**	The Squamscott series consists of very deep, poorly drained soils that formed in sandy materials overlying loamy sediments on marine or lacustrine plains or terraces. These soils are located in the small wetland area that is in the southeastern portion of the proposed construction area of the property. The soil texture is loamy sand over silt loam. These soils are deep to bedrock. Permeability is rapid in the upper part of the soil and moderately slow in the lower part. Some inclusions of somewhat poorly drained componant of the Boxford soil series may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 0 to 10 inches.

MAP UNIT #	SOIL TAXANOMIC NAME	SLOPES	HYDROLOGIC SOIL GROUP	DESCRIPTION
915	**Deerfield Variant (somewhat poorly drained)**	**B**	**C**	The Deerfield Variant series consists of very deep, somewhat poorly drained soils formed in glaciofluvial deposits. These soils are located at the eastern end of the access road to the property. adjacent to the wetlands. The soil texture is loamy sand over stratified very fine sand and silt. These soils are deep to bedrock. Saturated hydraulic conductivity is high to very high. Some inclusions of moderately well drained Deerfield, and Boxfod soils, and poorly drained Wareham soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 11 to 15 inches.
953	**Boxford (somewhat poorly drained)**	**A B**	**C**	The Boxford series consists of very deep, somewhat poorly drained soils formed in clayey marine sediments. These soils are located along the access road to the property. adjacent to the wetlands. The soil texture is silt loam over silty clay loam. These soils are deep to moderately deep to bedrock. Saturated Hydraulic Conductivity is moderately high in the surface horizon and the upper part of the subsoil, and low to moderately low in the lower part of the subsoil and in the substratum. Some inclusions of moderately well drained component of the Boxford soils, and poorly drained Scitico soils may be present, but are less than 10 percent of the mapped area. Estimated seasonal high water tables in these soils range from 10 to 15 inches.

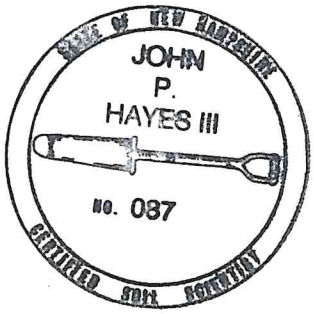
Slope Phases

Alpha Slope Symbol	Range
A	0 – 3%
B	3 – 8%
C	8 – 15%
D	15 – 25%
E	25 – 50%
F	> 50%

I trust that this Soil Survey and report meet your current planning needs. Please do not hesitate to contact me if you have any questions.

Sincerely:

John P. Hayes III



John P. Hayes III CSS, CWS

INFILTRATION FEASIBILITY REPORT

Heath Todd
Single-Family Residential Development
Back Road, Dover, New Hampshire

The project proposes two Bioretention Ponds and an Infiltration Pond to meet the Groundwater Recharge Volume requirements of the Alteration of Terrain permit as well as provide stormwater treatment and balance pre- and post-development peak rates of stormwater runoff.

1.0 Location of Practice

Bioretention Pond #1 – With a forebay, located to the southwest of the proposed stand-alone garage by where the driveway transitions from gravel to pavement.

Bioretention Pond #2 – With a forebay, located to the northwest of the proposed house and to the west of the driveway's turn-around area.

Infiltration Pond #1 – Located to the south of the proposed tennis court and to the west of the proposed pier shed.

2.0 Existing topography at the location of the practice

Bioretention Pond #1 – Existing topography within the area of the practice is flat with a wooded cover.

Bioretention Pond #2 – Existing topography within the area of the practice is flat with a wooded cover.

Infiltration Pond #1 – Existing topography within the area of the practice is relatively flat with a wooded cover.

3.0 Test Pit/Boring locations

Bioretention Pond #1 – The surface area of the pond is 2,688 sf and TP-13 and IT-1 were performed in the location of the proposed practice.

Bioretention Pond #2 – The surface area of the pond is 2,629 sf and IT-3 (test pit and infiltration test) was performed in the center of the proposed practice.

Infiltration Pond #1 – The surface area of the pond is 1,362 sf and TP-15 and IT-2 were performed in the location of the proposed practice.

4.0 Seasonal high-water table (SHWT) and bedrock elevations

Bioretention Pond #1 –

Bottom of Filter Course = 20.55'

TP-13: Existing Surface Elevation = 23.05'
SHWT = 19.55'
Bedrock = Not encountered
Deepest Elevation = 17.88'

Bioretention Pond #2 –

Bottom of Filter Course = 18.85'

IT3: Existing Surface Elevation = 20.77'
SHWT = 17.85'
Bedrock = Not encountered
Deepest Elevation = 15.44'

Infiltration Pond #1 –

Bottom of Pond = 19.00'

TP-15: Existing Surface Elevation = 19.50'
SHWT = 17.33'
Bedrock = Not encountered
Deepest Elevation = 14.08'

5.0 Profile descriptions

The following profiles were logged by John P. Hayes III, CSS #087:

TP-13:

Test Pit 13

Depth (inches)	Color	Textural Classification	Soil Structure	Soil Consistance
0-8	10YR 3/2 Dark Grayish Brown	Loamy Sand	Granular	Friable
8-22	10YR 5/6 Yellowish Brown	Loamy Sand	Granular	Friable
22-36	!0 YR 6/4 Light Yellowish Brown	Loamy Sand	Granular	Friable
36-42	10YR 6/3 Pale Brown	Sand	Single Grain	Loose
42-62	5Y 6/1 Gray	Very Fine Sand with Redoximorphic features present	Massive	Friable

ESHWT: 42 in. Restrictive Layer : None Observed H2O: None Refusal: None

TP-15:

Test Pit 15

Depth (inches)	Color	Textural Classification	Soil Structure	Soil Consistance
0-10	10YR 3/2 Dark Grayish Brown	Loamy Sand	Granular	Friable
10-18	7.5YR 5/6 Strong Brown	Loamy Sand	Granular	Friable
18-26	10YR 6/4 Light Yellowish Brown	Loamy Sand	Granular	Friable
26-38	5YR 4/6 Yellowish Red	Sand with Redoximorphic features present	Single Grain	Loose
38-64	2.5Y 6/2 Light Brownish Gray	Gravelly Sand with Redoximorphic features present	Single Grain	Loose

ESHWT: 26 in. Restrictive Layer : None Observed H2O: 50 in. Refusal: None

The following profile was logged by James Gove of Gove Environment Services, Inc, CSS #004:

IT3:

Test Pit No.	**IT 3**	Soils Series: Deerfield
ESHWT::	35”	Landscape: Plain
Termination @	65”	Slope: 3%
Refusal:	No	Parent Material: outwash
Obs. Water:	None	(clay>40”)
		Hydrologic Soil Group: B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0-6”	10YR3/2	loamy sand	granular-friable-none
B 6-35”	10YR5/4	sand	single grain-loose-none
C 35-55”	2.5Y5/3	sand	single grain-loose- 10% R 5YR5/6
C2 55-65”	2.5Y5/2	silty clay loam	massive-firm- 20% R 5YR5/6

6.0 Soil Plan in the area of the proposed practices

Grading/Soil Plans appears as part of the Site Plans.

7.0 Summary of data used to determine infiltration rate

The following infiltration rates were determined using the field measurement method with a compact constant head permeameter (Amoozemeter) by Gove Environmental Services. Three Ksat measurements were performed at each location to obtain an average. Amoozemeter field data sheets for all tests appear at the end of this report.

Bioretention Pond #1 –

Average Ksat = 8.004 in/hr
Design Ksat = 4.002 in/hr

Bioretention Pond #2 –

Average Ksat = 5.675 in/hr
Design Ksat = 2.838 in/hr

Infiltration Pond #1 –

Average Ksat = 1.118 in/hr
Design Ksat = 0.559 in/hr

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~10%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6 in

Horizon: B Horizon

Final: 6 in

Soil Series: No soil map provided

Hole Depth: 18in

Test Location: IT 1-1

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
0.30	1.7	105	0.008333	21420.85683	15	0.001056	22.6204	8.9057
1.00	1.8	105	0.008333	22680.90724	15	0.001056	23.9510	9.4295
1.30	1.7	105	0.008333	21420.85683	15	0.001056	22.6204	8.9057
2.00	1.7	105	0.008333	21420.85683	15	0.001056	22.6204	8.9057
2.30	1.8	105	0.008333	22680.90724	15	0.001056	23.9510	9.4295
3.00	1.6	105	0.008333	20160.80643	15	0.001056	21.2898	8.3818
						Mean Ksat	22.8422	8.9930
						Std Deviation	1.0016	0.3944

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~10%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6 in

Horizon: B Horizon

Final: 6 in

Soil Series: No soil map provided

Hole Depth: 18in

Test Location: IT 1-2

Outflow Chamber(s): Small (1on)___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

IT 1-2 30sec

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
0.30	1.7	105	0.008333	21420.85683	15	0.001056	22.6204	8.9057
1.00	1.8	105	0.008333	22680.90724	15	0.001056	23.9510	9.4295
1.30	1.6	105	0.008333	20160.80643	15	0.001056	21.2898	8.3818
2.00	1.6	105	0.008333	20160.80643	15	0.001056	21.2898	8.3818
2.30	1.7	105	0.008333	21420.85683	15	0.001056	22.6204	8.9057
3.00	1.8	105	0.008333	22680.90724	15	0.001056	23.9510	9.4295
						Mean Ksat	22.6204	8.9057
						Std Deviation	1.1901	0.4686

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~10%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6 in

Horizon: B Horizon

Final: 6 in

Soil Series: No soil map provided

Hole Depth: 17in

Test Location: IT 1-3

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

IT1-3
30sec

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
0.30	1.2	105	0.008333	15120.60482	15	0.001056	15.9674	6.2864
1.00	1.2	105	0.008333	15120.60482	15	0.001056	15.9674	6.2864
1.30	1.3	105	0.008333	16380.65523	15	0.001056	17.2980	6.8102
2.00	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
2.30	1.3	105	0.008333	16380.65523	15	0.001056	17.2980	6.8102
3.00	1.1	105	0.008333	13860.55442	15	0.001056	14.6367	5.7625
						Mean Ksat	15.5238	6.1117
						Std Deviation	2.0033	0.7887

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~10%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 7 in

Horizon: B Horizon

Final: 7 in

Soil Series: No soil map provided

Hole Depth: 11in

Test Location: IT 2-1

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

IT2-1 1 Min

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
1.00	0.3	105	0.0167	1886.227545	18	0.000808	1.5241	0.6000
2.00	0.4	105	0.0167	2514.97006	18	0.000808	2.0321	0.8000
3.00	0.4	105	0.0167	2514.97006	18	0.000808	2.0321	0.8000
4.00	0.3	105	0.0167	1886.227545	18	0.000808	1.5241	0.6000
5.00	0.4	105	0.0167	2514.97006	18	0.000808	2.0321	0.8000
6.00	0.3	105	0.0167	1886.227545	18	0.000808	1.5241	0.6000
						Mean Ksat	1.7781	0.7000
						Std Deviation	0.2783	0.1095

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~20%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6.5 in

Horizon: B Horizon

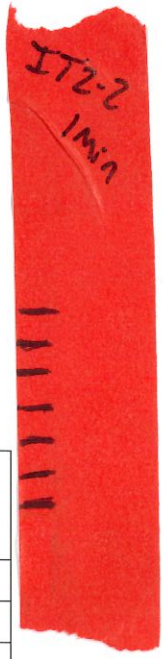
Final: 6.5 in

Soil Series: No soil map provided

Hole Depth: 11in

Test Location: IT 2-2

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)



Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
1.00	0.4	105	0.0167	2514.97006	16.5	0.000919	2.3113	0.9099
2.00	0.3	105	0.0167	1886.227545	16.5	0.000919	1.7334	0.6825
3.00	0.4	105	0.0167	2514.97006	16.5	0.000919	2.3113	0.9099
4.00	0.4	105	0.0167	2514.97006	16.5	0.000919	2.3113	0.9099
5.00	0.4	105	0.0167	2514.97006	16.5	0.000919	2.3113	0.9099
6.00	0.3	105	0.0167	1886.227545	16.5	0.000919	1.7334	0.6825
						Mean Ksat	2.1187	0.8341
						Std Deviation	0.2984	0.1175

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~20%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6.5 in

Horizon: B Horizon

Final: 6.5 in

Soil Series: No soil map provided

Hole Depth: 11in

Test Location: IT 2-3

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
1.00	0.8	105	0.0167	5029.94012	16.5	0.000919	4.6225	1.8199
2.00	0.7	105	0.0167	4401.197605	16.5	0.000919	4.0447	1.5924
3.00	0.9	105	0.0167	5658.682635	16.5	0.000919	5.2003	2.0474
4.00	0.8	105	0.0167	5029.94012	16.5	0.000919	4.6225	1.8199
5.00	0.8	105	0.0167	5029.94012	16.5	0.000919	4.6225	1.8199
6.00	0.8	105	0.0167	5029.94012	16.5	0.000919	4.6225	1.8199
						Mean Ksat	4.6225	1.8199
						Std Deviation	0.3654	0.1439

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~20%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6 in

Horizon: B Horizon

Final: 6 in

Soil Series: No soil map provided

Hole Depth: 21 in

Test Location: IT 3-1

Outflow Chamber(s): Small (1on)___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
0.30	1	105	0.008333	12600.50402	15	0.001056	13.3061	5.2386
1.00	1.2	105	0.008333	15120.60482	15	0.001056	15.9674	6.2864
1.30	1.1	105	0.008333	13860.55442	15	0.001056	14.6367	5.7625
2.00	1	105	0.008333	12600.50402	15	0.001056	13.3061	5.2386
2.30	1.1	105	0.008333	13860.55442	15	0.001056	14.6367	5.7625
3.00	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
						Mean Ksat	13.9714	5.5006
						Std Deviation	1.3956	0.5494

IT 3-1
30 sec

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~20%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6 in

Horizon: B Horizon

Final: 6 in

Soil Series: No soil map provided

Hole Depth: 20 in

Test Location: IT 3-2

Outflow Chamber(s): Small (1on)___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

IT 3-2
30 sec

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
0.30	0.8	105	0.008333	10080.40322	15	0.001056	10.6449	4.1909
1.00	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
1.30	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
2.00	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
2.30	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
3.00	0.9	105	0.008333	11340.45362	15	0.001056	11.9755	4.7148
						Mean Ksat	11.7538	4.6275
						Std Deviation	0.5432	0.2139

GOVE ENVIRONMENTAL SERVICES, INC.

Amoozemeter Data Sheet

Site: Back Road, Dover

Air Temp: 70°

GES Project #: 2024092

Water Source: Tap

Date: 10/3/2024

Soil Moisture Content %: ~20%

Water Depth in Hole

Preformed By: Brenden Walden & Aspynn Kutz

Initial: 6 in

Horizon: B Horizon

Final: 6 in

Soil Series: No soil map provided

Hole Depth: 20 in

Test Location: IT 3-3

Outflow Chamber(s): Small (1on) ___ ($20.0cm^2$) Both (2on) X ($105.0cm^2$)

IT-3-3
30 sec

Time (hr : min)	Water level dropped (cm)	Chamber (C.F.)	min/hr Conversion	Q (cm^3/Hr)	H (cm)	A	Ksat (cm/hr)	Ksat (in/hr)
0.50	1.5	105	0.008333	18900.75603	15	0.001056	19.9592	7.8580
1.00	1.4	105	0.008333	17640.70563	15	0.001056	18.6286	7.3341
1.50	1.2	105	0.008333	15120.60482	15	0.001056	15.9674	6.2864
2.00	1.3	105	0.008333	16380.65523	15	0.001056	17.2980	6.8102
2.50	1.3	105	0.008333	16380.65523	15	0.001056	17.2980	6.8102
3.00	1.2	105	0.008333	15120.60482	15	0.001056	15.9674	6.2864
						Mean Ksat	17.5197	6.8975
						Std Deviation	1.5555	0.6124

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

N

SOIL COLOR LEGEND

- HSG "A"
- HSG "B"
- HSG "C"
- HSG "D"
- IMPERVIOUS

SfC

BIORETENTION POND #1

BIORETENTION POND #2

INFILTRATION POND #1

PROPOSED 3,200 SF FF GARAGE FF 23.0'

PROPOSED TENNIS COURT

6-BEDROOM HOUSE
1st FLOOR = 24.0
BASEMENT = 14.0
(WALKOUT)

PATIO

PIER SHED

PIER AND DOCK

6' WIDE WALKWAY

PISCATAQUA (TIDAL

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

REVISIONS: DATE:

INFILTRATION FEASIBILITY PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	DEC 27, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	1 of 1

STORMWATER MANAGEMENT / BMP
INSPECTION & MAINTENANCE PLAN

HEATH TODD RESIDENTIAL DEVELOPMENT
BACK ROAD, DOVER, NH
NH-1501
November 2024
Revised December 23, 2024

Proper construction, inspections, maintenance, and repairs are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality.

For the purpose of this Stormwater Management Program, a significant rainfall event is considered and event of three (3) inches or more in a 24-hour period or at least 0.5 inches in a one-hour period. During construction, inspections should be conducted every two weeks or after a 0.25" rainfall event in a 24-hour period per the EPA NPDES Phase II SWPPP, until the entire disturbed area is fully restabilized. Upon full stabilization of the project and filing of an NOI, inspections need only be conducted after a significant rainfall event as described above or as described in the maintenance guidelines below.

During construction activities Heath Todd with an address of 402 Webber Hill Road, Kennebunk, Maine and a phone of 603.330.3600 or their heirs and/or assigns, shall be responsible for inspections and maintenance activities for the above project site. Heath Todd shall also be responsible for *ongoing inspection and maintenance* of the grass swales, two bioretention ponds with forebays, and two infiltration trenches. The owner shall document the transfer of responsibility in writing to the NHDES AoT Bureau.

The owner is responsible to ensure that any subsequent owner has copies of the Log Form and Annual Report records and fully understands the responsibilities of this plan. The grantor owner(s) will ensure this document is provided to the grantee owner(s) by duplicating the Ownership Responsibility Sheet which is found toward the back of this document, which will be maintained with the Inspection & Maintenance Logs and provided to the City of Dover and/or NHDES Alteration of Terrain Bureau upon request.

Documentation:
A maintenance log (i.e., report) will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task (see Stormwater System Operation and Maintenance Plan Inspection & Maintenance Manual Checklist attached). If a maintenance task

requires the clean-out of any sediments or debris, the location where the sediment and debris was disposed after removal shall be indicated.

Best Management Practices (BMP) Maintenance Guidelines
The following provides a list of recommendations and guidelines for managing the Stormwater facilities. The cited areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

DURING CONSTRUCTION

1. Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1 - Sediment and Erosion Control Detail Plan.

2. Dust Control

Dust will be controlled on the site using multiple BMPs. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

3. Temporary Erosion and Sediment Control Devices / Barriers

Function – Temporary erosion and sediment control devices are utilized during construction period to divert, store and filter stormwater from non-stabilized surfaces. These devices include, but are not limited to: silt fences, hay bales, filters, sediment traps, stone check dams, mulch and erosion control blankets.

Maintenance – Temporary erosion and sediment control devices shall be inspected and maintained on a weekly basis and following a significant storm event (>0.5-inch rain event) throughout the construction period to ensure that they still have integrity and are not allowing sediment to pass. Sediment build-up in swales will be removed if it is deeper than six inches. Sediment is to be removed from sumps in the catch basin semi-annually. Refer to the Site Plan drawings for the maintenance of temporary erosion and sediment control devices.

4. Invasive Species

THE NH COMMISSIONER OF AGRICULTURE PROHIBITS THE COLLECTION, POSSESSION, IMPORTATION, TRANSPORTATION, SALE, PROPAGATION, TRANSPLANTATION, OR CULTIVATION OF PLANTS BANNED BY NH LAW RSA 430:53 AND NH CODE ADMINISTRATIVE RULES AGR 3800. THE PROJECT

SHALL MEET ALL REQUIREMENTS AND THE INTENT OF. RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.

POST CONSTRUCTION / LONG TERM MAINTENANCE:

5. Culverts

Inspect culverts 2 times per year (preferably in spring and fall) to ensure that the culverts are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit and to repair any erosion damage at the culvert's inlet and outlet. Repair/replace culvert if it becomes crushed or deteriorated.

6. Vegetated Areas

Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

7. Pretreatment Structures/Sediment Forebays

Inspect all upstream pre-treatment measures (forebays, etc.) for sediment and floatables accumulation. Remove and dispose of sediments, debris, or woody vegetation as needed. Remove sediment as needed when average depths reach 6". Mow embankments at least two times annually.

8. Drainage Swales/Stormwater Conveyances

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on the Site Plans. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

Maintenance

- Inspect annually for erosion, sediment accumulation, vegetation loss and presence of invasive species.
- Perform periodic mowing; frequency depends on location and type of grass.
- Do not cut shorter than Water Quality Flow depth (maximum 4 inches)
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas, remove invasive species and dead vegetation, and reseed
- With applicable grass mix as warranted by inspection.

9. Bioretention Basin

- The perimeter should be mowed at least annually and the embankments periodically.
- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection.

- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed at each inspection.
- At least once annually, system should be inspected for drawdown time.
- If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function, including but not limited to removal of accumulated sediments or reconstruction of the filter media.
- The pre-treatment forebays will need occasional removal of sediment (every 5 years, or when 50% of capacity is lost, whichever occurs first). Inspections should ensure that no sediment is reaching the gravel.
- All structural components, which include, but are not limited to, level spreader, vegetation, pipes, orifice structures, and spillway structures, should be inspected and any deficiencies repaired. This includes a visual inspection of all storm water control structures for damage and/or accumulation of sediment.
- Vegetation should be inspected at least annually, and maintained in healthy condition, including pruning, removal and replacement.
- All dead or dying vegetation within the extents of the basin should be removed, as well as all herbaceous vegetation rootstock when overcrowding is observed and any vegetation that has a negative impact on storm water flowage through the facility. Any invasive vegetation encroaching upon the perimeter of the facility should be pruned or removed. Wetland plantings typically become well established, but occasional replanting to maintain minimum 50% coverage may be needed.

10. Stormwater Infiltration Facilities

- Inspect all upstream pre-treatment measures for sediment and floatables accumulation. Remove and dispose of sediments or debris as needed.
- The infiltration facility will be inspected within the first three months after construction.
- After the initial three months, the infiltration facility will be inspected 2 times per year to ensure that the filter is draining within 72 hours of a rain event equivalent to 1/2” or more.
- Failure to drain in 72 hours will require part or all of the top 3 inches of the infiltration area to be removed and replaced with new like material. If the infiltration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function.
- Vegetated infiltration ponds or swales will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and to control the accumulation of sediments in order to maintain the water quality volume. Any woody vegetation or accumulated sediment must be removed.
- The facilities will be inspected after major storms and any identified deficiencies will be corrected.

11. Riprap Weir – Maintenance

- Inspect at least once annually for accumulation of sediment and debris and for signs of erosion within weir or down-slope of the spreader.
- Remove debris whenever observed during inspection.
- Mow as required by landscaping design. At a minimum, mow annually to control woody vegetation.
- Repair any erosion and re-grade or replace stone berm material, as warranted by inspection.
- Reconstruct the spreader if down-slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

12. Invasive Species

Background

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- Becoming weedy and overgrown;
- Killing established shade trees;
- Obstructing pipes and drainage systems;
- Forming dense beds in water;
- Lowering water levels in lakes, streams, and wetlands;
- Destroying natural communities;
- Promoting erosion on stream banks and hillsides; and
- Resisting control except by hazardous chemical.

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. They should be controlled as described on the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plant dated January 2010.

In the event that invasive species are noticed growing in any of the stormwater management practices, the invasive vegetation shall be removed completely to include root matter and disposed of properly. Prior to disposal, the vegetation shall be placed on and completely cover with a plastic tarp for a period of two – three weeks until plants are completely dead. If necessary or to expedite the process, spray only the invasive vegetation and roots with a systemic nonselective herbicide after placement on the tarp (to prevent chemical migration) and then cover.

Annual Report

Description: The owner is responsible to keep an **Inspection & Maintenance Activity Log** that documents inspection, maintenance, and repairs to the storm water management system, and a

Deicing Log to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Stormwater System Operation and Maintenance Plan & Inspection and Maintenance Manual, copies of past logs and check lists. This includes any owner association for potential condominium conversion of the property. The Annual Report will be prepared and submitted to the City of Dover DPW upon request.

Disposal Requirements

Disposal of debris, trash, sediment, and other waste materials should be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal waste regulations.

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

Residential Development

Heath Todd – Back Road
Dover, NH

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Stabilized Construction Entrance	Weekly	Inspect adjacent roadway for sediment tracking Inspect stone for sediment accumulation	Sweep adjacent roadways as soon as sediment is tracked Top dress with additional stone when necessary to prevent tracking
Sediment Control Devices / Barriers	Weekly	Inspect accumulated sediment level, rips, and tears	Repair or replace damaged lengths Remove and dispose of accumulated sediment once level reaches 1/3 of barrier height
Gravel	Spring and Fall	Inspect gravel for ruts and depth	Replace gravel as necessary, regrade as necessary to maintain design grades, remove any accumulated gravel washed from roadway
Drainage Culverts	Spring and Fall	Check for sediment accumulation & clogging.	More than 2" sediment depth
Sediment Forebay	Spring and Fall	Sediment accumulation. Inspect embankments, inlet and outlet structures, and appurtenances.	Remove sediment as needed. Remove trash & debris from system and appurtenances. Mow embankment and remove woody vegetation.
Bioretention System / Rain Garden	Spring and Fall and after every 2.5” or rain or greater in a 24-hour period	Sediment accumulation. Inspect embankments, inlet and outlet structures, and appurtenances. 72-Hour drawdown time	Remove sediment as needed. Remove trash & debris from system and appurtenances. Mow embankment and

		evaluation and vegetation evaluation.	remove woody vegetation. Take corrective measures of filtration media if required.
Infiltration Basin	Spring and Fall and after every 2.5" of rain or greater in a 24-hour period	Monitoring and evaluation of wetland vegetation, inspection of sediment on pond surface, inlet/outlet and appurtenance structure evaluation. 72-Hour drawdown time evaluation and vegetation evaluation.	Remove dead & diseased vegetation along with all debris; take corrective measures, reseed and repair inlet/outlet structures and appurtenances if required. Mow embankments and remove woody vegetation. Restore infiltration by removing accumulated sediments and reconstruction of the infiltration basin as necessary.
Drainage Swales	Annually	Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.	Remove sediment & debris when exceeds 3". Repair eroded areas. Remove invasive species and dead vegetation. Reseed as warranted.
	Spring and Fall	Inspect height of vegetation	Mow when necessary – allow length of vegetation to remain at least 4" high
Annual Report	1 time per year	Submit Annual Report to City of Dover Inspector upon request	

Inspection Notes:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

Residential Development

Heath Todd – Back Road
Dover, NH

BMP / System	Date Inspected	Inspected By	Cleaning/Repair (List Items & Comments)	Date Repaired	Repairs Performed By

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location: Inspector:

Date: Time: Site Conditions:

Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1. Initial Inspection After Planting and Mulching		
Plants are stable, roots not exposed:	S U	
Surface is at design level, typically 4" below overpass:	S U	
Overflow bypass / inlet (if available) is functional:	S U	
2. Debris Cleanup (2 times a year minimum, Spring & Fall)		
Litter, leaves, and dead vegetation removed from	S U	
Prune perennial vegetation:	S U	
3. Standing Water (1 time a year, After large storm events)		
No evidence of standing water after 72 hours:	S U	
4. Short Circuiting & Erosion (1 times a year, After large storm events)		
No evidence of animal burrows or other holes:	S U	
No evidence of erosion:	S U	
5. Drought Conditions (As needed)		
Water plants as needed:	S U	
Dead or dying plants:	S U	
6. Overflow Bypass / Inlet Inspection (1 times a year, After large storm events)		
No evidence of blockage or accumulated leaves:	S U	
Good condition, no need for repair:	S U	
7. Vegetation Coverage (once a year)		
50 % coverage established throughout system by first year:	S U	
Robust coverage by year 2 or later:	S U	
8. Mulch Depth (if applicable, once every 2 years)		
Mulch at original design depth after tilling or replacement:	S U	
9. Vegetation Health (once every 3 years)		
Dead or decaying plants removed from the system:	S U	
10. Tree Pruning (once every 3 years)		
Prune dead, diseased, or crossing branches:	S U	
Corrective Action Needed		**Due Date**
1.		
2.		
3.		

INSPECTION CHECKLIST AND MAINTENANCE GUIDANCE

INFILTRATION POND - INSPECTION CHECKLIST

Location: _____

Owner Change Since Last Inspection? Y N

Owner Name, Address, Phone: _____

Date:_____Time:_____Site Conditions: _____

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
Sand Filter Inspection List		
Complete drainage of the filter in about 40 hours after a rain event?		
Clogging of filter surface?		
Clogging of inlet/outlet structures?		
Clogging of filter fabric?		
Clear of debris and functional?		
Leaks or seeps in filter?		
Obstructions of spillway(s)?		
Animal burrows in filter?		
Sediment accumulation in filter bed (less than 50% is acceptable)?		
Cracking, spalling, bulging or deterioration of concrete?		
Erosion in area draining to sand filter?		
Erosion around inlets, filter bed, or outlets?		
Pipes and other structures in good		
Undesirable vegetation growth?		
Other (describe)?		
Hazards		
Have there been complaints from residents?		
Public hazards noted?		

If any of the above inspection items are **UNSATISFACTORY**, list corrective actions and the corresponding completion dates below:

Corrective Action Needed	Due Date

Inspector Signature:_____

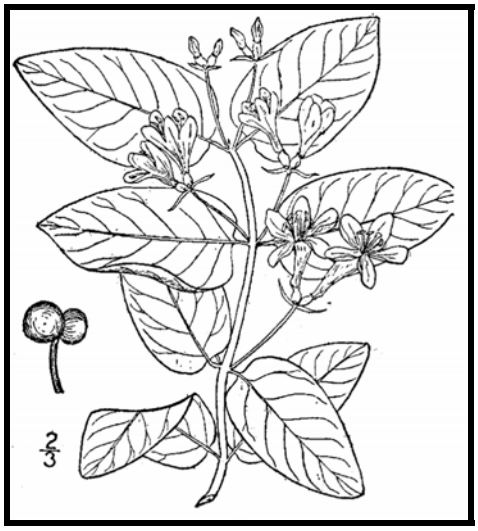
Inspector Name (printed):_____

Date:_____

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

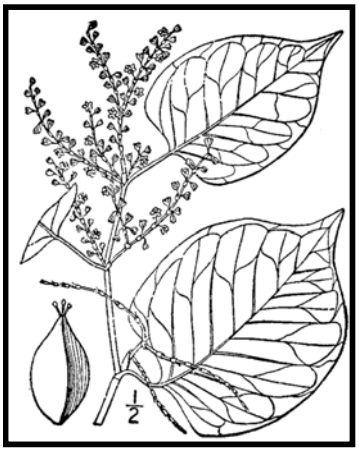
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
 </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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RESIDENTIAL SITE PLAN
BACK ROAD
DOVER, NEW HAMPSHIRE
TAX MAP M, LOT 104

AUGUST 2, 2024

NOT FOR CONSTRUCTION

CIVIL ENGINEERS:

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

LAND SURVEYORS:

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
1-603-332-2863

WETLAND CONSULTANTS:

MICHAEL L. PARSONT, CWS, CPESC
STABLE GROWTH ENVIRONMENTAL LLC
PO Box 713
SOMERSWORTH, NH 03878
1-603-767-8633

TFMORAN, INC.
170 COMMERCE WAY, SUITE 102
PORTSMOUTH, NH 03801
1-603-431-2222

SOIL CONSULTANT:

JOHN P. HAYES CSS, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
1-603-205-4396

RECORD OWNER/APPLICANT

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

PLAN SET LEGEND

FRESHWATER WETLAND BOUNDARY	UTILITY POLE
FRESHWATER WETLAND/ STREAM BUFFER	SEWER MANHOLE
PROPERTY LINE	EXISTING LIGHT POLE
HOTL / REFERENCE LINE	EXISTING CATCH BASIN
FLOOD HAZARD ZONE (FHZ)	WATER GATE
50' NHDES PRIMARY STRUCTURE SETBACK (PSS)	WATER SHUT OFF
100' NHDES TIDAL BUFFER ZONE (TBZ)	HYDRANT
150' NHDES NATURAL WOODLAND BUFFER SETBACK (NWB)	OVERHEAD ELEC. LINE (OHW)
250' NHDES PROTECTED SHORELAND ZONE (SPZ)	FENCING (X)
NATURAL WOODLAND AREA REQUIREMENT	DRAINAGE LINE (D)
	SEWER LINE (S)
	GAS LINE (G)
	WATER LINE (W)
	STONE WALL
	TREE LINE
	PINES, ETC.
	MAPLES, ETC.
	EXIST. CONTOUR (100)
	PROP. CONTOUR (100)
	SOIL LINES
	EXIST. SPOT GRADE (96x69)
	PROP. SPOT GRADE (96x69)
	DOUBLE POST SIGN
	SINGLE POST SIGN

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10 GRADING, DRAINAGE, & EROSION CONTROL PLAN
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18-19 PHOTO LOG PLANS
20 VEGETATION MANAGEMENT PLAN
21 EFFLUENT DISPOSAL PLAN
22 LADDER TRUCK MANEUVERING PLAN
23 DRIVEWAY SECTIONS
24 EROSION CONTROL NOTES & DETAILS
25-26 CONSTRUCTION DETAILS

REQUIRED STATE AND FEDERAL PERMITS

NHDES ALTERATION OF TERRAIN PERMIT	PENDING SUBMITTAL
NHDES INDIVIDUAL SEWAGE DISPOSAL SYSTEM PERMIT	PENDING SUBMITTAL
NHDES SHORELAND IMPACT PERMIT	2024-02318
NHDES WETLANDS BUREAU DREDGE AND FILL	2024-02319
CONSTRUCTION GENERAL PERMIT	PENDING SUBMITTAL

	REVISIONS:	DATE:
1	REVISED PER REVIEW COMMENTS	11.12.24
2	REVISED PER REVIEW COMMENTS	12.23.24
3	REVISED FOR AOT SUBMITTAL	12.27.24
4		
5		

NH-1501 PROPOSED SITE PLAN

NHB23–3169 New Hampshire Fish and Game Recommended Permit Conditions:

1. Blanding's Turtle (State Endangered), New England Cottontail (State Endangered), Shortnose Sturgeon (State Endangered), and Spotted Turtle (State Threatened) occur within the vicinity of the project area. Recommendations for Shortnose Sturgeon were issued by NHFG for NHB24–0953 on May 14, 2024. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information. See this sheet.

2. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings prior to work commencement during the construction phase of the project. See this sheet.

3. NHFG recommends driveway construction occur between October 15th and April 15th to avoid impacting turtles during the active season. If project activities cannot be completed between October 15th and April 15th and must occur between April 16th and October 14th, searches and sweeps shall be conducted by trained individuals immediately before the start of work and movement of equipment in order to minimize the chance of animals entering an area between the sweep and work. A trained individual shall be defined as any contractor who has gone through project–species protection education conducted by the qualified biologist on rare wildlife species at the site. Sweeps (e.g. visual observations made while walking transects) shall consist of trained individuals moving through the area and surrounding vicinity that will be impacted by the current activities and actively looking for turtles (and other wildlife) that may be impacted by project activities.

4. All culverts shall be oversized, partially buried RCP culverts.

5. Staging of construction equipment/material and vehicle parking shall not occur in shrub cover and shrub cover shall not be removed.

6. Fertilizer shall not be applied in or near the wetlands along the driveway. Fertilizer applied in all other areas shall be slow–release or controlled–release.

7. Turtles may be attracted to disturbed ground during the nesting season (May 15th –June 30th). Turtle nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Josh Megyesy at NHFG immediately for further consultation. See Species Flyers, See this sheet for NHFG contact information.

    a. The nest or suspected nest shall be marked (surrounding roped off or cone buffer deployed) and avoided; this shall be communicated to all personnel onsite.

    b. Site activities shall not occur in the area surrounding the nest or suspected nest until further guidance is provided by NHFG.

8. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than ¼ inches. See Erosion Control Notes & Details sheet.

9. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603–271–2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation.

    a. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible.

10. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.

    a. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone if in direct harm from project activities.

    b. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading.

    c. NHFG shall be contacted immediately if this action occurs.

11. NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

PLEASE REPORT OBSERVATIONS OF RARE TURTLES

The NH Fish & Game Department is requesting observations of the following turtle species

Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th)

Turtles are most active from April 15th - October 15th - maintain silt fences during this time

Blanding's turtle
(State Endangered)

Large, dark/black domed shell with lighter speckles.

Distinct yellow throat/chin.

Aquatic but often moves on land.

Spotted turtle
(State Threatened)

Small, mostly aquatic with black or dark brown with yellow spots.

Fairly flat shell compared to Blanding's turtle.

Spots vary in color and number.

Fis 1401.03 (a) No person shall take or possess a spotted turtle (*Clemmys guttata*)...Blanding's turtle (*Emydoidea blandingii*)...or any egg or part thereof.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Josh Megyesy 603-271-1125 or 978-578-0802 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603–583–4860,
FAX. 603–583–4863

GRAPHIC SCALE

120 0 60 120 240 480

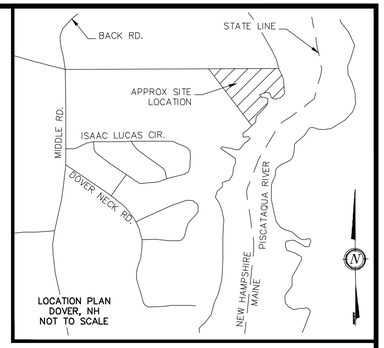
(IN FEET)
1 inch = 120 ft.

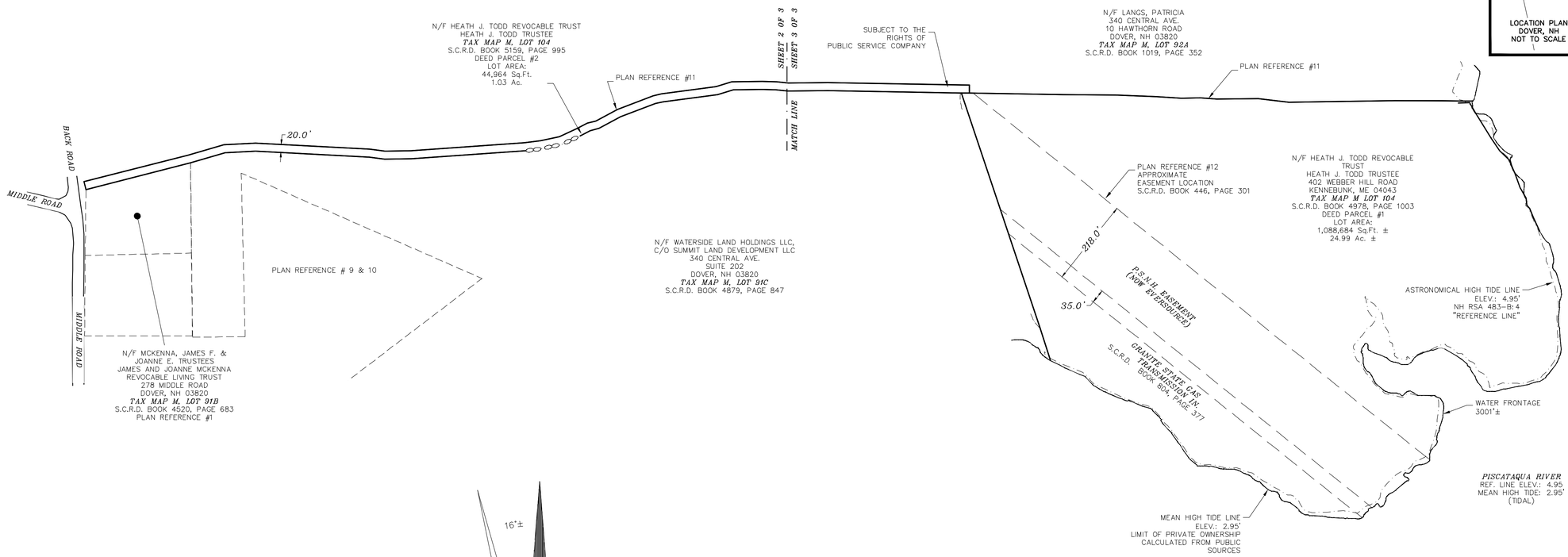
REVISIONS:	DATE:

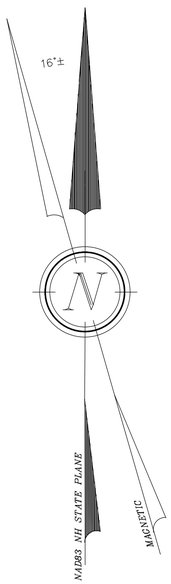
NH FISH & GAME PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	DEC 23, 2024	SCALE:	NTS
PROJ. N0:	NH-1501	SHEET NO.	0







PLAN REFERENCES:

1.) "SUBDIVISION PLAN FOR MARK PHILIPS & PETER RUSSELL DOVER, NEW HAMPSHIRE"
BY: FRANK EMERY
DATED: MAY 22, 1973
S.C.R.D. POCKET #12, FOLDER #2, PLAN #36

2.) "SUBDIVISION OF LAND FOR EDMUND J. O'BRIEN JR. IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 9, 1981
S.C.R.D. PLAN #21A-87

3.) "SUBDIVISION OF LAND CULLEN BAY DEVELOPMENT IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 4, 1984
S.C.R.D. PLAN #24A-59

4.) "SUBDIVISION OF LAND FOR ARTHUR AND LINDA THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: JULY 30, 1986
S.C.R.D. PLAN #26-78

5.) "FINAL PLAN BRICKYARD ESTATES MIDDLE ROAD DOVER, N.H."
BY: G.L. DAVIS & ASSOCIATES
DATED: OCTOBER 1, 1985
S.C.R.D. PLAN #29-35

6.) "SUBDIVISION OF LAND FOR GEORGE & DOROTHY PRESCOTT AND ARTHUR G. THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
RECORDED: OCTOBER 13, 1983
S.C.R.D. PLAN #29A-61

PLAN REFERENCES (cont.):

7.) "PLAN OF LAND FOR FRANCIS & VALERIE CHENEVERT MIDDLE ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES
DATED: MAY, 1989
S.C.R.D. PLAN #38-48

8.) "LOT LINE REVISION ISAAC LUCAS CIRCLE DOVER, N.H. FOR CITADEL BROADCASTING COMPANIES AND NELSON MILES COOK, III"
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: MARCH 13, 2002
S.C.R.D. PLAN #66-70

9.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY:MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. 12348

10.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. PLAN #12349

11.) "PLAN OF LAND OF GEORGE & DOROTHY PRESCOTT DOVER, N.H. SHOWING PARCEL SOLD TO ALAN R. & PATRICIA WILSON"
BY: RICHARD P. TOWLE
DATED AUGUST 1972

12.) "EASEMENT WORKSHEET"
BY: DOUCET SURVEY
ON FILE AT THIS OFFICE

LEGEND:

- "DAVIS" STEEL STAKE (FND)
- ½" REBAR (FND)
- DRILL HOLE (FND)
- ¾" REBAR W/ID CAP (TO BE SET)
- FENCE POST W/BARBED WIRE
- ABUTTING PROPERTY LINE
- MATCH LINE
- SURVEY TIE LINE
- ASTRONOMICAL HIGH TIDE LINE "REFERENCE LINE"
- PSNH EASEMENT LINE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- EXISTING TREE OR STUMP W/BARBED WIRE

NOTES:

1.) OWNER: HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

2.) TAX MAP M, LOT 104

3.) LOT AREA: 1,088,684 Sq. Ft., 24.99 Ac.
44,964 Sq.Ft., 1.03 Ac. (20' WIDE CONNECTION TO MIDDLE ROAD)

4.) S.C.R.D. BOOK 5159, PAGE 995

5.) THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES OF TAX MAP M, LOT 104 IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT AND ORIGINAL LEGAL DESCRIPTIONS, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

6.) BOUNDARY LINES BASED ON A CLOSED TRAVERSE WITH A CLOSURE BETTER THAN 1 PART IN 10,000 PERFORMED BY THIS OFFICE IN 2022

7.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD.
REF.: FEMA COMMUNITY #330145, MAP #33017C0340E,
DATED: SEPTEMBER 30, 2015.

8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

9.) THE LAND IS IN CURRENT USE. S.C.R.D. BOOK 1753, PAGE 613.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

6-26-24

KENNETH A. BERRY L.L.S. 805 DATE

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

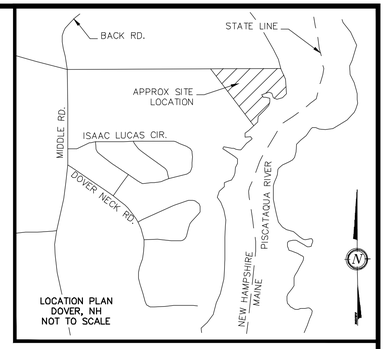
REVISION	DATE	DESCRIPTION
#1	5-21-24	REVISE OWNERSHIP

BOUNDARY SURVEY
LAND OF
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
LAND OFF MIDDLE ROAD
&
PISCATAQUA RIVER
DOVER, N.H.
TAX MAP M, LOT 104

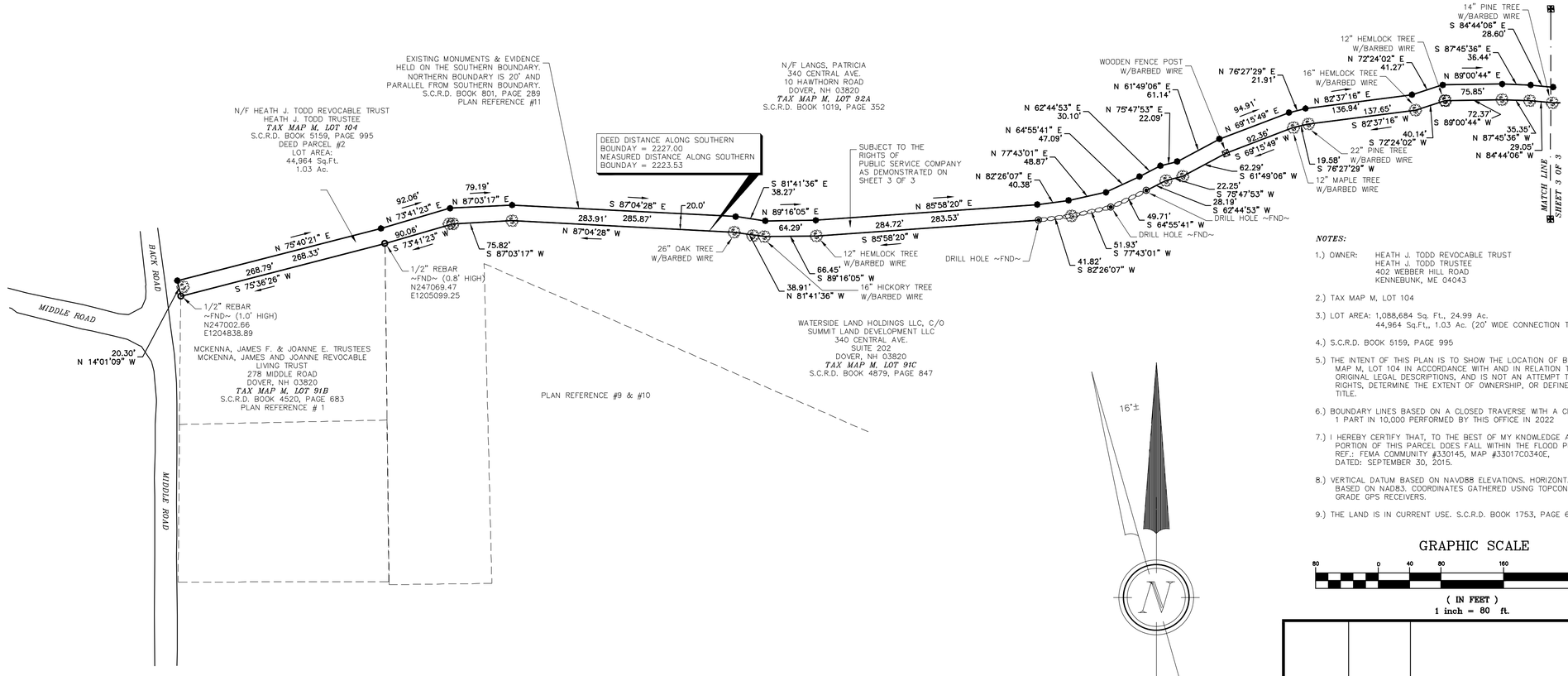
STATE OF NEW HAMPSHIRE — NO. 805 — LICENSED LAND SURVEYOR
KENNETH A BERRY
SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 150 FT.
DATE : DECEMBER 16, 2022
FILE NO. : DB 2021 - 087



LOCATION PLAN
DOVER, NH
NOT TO SCALE



PLAN REFERENCES:

1.) "SUBDIVISION PLAN FOR MARK PHILIPS & PETER RUSSELL DOVER, NEW HAMPSHIRE"
BY: FRANK EMERY
DATED: MAY 22, 1973
S.C.R.D. POCKET #12, FOLDER #2, PLAN #36

2.) "SUBDIVISION OF LAND FOR EDMUND J. O'BRIEN JR. IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 9, 1981
S.C.R.D. PLAN #21A–87

3.) "SUBDIVISION OF LAND CULLEN BAY DEVELOPMENT IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 4, 1984
S.C.R.D. PLAN #24A–59

4.) "SUBDIVISION OF LAND FOR ARTHUR AND LINDA THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: JULY 30, 1986
S.C.R.D. PLAN #26–78

5.) "FINAL PLAN BRICKYARD ESTATES MIDDLE ROAD DOVER, N.H."
BY: G.L. DAVIS & ASSOCIATES
DATED: OCTOBER 1, 1985
S.C.R.D. PLAN #29–35

6.) "SUBDIVISION OF LAND FOR GEORGE & DOROTHY PRESCOTT AND ARTHUR G. THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
RECORDED: OCTOBER 13, 1983
S.C.R.D. PLAN #29A–61

7.) "PLAN OF LAND FOR FRANCIS & VALERIE CHENEVERT MIDDLE ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES
DATED: MAY, 1989
S.C.R.D. PLAN #38–48

8.) "LOT LINE REVISION ISAAC LUCAS CIRCLE DOVER, N.H. FOR CITADEL BROADCASTING COMPANIES AND NELSON MILES COOK, III"
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: MARCH 13, 2002
S.C.R.D. PLAN #66–70

9.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY:MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. 12348

10.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
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S.C.R.D. PLAN #12349

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BY: RICHARD P. TOWLE
DATED AUGUST 1972

12.) "EASEMENT WORKSHEET"
BY: DOUCET SURVEY
ON FILE AT THIS OFFICE

NOTES:

1.) OWNER: HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

2.) TAX MAP M, LOT 104

3.) LOT AREA: 1,088,684 Sq. Ft., 24.99 Ac.
44,964 Sq.Ft., 1.03 Ac. (20' WIDE CONNECTION TO MIDDLE ROAD)

4.) S.C.R.D. BOOK 5159, PAGE 995

5.) THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES OF TAX MAP M, LOT 104 IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT AND ORIGINAL LEGAL DESCRIPTIONS, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

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LEGEND:

- ⊕ "DAVIS" STEEL STAKE (FND)
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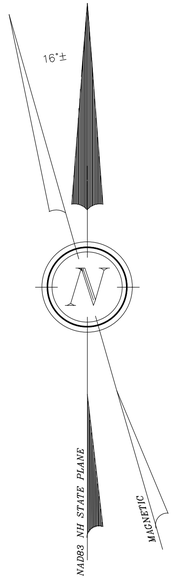

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

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6-26-24

KENNETH A. BERRY L.L.S. 805 DATE

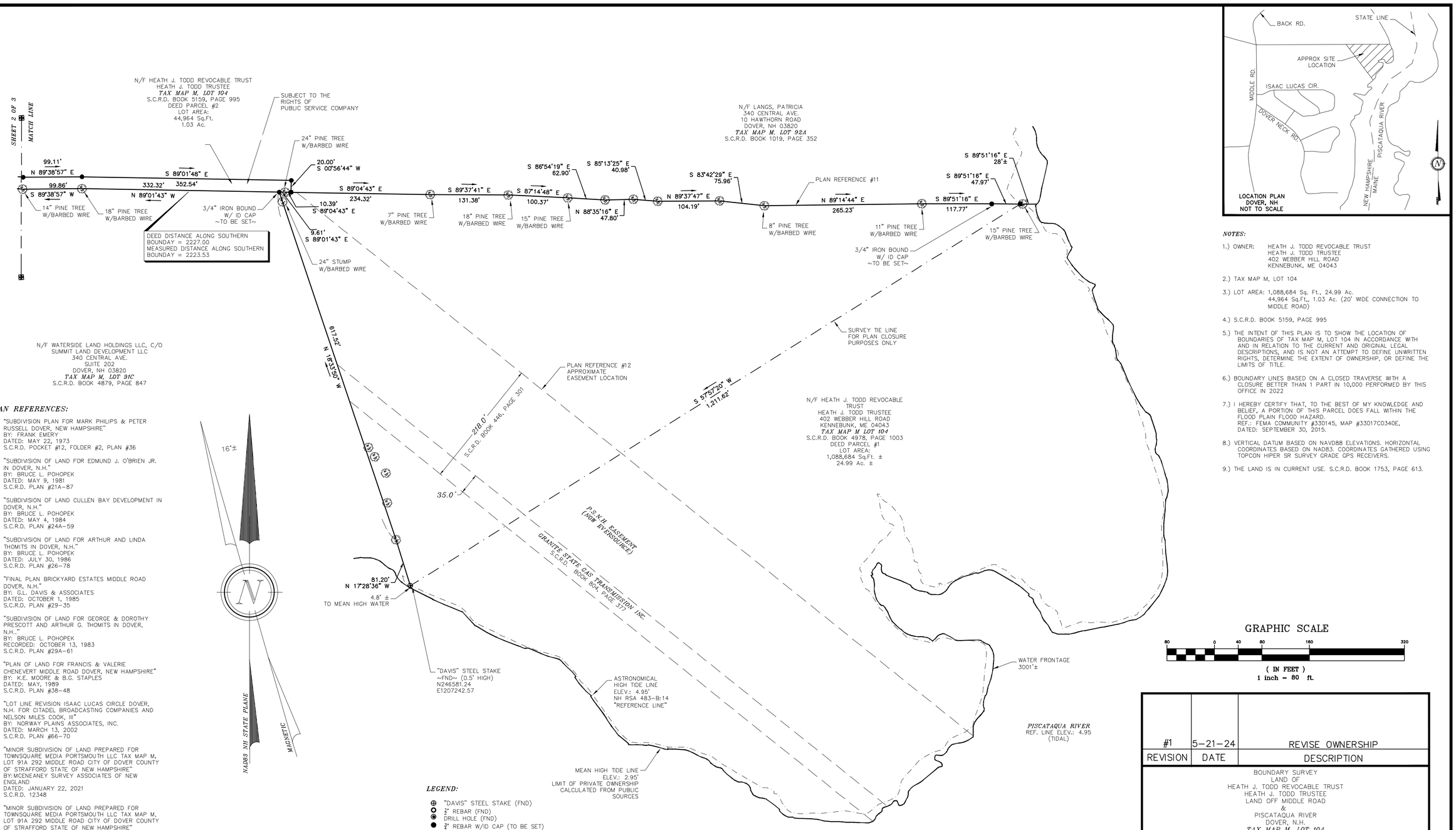
REVISION	DATE	DESCRIPTION
#1	5–21–24	REVISE OWNERSHIP

BOUNDARY SURVEY
LAND OF
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
LAND OFF MIDDLE ROAD
&
PISCATAQUA RIVER
DOVER, N.H.
TAX MAP M, LOT 104

STATE OF NEW HAMPSHIRE — No. 805 — KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332–2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : DECEMBER 16, 2022
FILE NO. : DB 2021 – 087



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- EXISTING TREE OR STUMP W/BARBED WIRE

NOTES:

1.) OWNER: HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

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6-26-24

KENNETH A. BERRY L.L.S. 805 DATE

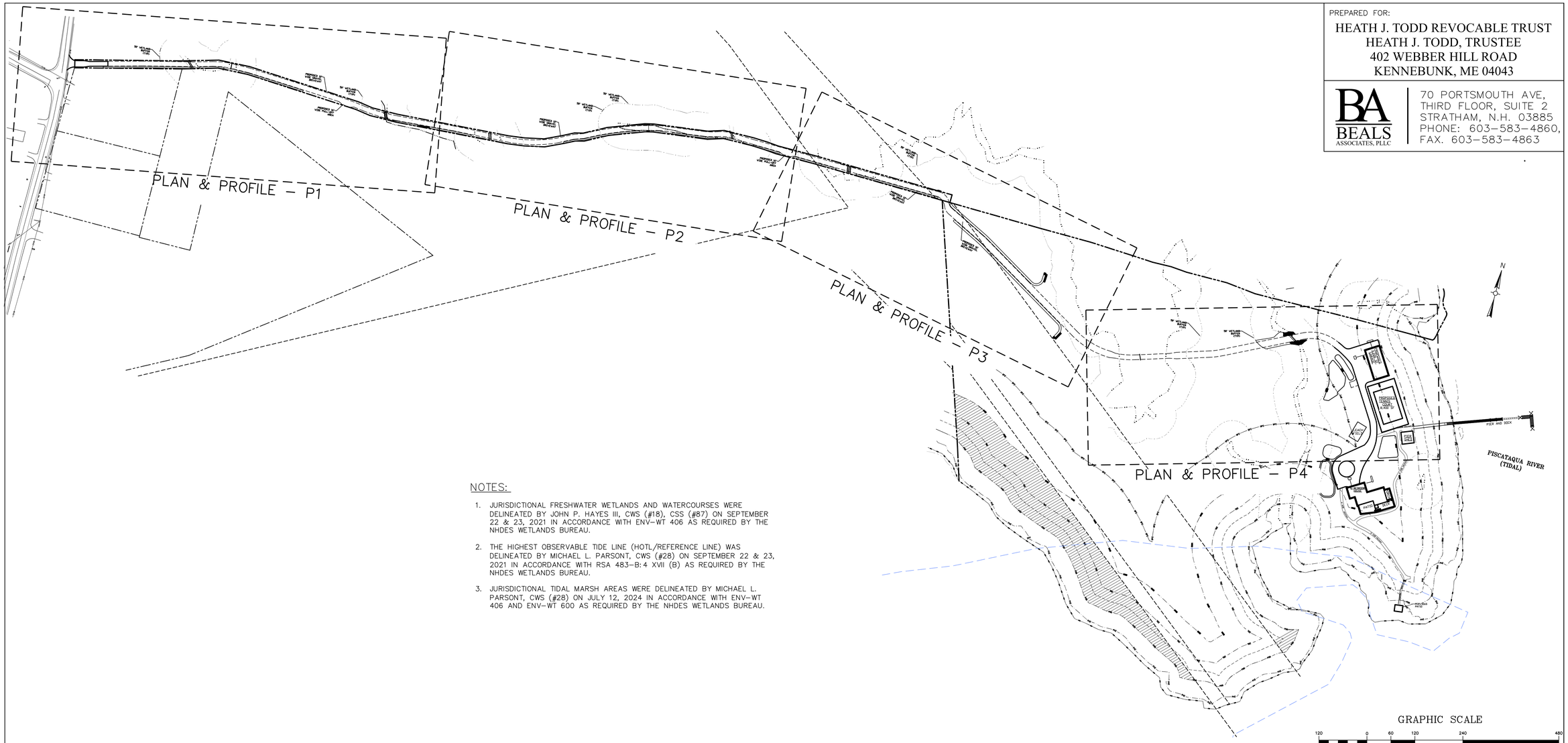
REVISION	DATE	DESCRIPTION
#1	5-21-24	REVISE OWNERSHIP

BOUNDARY SURVEY
LAND OF
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
LAND OFF MIDDLE ROAD
&
PISCATAQUA RIVER
DOVER, N.H.
TAX MAP M, LOT 104

STATE OF NEW HAMPSHIRE — NO. 805 KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : DECEMBER 16, 2022
FILE NO. : DB 2021 – 087



NOTES:

1. JURISDICTIONAL FRESHWATER WETLANDS AND WATERCOURSES WERE DELINEATED BY JOHN P. HAYES III, CWS (#18), CSS (#87) ON SEPTEMBER 22 & 23, 2021 IN ACCORDANCE WITH ENV–WT 406 AS REQUIRED BY THE NHDES WETLANDS BUREAU.
2. THE HIGHEST OBSERVABLE TIDE LINE (HOTL/REFERENCE LINE) WAS DELINEATED BY MICHAEL L. PARSONT, CWS (#28) ON SEPTEMBER 22 & 23, 2021 IN ACCORDANCE WITH RSA 483–B:4 XVII (B) AS REQUIRED BY THE NHDES WETLANDS BUREAU.
3. JURISDICTIONAL TIDAL MARSH AREAS WERE DELINEATED BY MICHAEL L. PARSONT, CWS (#28) ON JULY 12, 2024 IN ACCORDANCE WITH ENV–WT 406 AND ENV–WT 600 AS REQUIRED BY THE NHDES WETLANDS BUREAU.

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch = 120 ft.

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

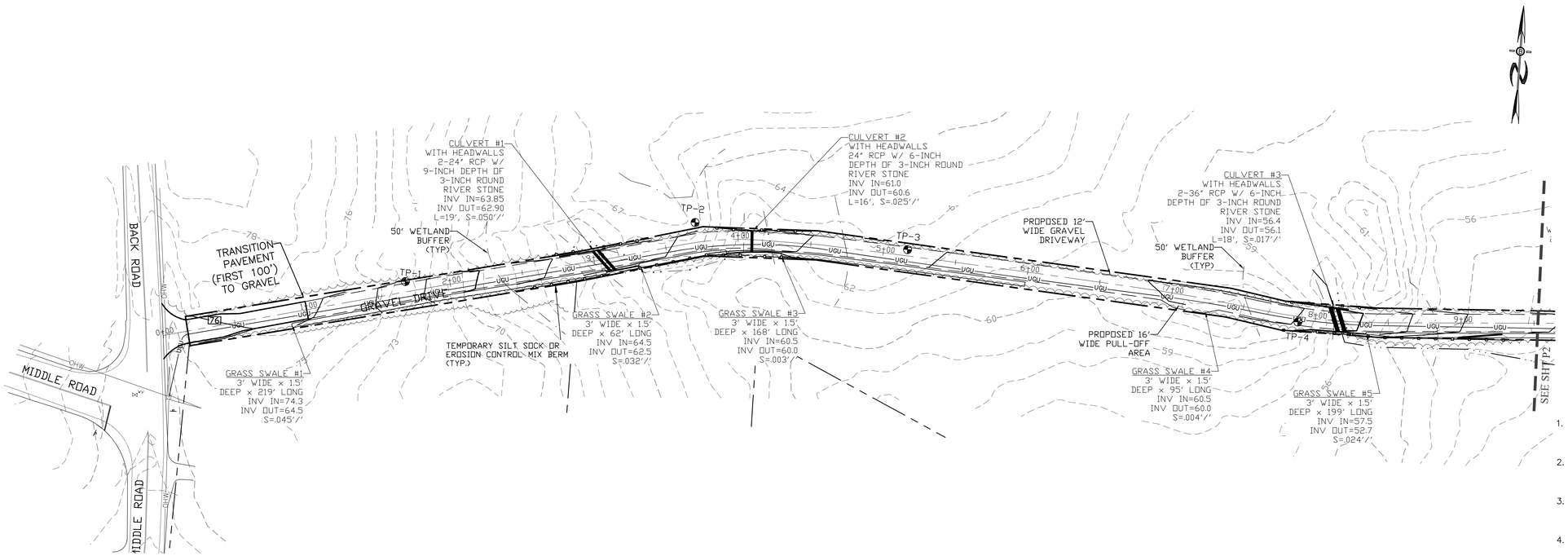
INDEX PLAN

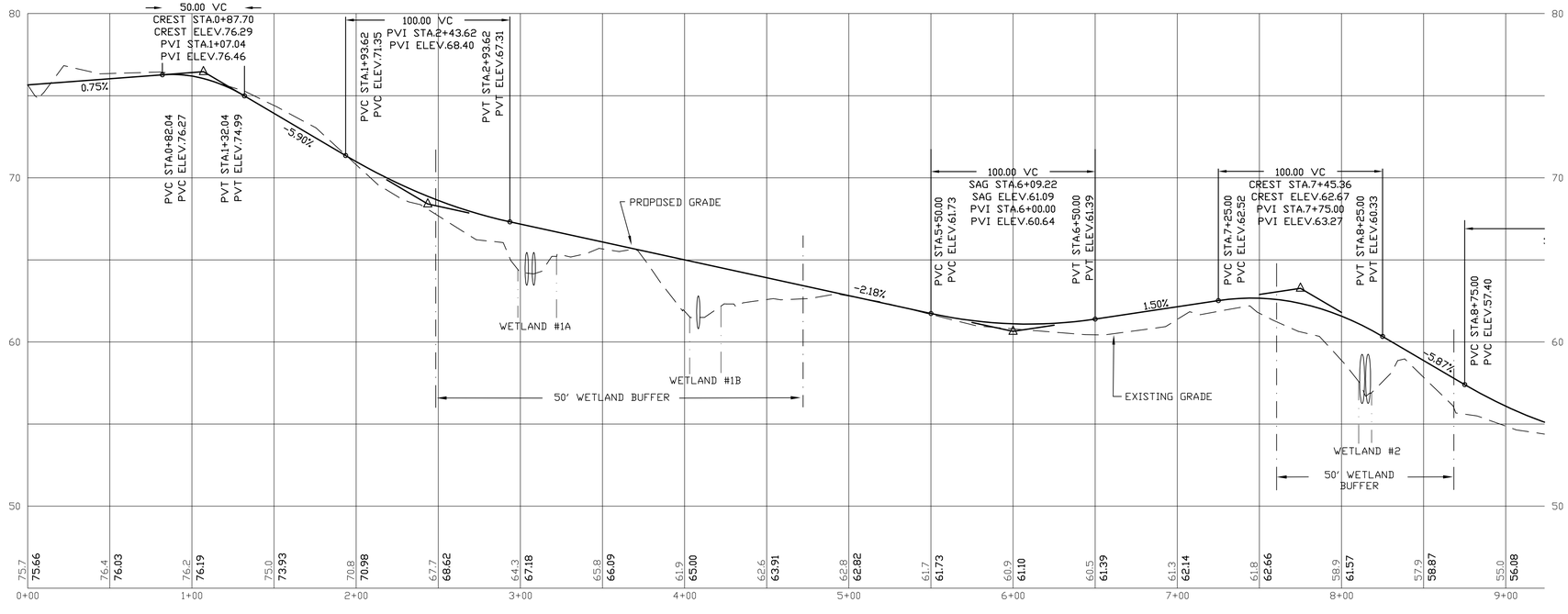
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=120'
PROJ. N0:	NH-1501	SHEET NO.	4

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603–583–4860,
FAX. 603–583–4863





PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

NOTES

1. ALL ELECTRICAL, TELEPHONE, CABLE TELEVISION AND ALARM LINES TO BE UNDERGROUND. LOW PROFILE UTILITY BOX STRUCTURES SHALL BE USED TO THE GREATEST EXTENT.
2. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR, ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY.
3. CONTRACTOR SHALL USE EXTREME CAUTION TO ENSURE ALL GRADING AND SOIL DISTURBANCE REMAINS ON THE PROPERTY.
4. ALL CONSTRUCTION METHODS AND MATERIALS WILL CONFORM TO THE TOWN STANDARD SPECIFICATIONS AND TO N.H.D.O.T. STANDARDS AND REGULATIONS.
5. ALL DRAINAGE STRUCTURES AND SWALES WILL BE BUILT AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
6. SEE DETAIL SHEETS FOR STANDARD CONSTRUCTION DETAILS.
7. ALL CROSS CULVERTS TO HAVE HEADWALLS OR F.E.S. MAY BE USED FOR DRIVEWAY CULVERTS WHERE APPROPRIATE. CULVERTS AND ROADWAY SHOULD BE MARKED WITH GREEN DELINEATORS FOR EASY LOCATION. TYPE & LOCATION TO BE APPROVED BY TOWN ROAD AGENT.
8. CONTRACTOR TO EMPLOY BEST MANAGEMENT PRACTICES AS SHOWN ON PLANS, AND AS FOUND IN THE NH STORMWATER MANUAL DATE DECEMBER, 2008.
9. NATURAL AREA BUFFERS ARE TO REMAIN WOODED.
10. CULVERTS SHOULD BE MAINTAINED BI-ANNUALLY.

STATE OF NEW HAMPSHIRE MICHAEL L. PARSONT No. 028 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

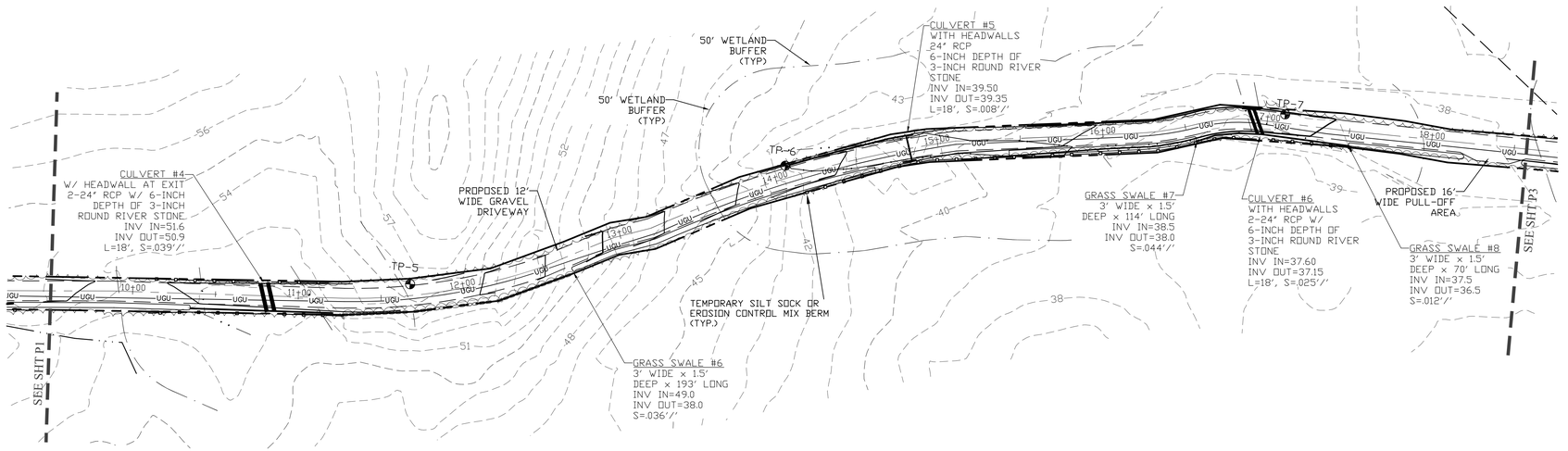
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

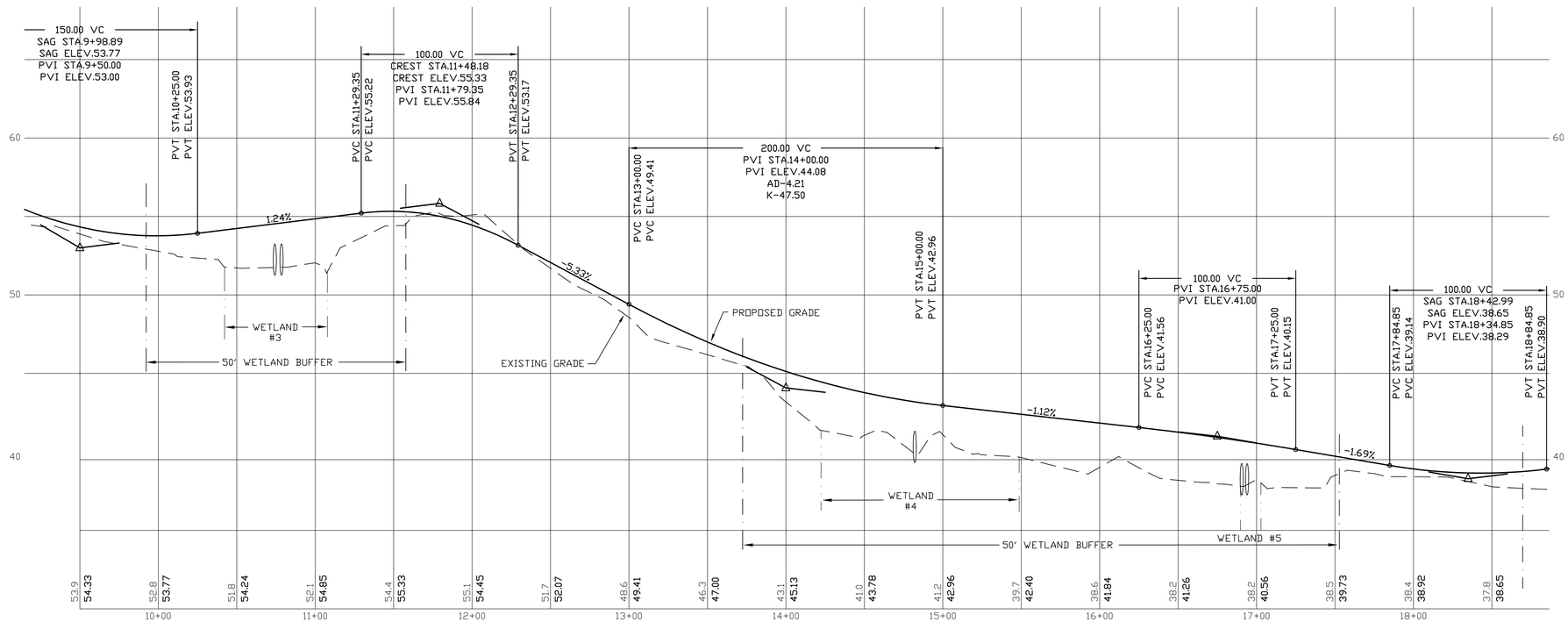
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PLAN & PROFILE - P1

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	5





PREPARED FOR:
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HEATH J. TODD, TRUSTEE
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PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

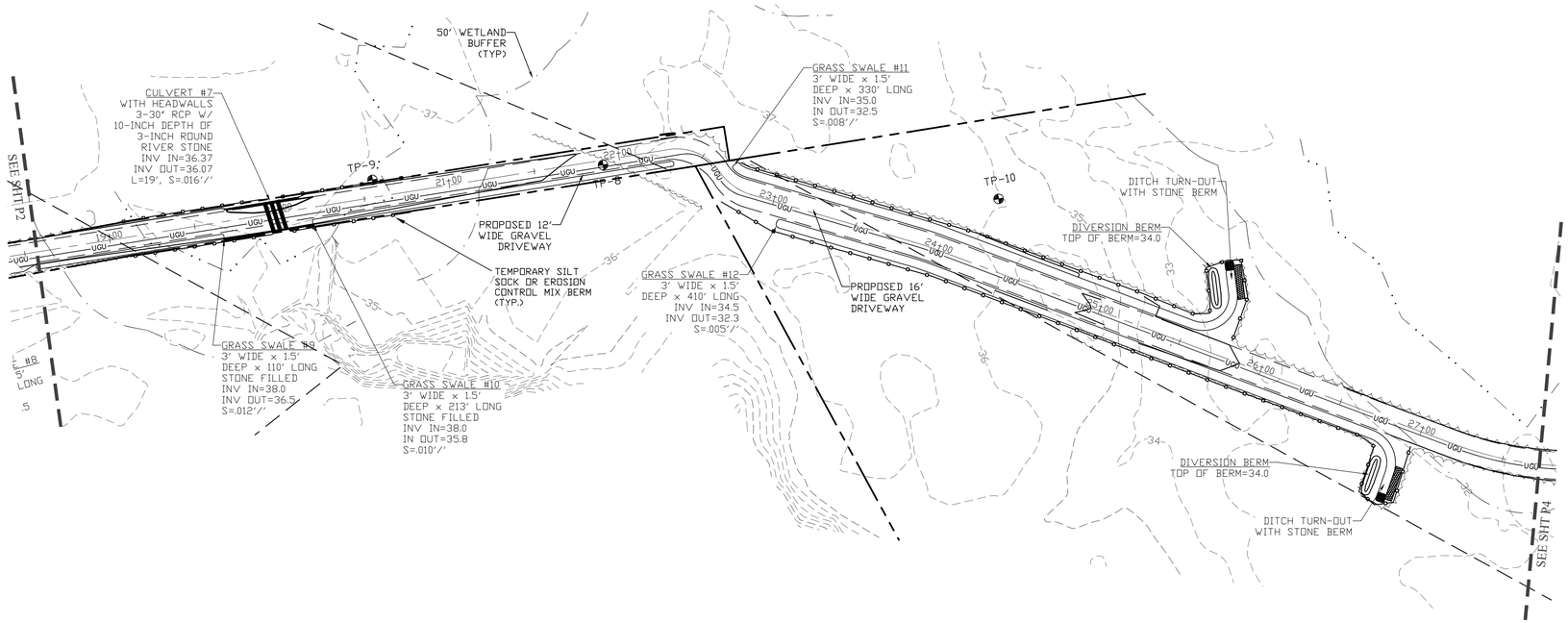
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

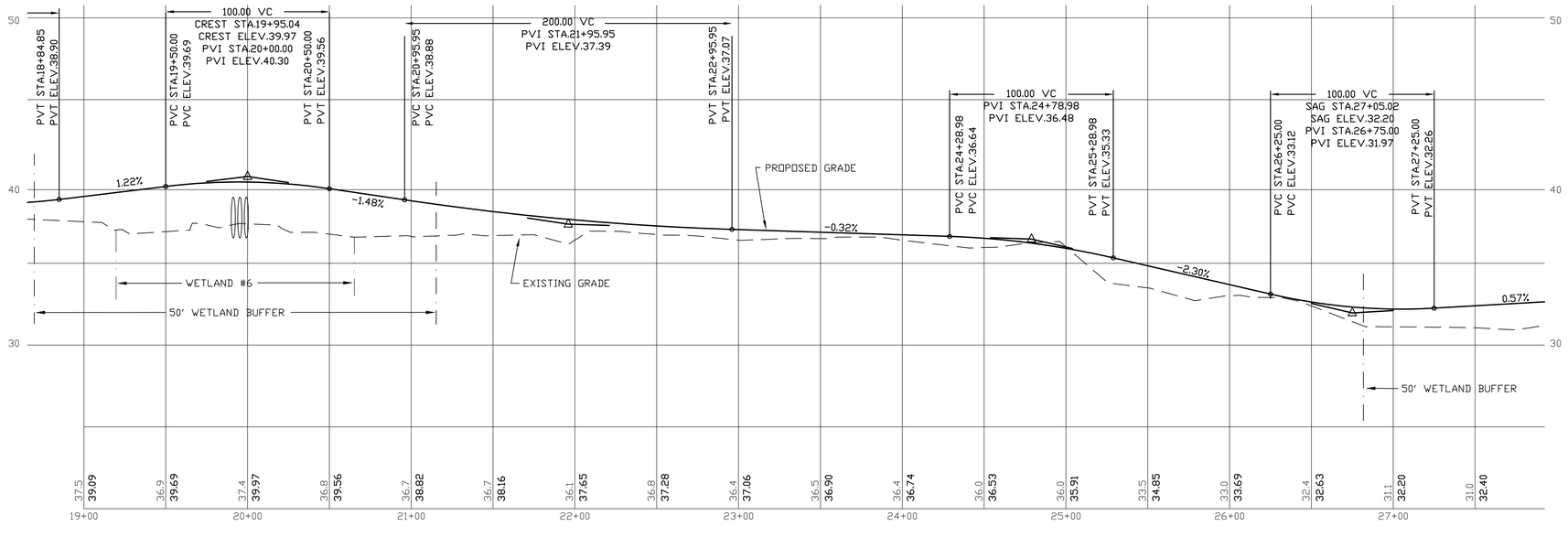
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PLAN & PROFILE - P2

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	6





PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 028 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

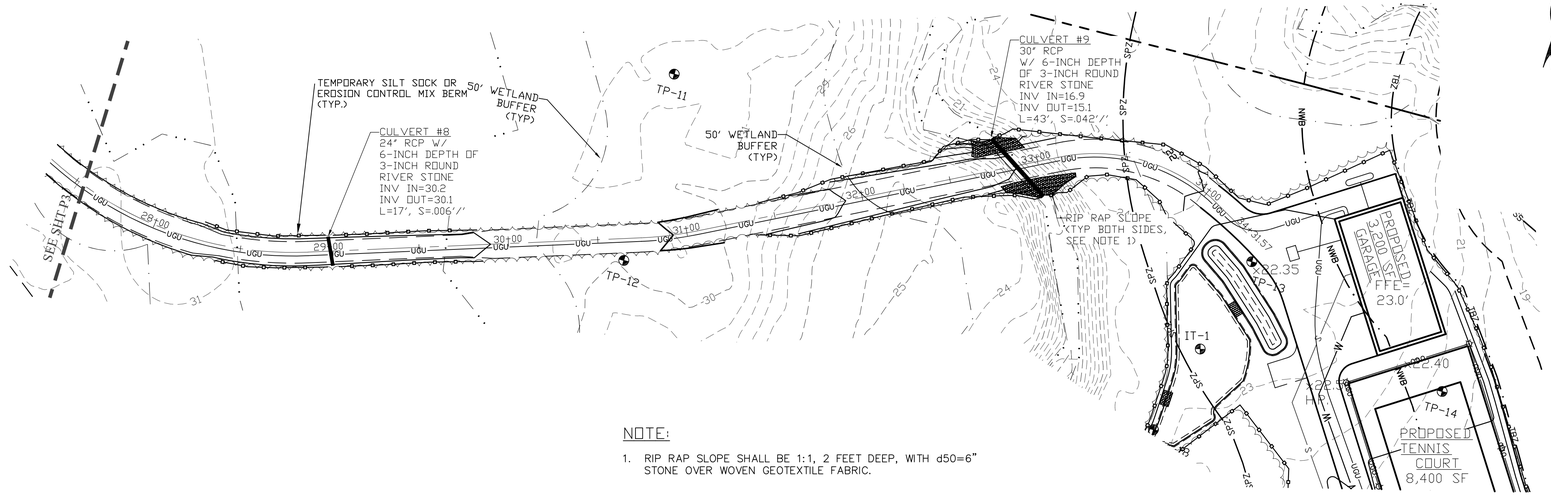
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

PLAN & PROFILE - P3

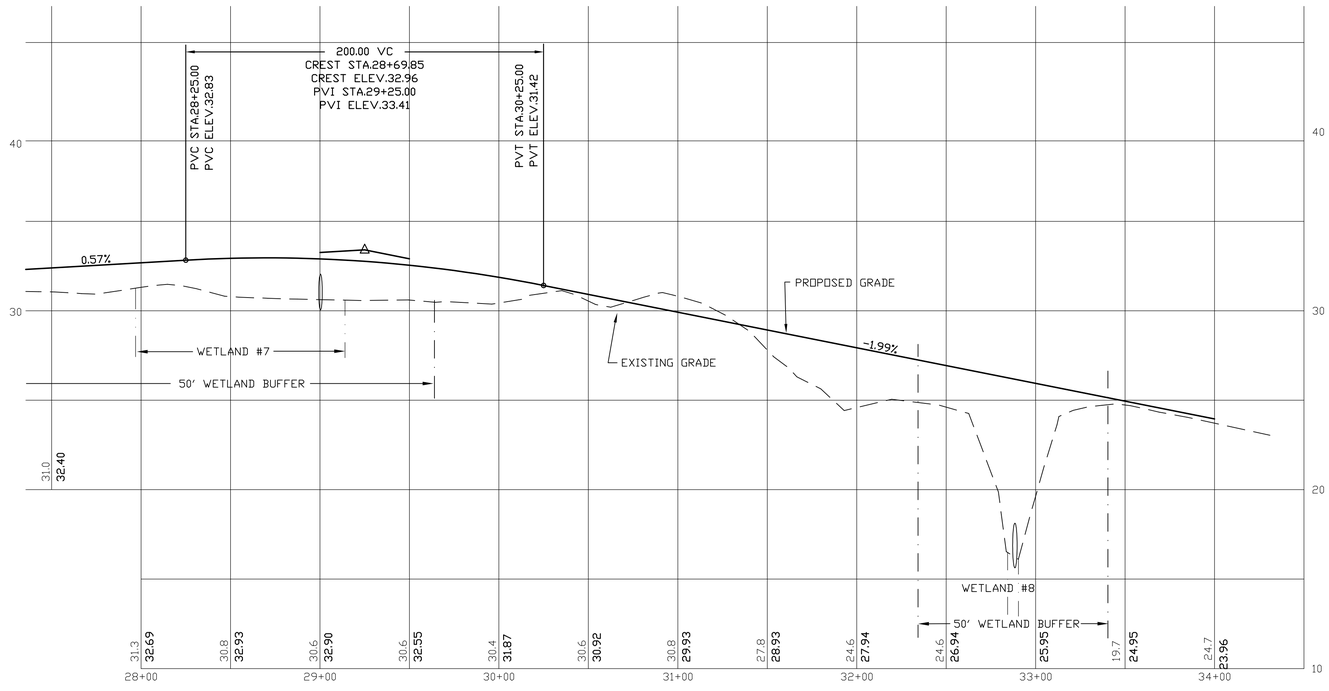
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	7



NOTE:

1. RIP RAP SLOPE SHALL BE 1:1, 2 FEET DEEP, WITH d50=6" STONE OVER WOVEN GEOTEXTILE FABRIC.



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STATE OF NEW HAMPSHIRE MICHAEL L. PARSONS No. 029 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 PROFESSIONAL ENGINEER

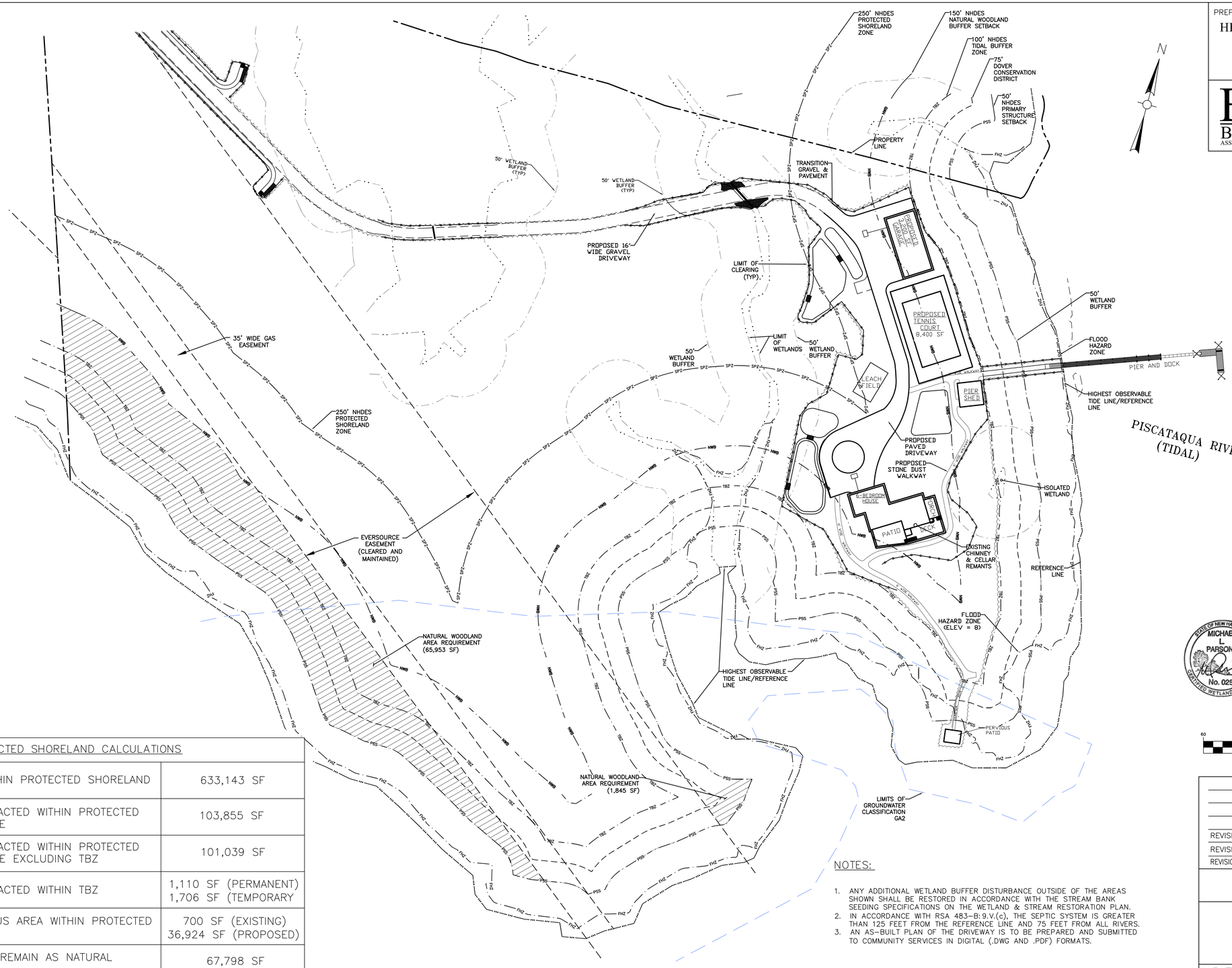
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PLAN & PROFILE - P4

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	8



PROTECTED SHORELAND CALCULATIONS	
TOTAL AREA WITHIN PROTECTED SHORELAND	633,143 SF
TOTAL AREA IMPACTED WITHIN PROTECTED SHORELAND ZONE	103,855 SF
TOTAL AREA IMPACTED WITHIN PROTECTED SHORELAND ZONE EXCLUDING TBZ	101,039 SF
TOTAL AREA IMPACTED WITHIN TBZ	1,110 SF (PERMANENT) 1,706 SF (TEMPORARY
TOTAL IMPERVIOUS AREA WITHIN PROTECTED SHORELAND	700 SF (EXISTING) 36,924 SF (PROPOSED)
TOTAL AREA TO REMAIN AS NATURAL WOODLAND	67,798 SF

NOTES:

1. ANY ADDITIONAL WETLAND BUFFER DISTURBANCE OUTSIDE OF THE AREAS SHOWN SHALL BE RESTORED IN ACCORDANCE WITH THE STREAM BANK SEEDING SPECIFICATIONS ON THE WETLAND & STREAM RESTORATION PLAN.
2. IN ACCORDANCE WITH RSA 483-B:9.V.(c), THE SEPTIC SYSTEM IS GREATER THAN 125 FEET FROM THE REFERENCE LINE AND 75 FEET FROM ALL RIVERS.
3. AN AS-BUILT PLAN OF THE DRIVEWAY IS TO BE PREPARED AND SUBMITTED TO COMMUNITY SERVICES IN DIGITAL (.DWG AND .PDF) FORMATS.

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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

GRAPHIC SCALE

60 0 30 60 120 240

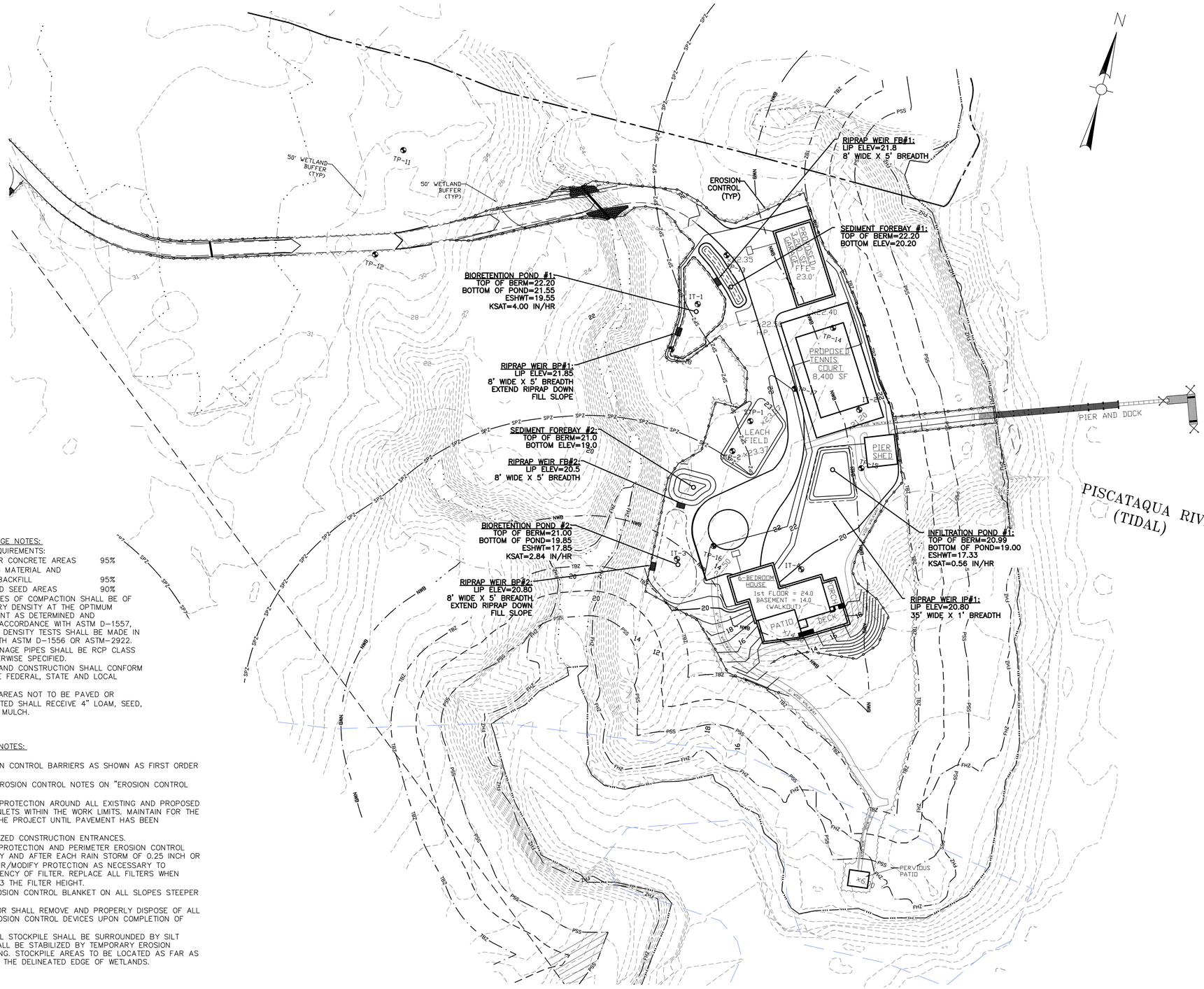
(IN FEET)
1 inch = 60 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

SHORELAND IMPACT PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	9



GRADING & DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:
   - BELOW PAVED OR CONCRETE AREAS 95%
   - TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL 95%
   - BELOW LOAM AND SEED AREAS 90%

   * ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.
2. ALL STORM DRAINAGE PIPES SHALL BE RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
4. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 4" LOAM, SEED, FERTILIZER, AND MULCH.

EROSION CONTROL NOTES:

1. INSTALL EROSION CONTROL BARRIERS AS SHOWN AS FIRST ORDER OF WORK.
2. SEE GENERAL EROSION CONTROL NOTES ON "EROSION CONTROL NOTES" SHEET.
3. PROVIDE INLET PROTECTION AROUND ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
5. INSPECT INLET PROTECTION AND PERIMETER EROSION CONTROL MEASURES DAILY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
6. CONSTRUCT EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 3:1.
7. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
8. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED BY SILT FENCE AND SHALL BE STABILIZED BY TEMPORARY EROSION CONTROL SEEDING. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLANDS.

PREPARED FOR:
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402 WEBBER HILL ROAD
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70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- UGU — UNDERGROUND UTILITY

GRAPHIC SCALE

50 0 25 50 100 200

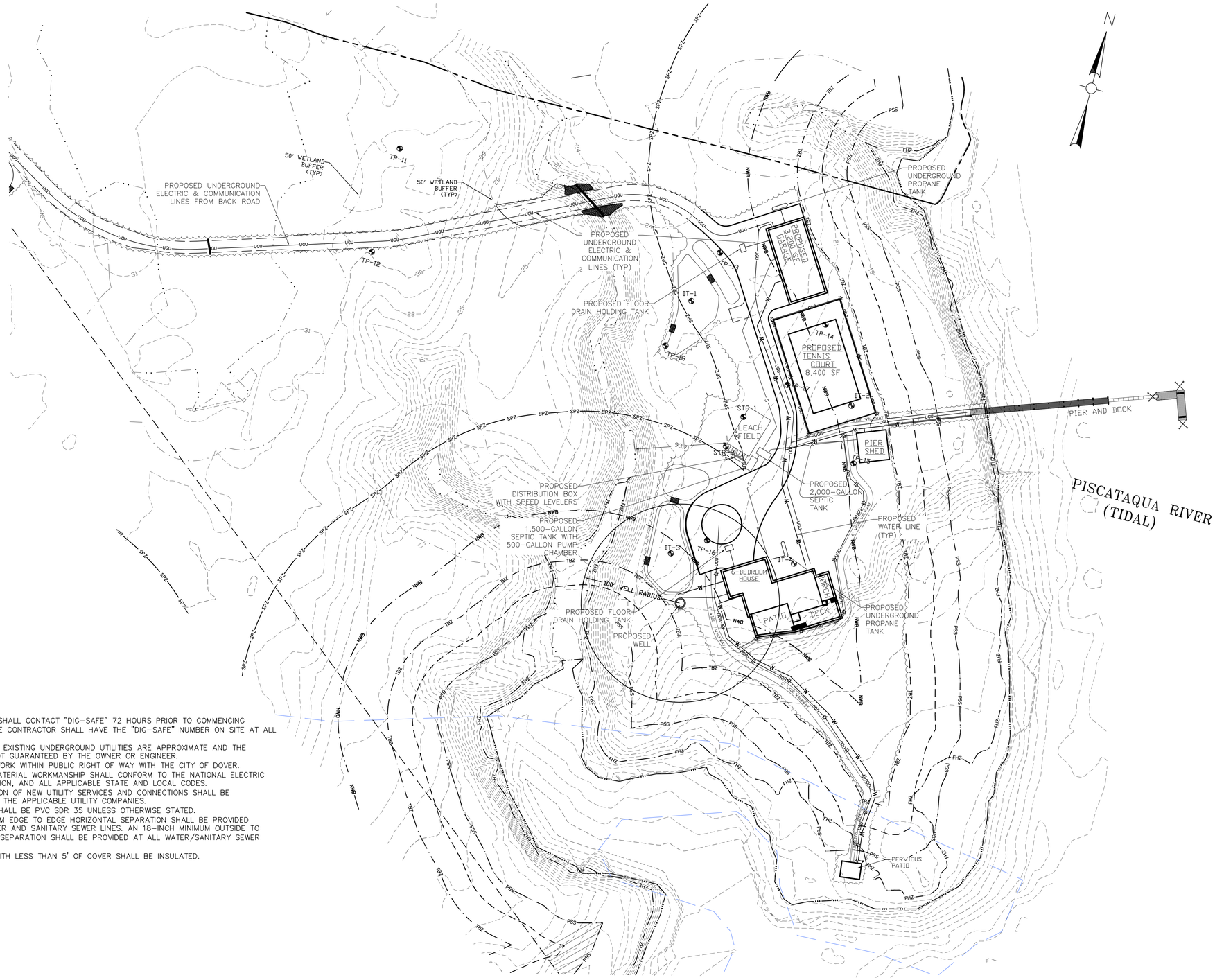
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:
REVISED FOR AOT SUBMITTAL	12.27.24
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	10.12.24

GRADING, DRAINAGE, & EROSION CONTROL PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	10



UTILITY NOTES:

1. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER.
2. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF DOVER.
3. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
4. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE APPLICABLE UTILITY COMPANIES.
5. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
6. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
7. ALL SEWER PIPE WITH LESS THAN 5' OF COVER SHALL BE INSULATED.

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LEGEND

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- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- W — PROPOSED WATER LINE
- UGU — PROPOSED UNDERGROUND ELECTRIC & COMMUNICATION LINES
- S — PROPOSED SEPTIC LINE

STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 029 QUALIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

UTILITY PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	11

N

LEGEND

AREAS TO BE RESTORED

R3 PHOTO LOCATION (RESTORATION AREA)

AFTER THE FACT (ATF) RESTORATION

ATF#	TO BE RESTORED	TYPE
1	350 SF	WETLAND
2	105 SF	WETLAND
3	160 SF	WETLAND
4	80 SF	WETLAND
5	385 SF	WETLAND
6	120 SF	WETLAND
7A	88 SF/9 LF	STREAM BANK
7B	109 SF/11 LF	WETLAND/STREAM
7C	91 SF/9 LF	STREAM BANK

WETLAND/STREAM TOTAL = 1,309 SF (11 LF)

STREAM BANK TOTAL = 179 SF (18 LF)

TOTAL TO BE RESTORED = 1,488 SF (29 LF)

NOTES:

1. EXISTING RUTS WITHIN AREAS TO BE RESTORED SHALL BE HAND RAKED, OR A SIMILAR NON-INTRUSIVE APPROACH, PRIOR TO RESTORATION SEEDING.
2. SEE SEEDING SPECIFICATION NOTES BELOW FOR WETLAND AND STREAM BANK RESTORATION AREAS.
3. SEED MIXES SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATIONS.
4. SEED MIXES ARE AVAILABLE THROUGH:
   NEW ENGLAND WETLAND PLANTS, INC.
   820 WEST ST. AMHERST, MA
   413-548-8000
   INFO@NEWP.COM

COWARDIN WETLAND CLASSIFICATION LEGEND

P = PALUSTRINE
SS = SCRUB-SHRUB
FO = FORESTED
1 = BROAD-LEAVED DECIDUOUS
R3 = RIVERINE, UPPER PERENNIAL
UB3 = UNCONSOLIDATED BOTTOM/MUD
UB4 = UNCONSOLIDATED BOTTOM/ORGANIC
E = SEASONALLY FLOODED/SATURATED
Z = INTERMITTENTLY EXPOSED/PERMANENT

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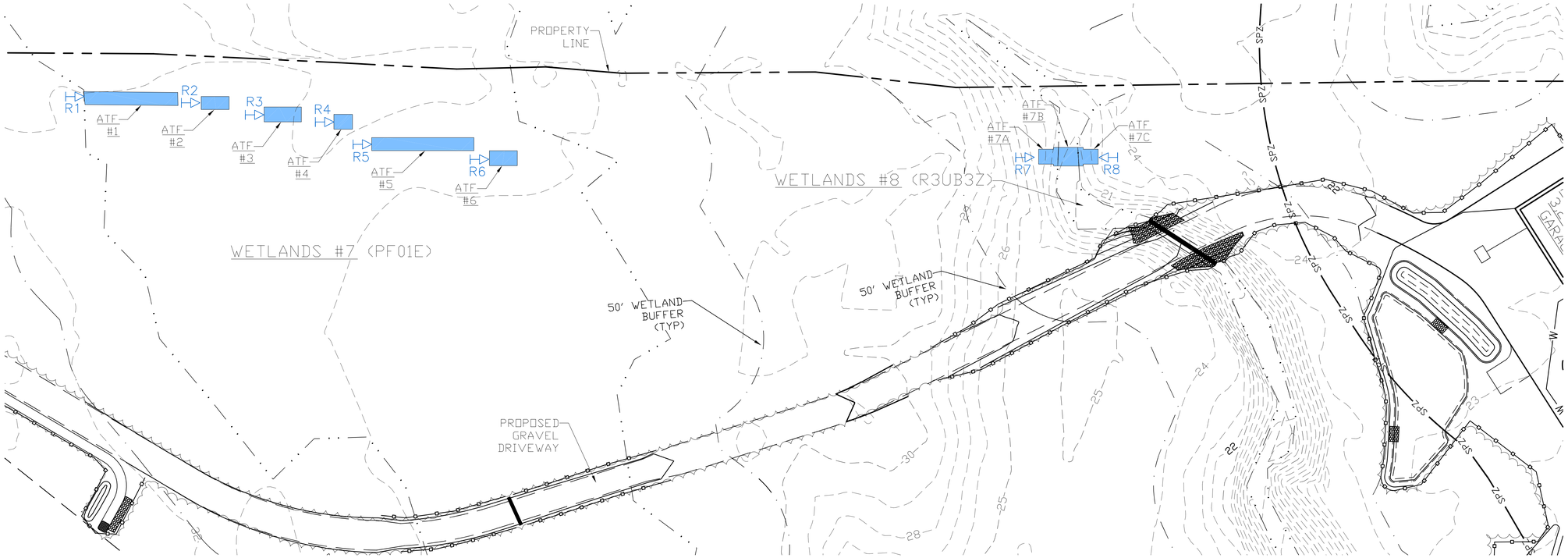


STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

SEEDING SPECIFICATIONS FOR WETLAND RESTORATION AREAS:

AREAS OF WETLAND RESTORATION ARE TO BE SEEDED WITH A WETLAND SEED MIX SUCH AS NEW ENGLAND WETMIX OR AN EQUIVALENT SUBSTITUTE. APPLY SEED AT A RATE OF 1 POUND PER 2,500 SF.

NEW ENGLAND WETMIX OR AN EQUIVALENT SUBSTITUTE TYPICALLY INCLUDES:

COMMON NAME	BOTANICAL NAME
FOX SEDGE	CAREX VULPINOIDEA
BLUNT BROOM SEDGE	CAREX SCOPARIA
LURID SEDGE	CAREX LURIDA
HOP SEDGE	CAREX LUPULINA
FOWL BLUEGRASS	POA PALUSTRIS
BEGGAR TICKS	BIDENS FRONDOSA
GREEN BULRUSH	SCIRPUS ATROVIRENS
SWAMP MILKWEED	ASCLEPIAS INCARNATA
FRINGED SEDGE	CAREX CRINITA
SOFT RUSH	JUNCUS EFFUSUS
STARVED/CALICO ASTER	ASTER LATERIFLORUS
BLUE FLAG	IRIS VERSICOLOR
AMERICAN MANNAGRASS	GLYCERIA GRANDIS
SQUARE STEMMED MONKEY FLOWER	MIMULUS RINGENS
SPOTTED JOE PYE WEED	EUPATORIUM MACULATUM

SEEDING SPECIFICATIONS FOR STREAM BANK RESTORATION AREAS:

AREAS OF STREAM BANK RESTORATION ARE TO BE SEEDED WITH A SEED MIX SUCH AS NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX OR AN EQUIVALENT SUBSTITUTE. APPLY SEED AT A RATE OF 1 POUND PER 1,450 SF.

NEW ENGLAND SEMI-SHADE GRASS AND FORBS OR AN EQUIVALENT SUBSTITUTE TYPICALLY INCLUDES:

COMMON NAME	BOTANICAL NAME
VIRGINIA WILD RYE	ELYMUS VIRGINICUS
CANADA WILD RYE	ELYMUS CANADENSIS
SENSITIVE FERN	ONOCLEA SENSIBILIS
BONESET	EUPATORIUM PERFOLIATUM
PATH RUSH	JUNCUS TENUIS

* FOR FURTHER INFORMATION REGARDING RECOMMENDED SEED MIXES, THE CONTRACTOR IS ENCOURAGED TO REACH OUT TO MADDIE SEVERANCE AT NHNHB AT (603) 271-2834.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

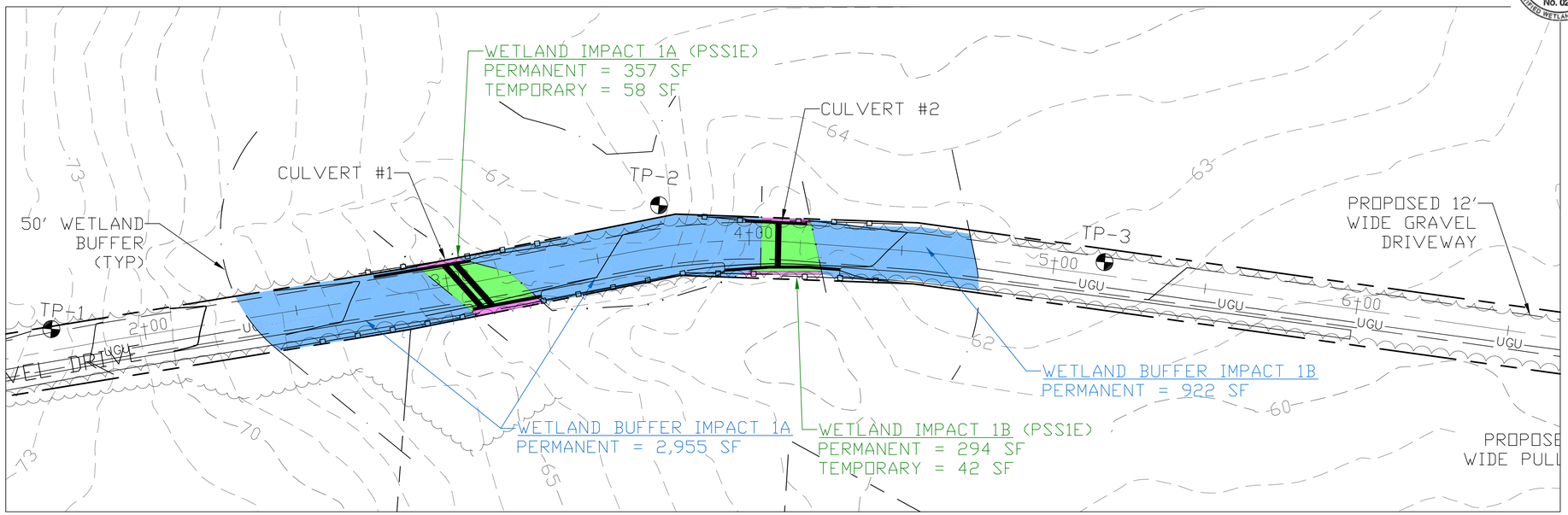
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24
REVISED PER REVIEW COMMENTS	11/12/24

WETLAND & STREAM BANK RESTORATION PLAN

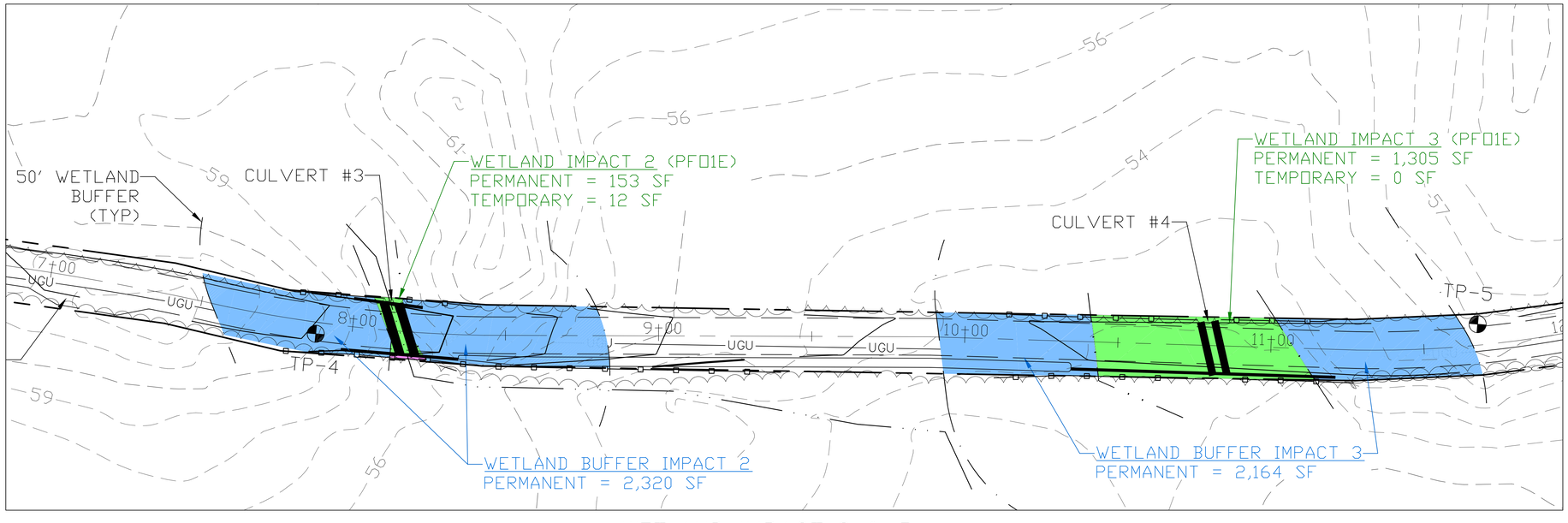
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=30'
PROJ. N0:	NH-1501	SHEET NO.	12

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *



WETLAND IMPACT 1A & 1B



WETLAND IMPACT 2 & 3

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
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STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 029 CERTIFIED WETLAND SCIENTIST

COWARDIN WETLAND CLASSIFICATION LEGEND

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E = SEASONALLY FLOODED/SATURATED
Z = INTERMITTENTLY EXPOSED/PERMANENT

LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

IMPACT SUMMARY

WETLAND/ STREAM IMPACT	8,938 SF (PERMANENT) 166 SF (TEMPORARY)
TIDAL BUFFER ZONE (TBZ) IMPACT	1,110 SF (PERMANENT) 1,706 SF (TEMPORARY)
PERENNIAL STREAM BANK IMPACT	1,573 SF (PERMANENT)
PERENNIAL STREAM LINEAR IMPACT	130 LF (PERMANENT)
INTERMITTENT STREAM LINEAR IMPACT	22 LF (PERMANENT)
PISCATAQUA RIVER BANK IMPACT (INCLUDED IN TBZ IMPACT #)	131 SF (PERMANENT)
PISCATAQUA RIVER BANK LINEAR IMPACT	6 LF (PERMANENT)
CITY OF DOVER WETLAND BUFFER IMPACT (INCLUDES TBZ IMPACTS)	28,193 SF (PERMANENT) 1,706 SF (TEMPORARY)

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

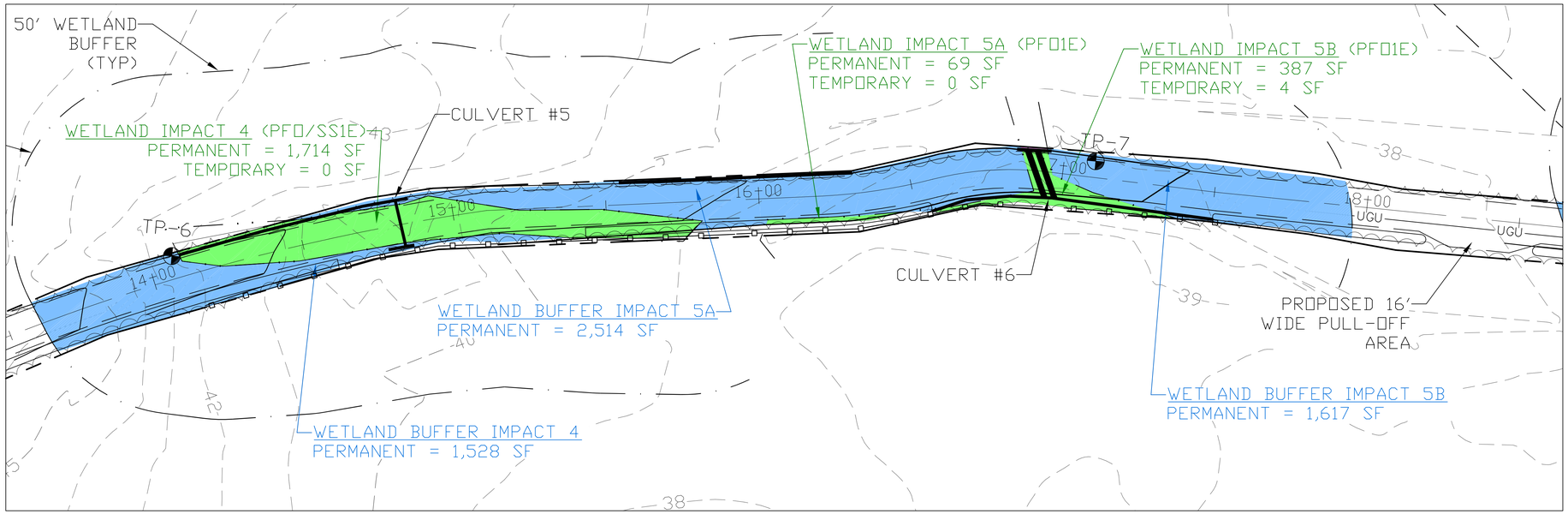
REVISED PER REVIEW COMMENTS	12/23/24
REVISIONS:	DATE:

WETLAND IMPACT PLAN 1

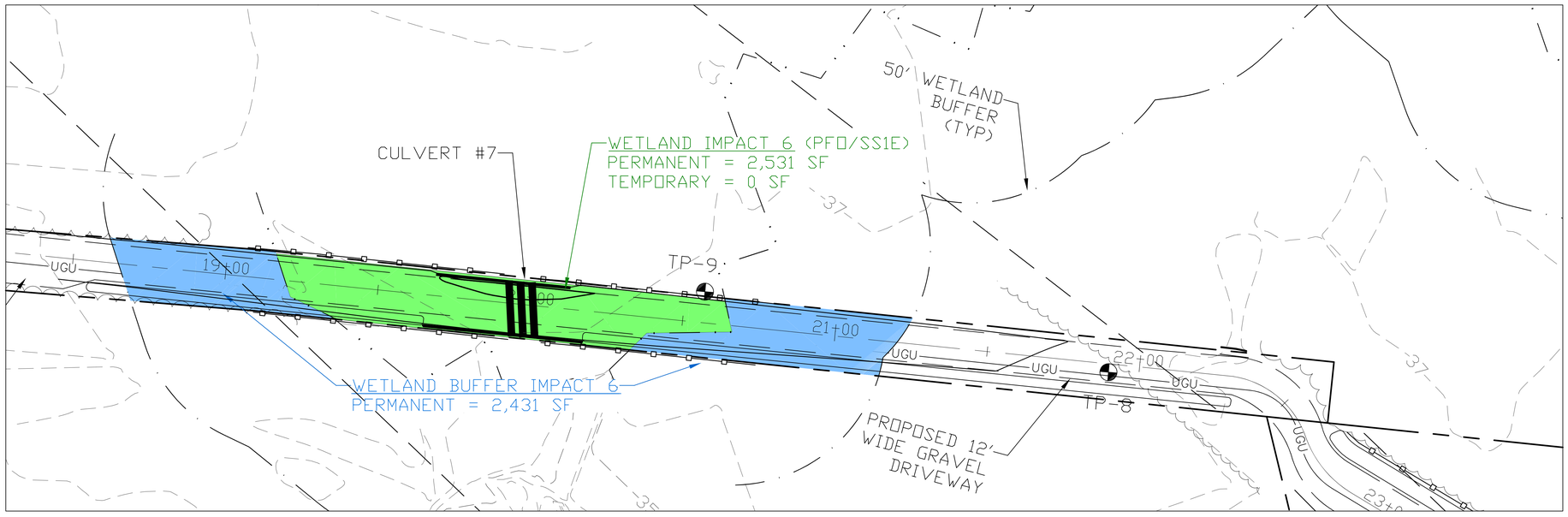
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	13

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *



WETLAND IMPACT 4, 5A, & 5B



WETLAND IMPACT 6

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
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BA BEALS ASSOCIATES, PLLC
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LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

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STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

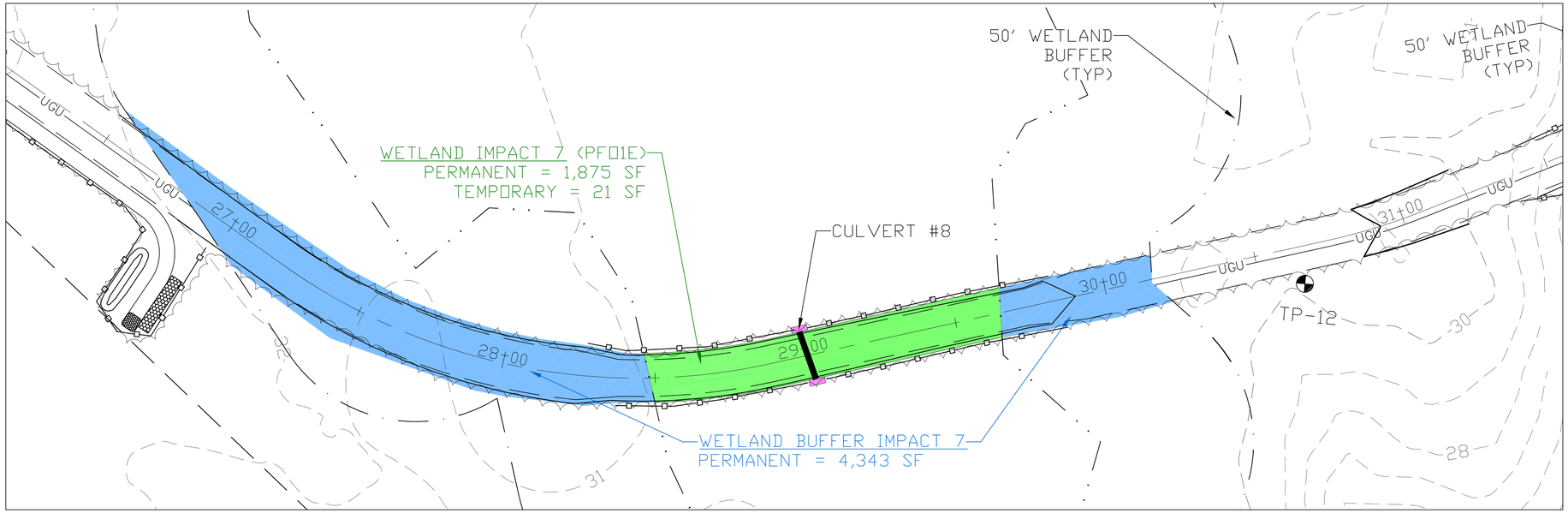
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

WETLAND IMPACT PLAN 2

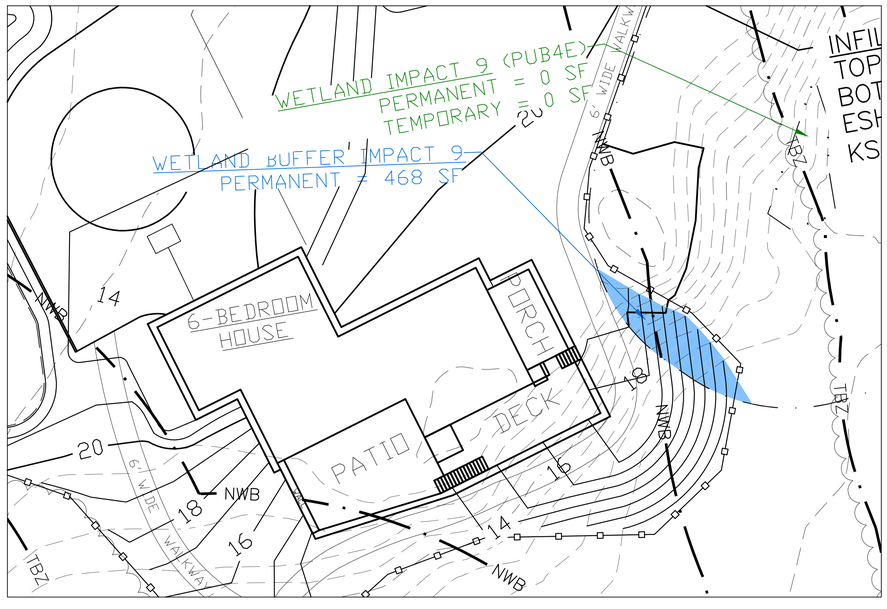
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	14

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *



WETLAND IMPACT 7



WETLAND IMPACT 9

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

P = PALUSTRINE
SS = SCRUB-SHRUB
FO = FORESTED
1 = BROAD-LEAVED DECIDUOUS
R3 = RIVERINE, UPPER PERENNIAL
UB3 = UNCONSOLIDATED BOTTOM/MUD
UB4 = UNCONSOLIDATED BOTTOM/ORGANIC
E = SEASONALLY FLOODED/SATURATED
Z = INTERMITTENTLY EXPOSED/PERMANENT

STATE OF NEW HAMPSHIRE MICHAEL L. PARSONT No. 029 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 LICENSED LAND SURVEYOR PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

WETLAND IMPACT PLAN 3

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	15

PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
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* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *

LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

P = PALUSTRINE
SS = SCRUB-SHRUB
FO = FORESTED
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E = SEASONALLY FLOODED/SATURATED
Z = INTERMITTENTLY EXPOSED/PERMANENT

WETLAND IMPACT 8

STATE OF NEW HAMPSHIRE MICHAEL L. PARSONT No. 023 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

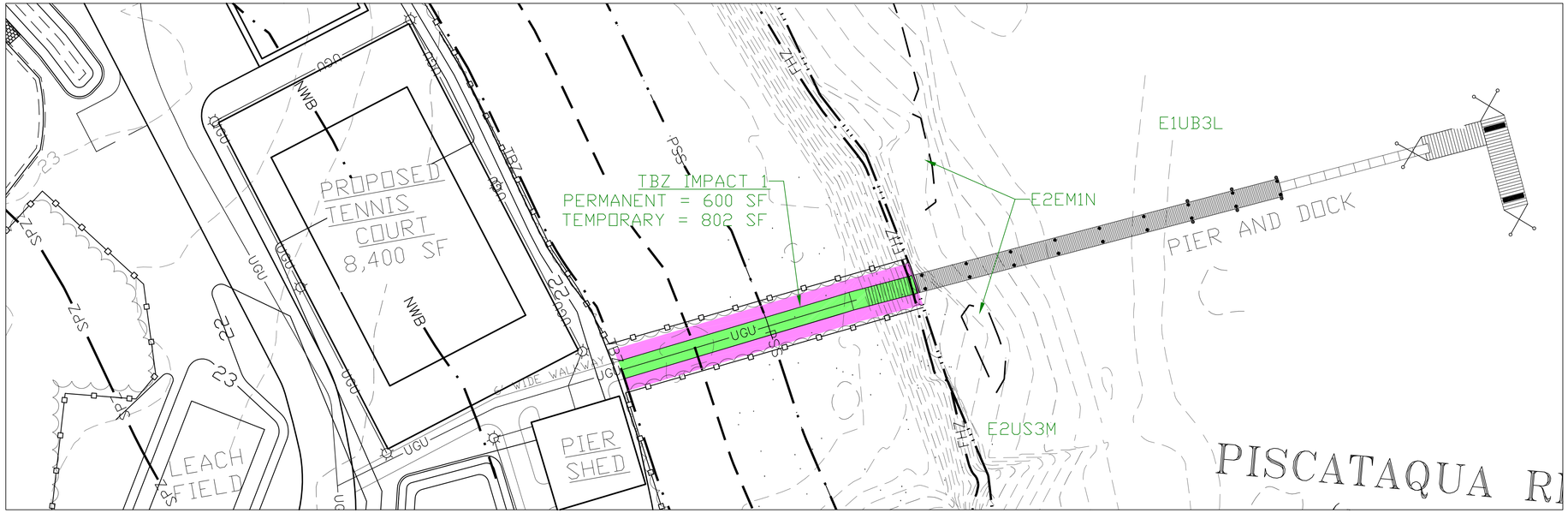
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

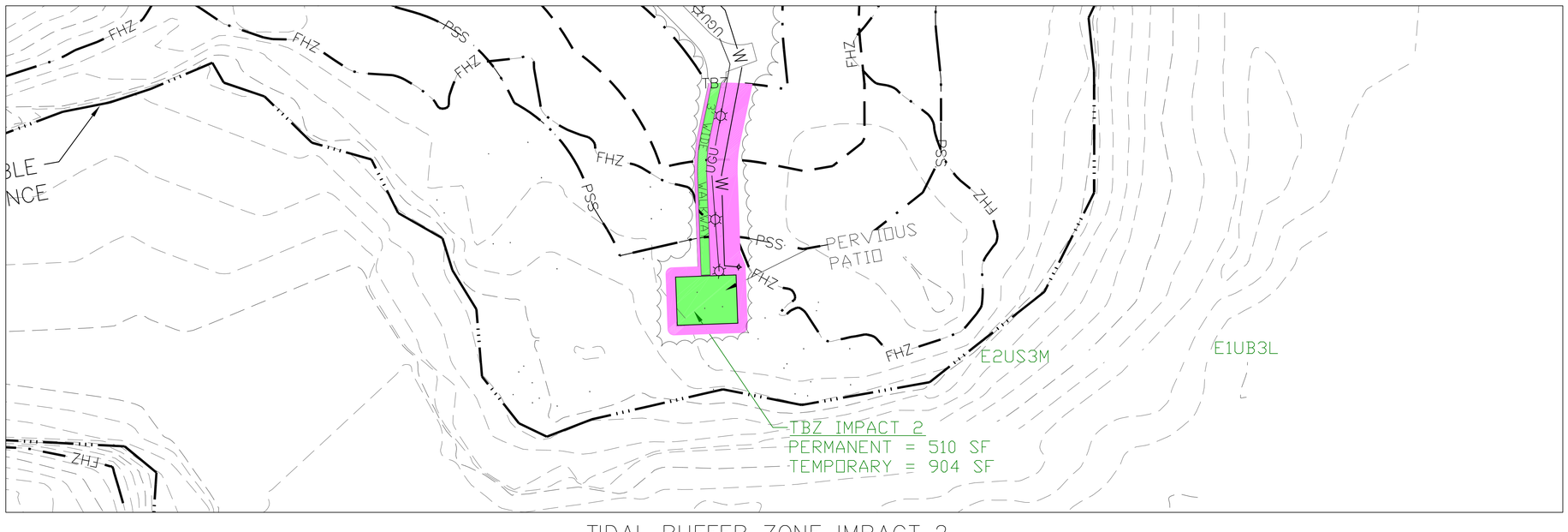
WETLAND IMPACT PLAN 4

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	16



TIDAL BUFFER ZONE IMPACT 1



TIDAL BUFFER ZONE IMPACT 2

NOTE
1. SHRUBS AND GROUND COVER IN THE TIDAL BUFFER ZONE WORK AREAS SHALL BE DOCUMENTED PRIOR TO DISTURBANCE THROUGH PHOTOS AND WRITTEN NOTES. ALL DISTURBED SHRUBS AND GROUND COVER SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS.

PREPARED FOR:
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KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

LEGEND

PERMANENT TIDAL BUFFER IMPACT

TEMPORARY TIDAL BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

E1 = ESTUARINE, SUBTIDAL
UB3 = UNCONSOLIDATED BOTTOM/MUD
E2 = ESTUARINE, INTERTIDAL
US3 = UNCONSOLIDATED SHORE/MUD
EM1 = EMERGENT/PERSISTENT
L = SUBTIDAL
M = IRREGULARLY EXPOSED
N = REGULARLY EXPOSED

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

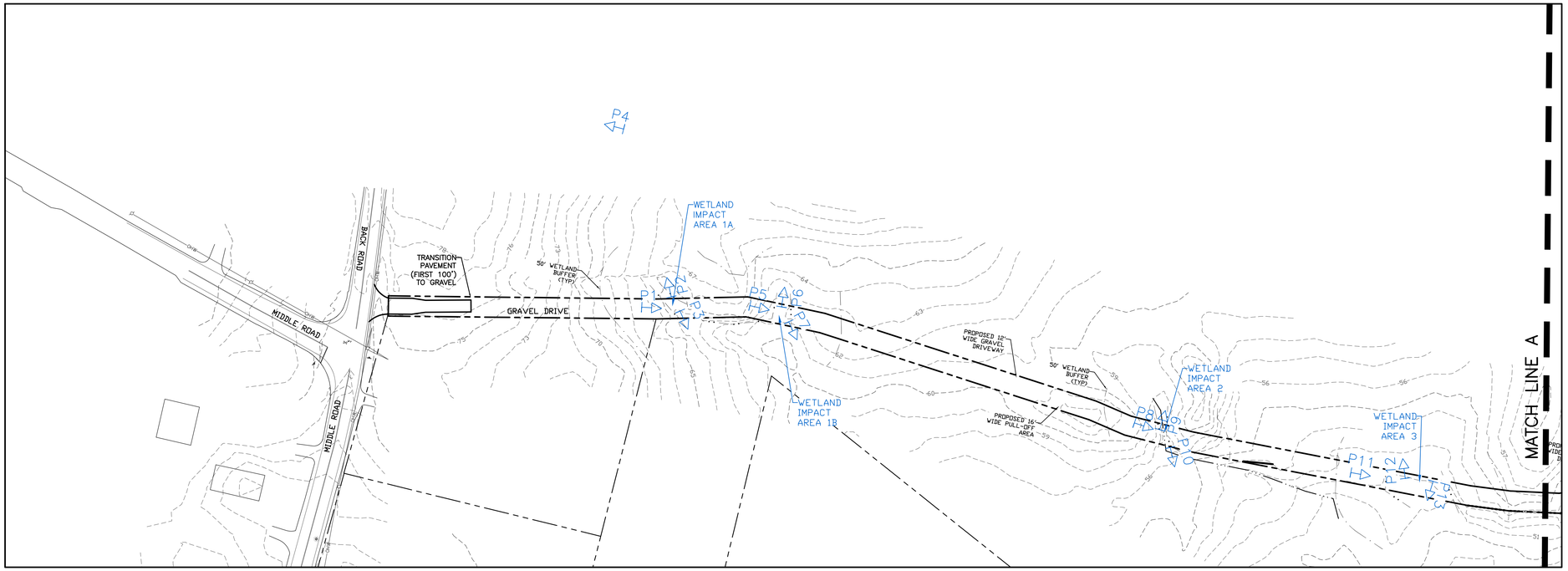
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

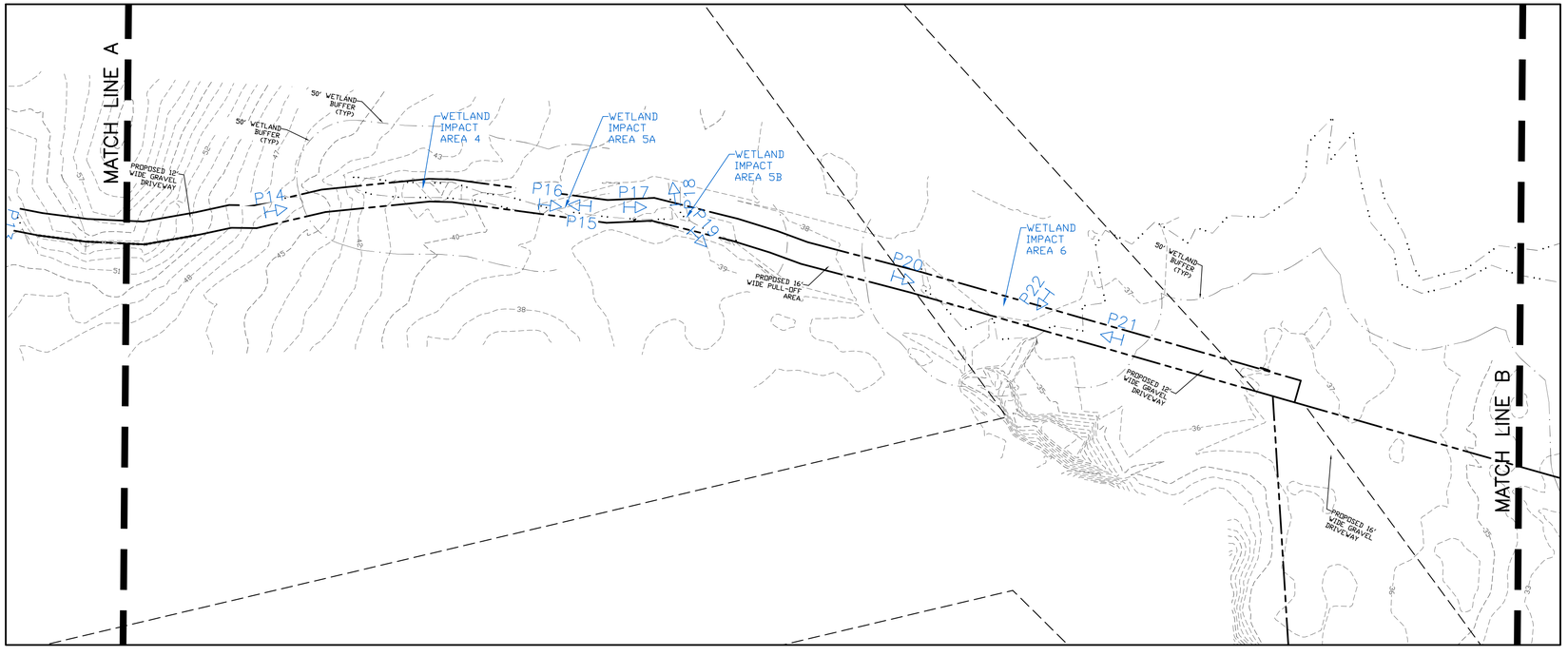
REVISED PER REVIEW COMMENTS	12/23/24
REVISIONS:	DATE:

TIDAL BUFFER IMPACT PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	17





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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- P1 — PHOTO LOCATION (WETLAND CROSSINGS)

N

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

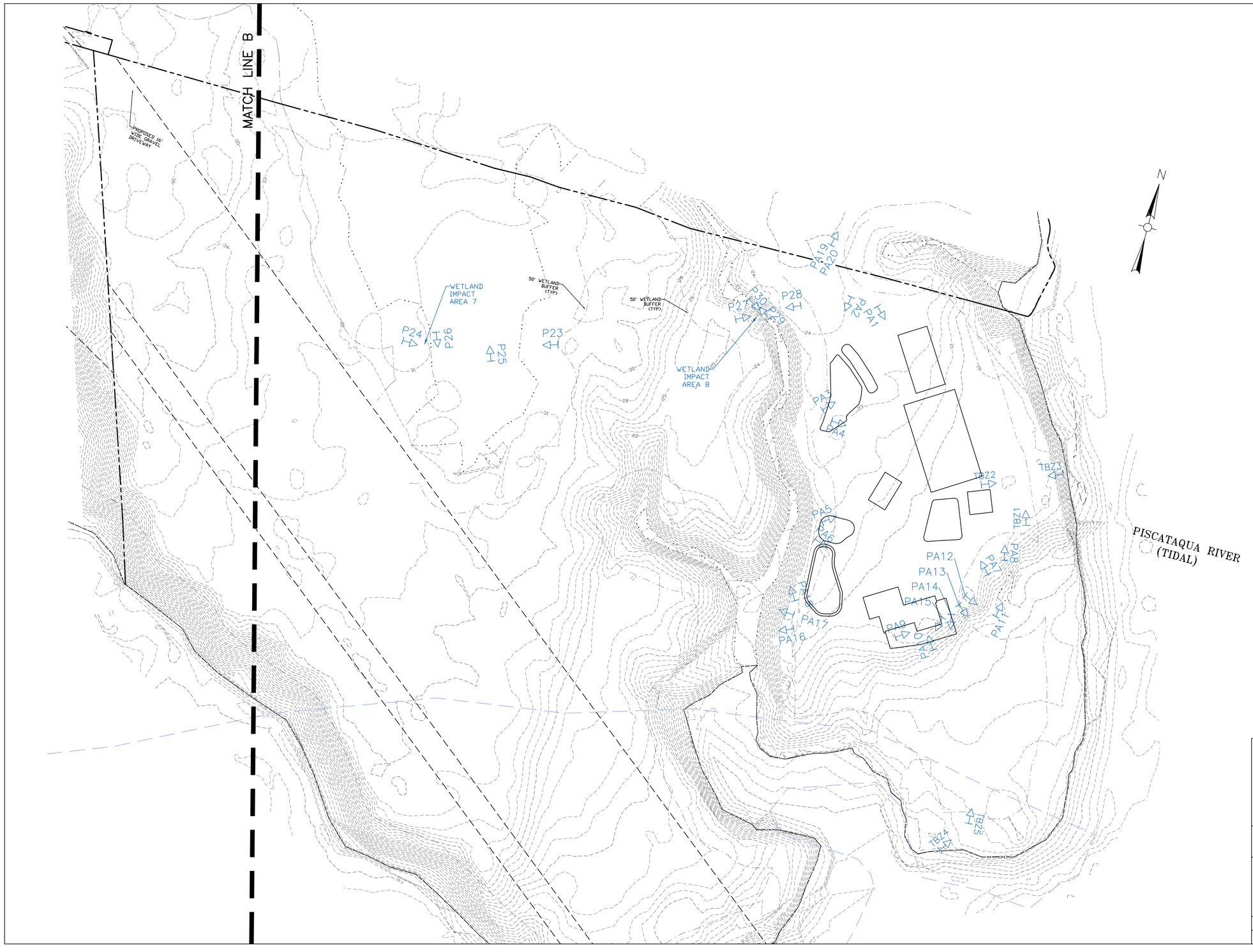
CHRISTIAN O. SMITH No.9900 STATE OF NEW HAMPSHIRE PROFESSIONAL ENGINEER

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PHOTO LOG PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	18



PREPARED FOR:

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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
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- FHZ — FLOOD HAZARD ZONE
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- NATURAL WOODLAND AREA REQUIREMENT

P1 — PHOTO LOCATION (WETLAND CROSSINGS)

PA2 — PHOTO LOCATION (PROJECT AREAS)

TBZ3 — PHOTO LOCATION (TBZ AREAS)

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

GRAPHIC SCALE

60 0 30 60 120 240

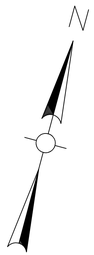
(IN FEET)
1 inch = 60 ft.

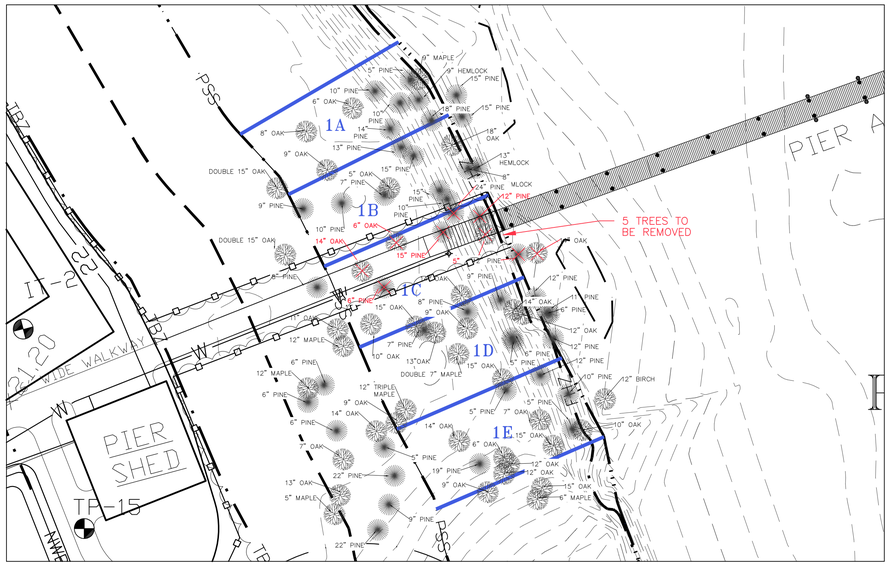
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PHOTO LOG PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	19

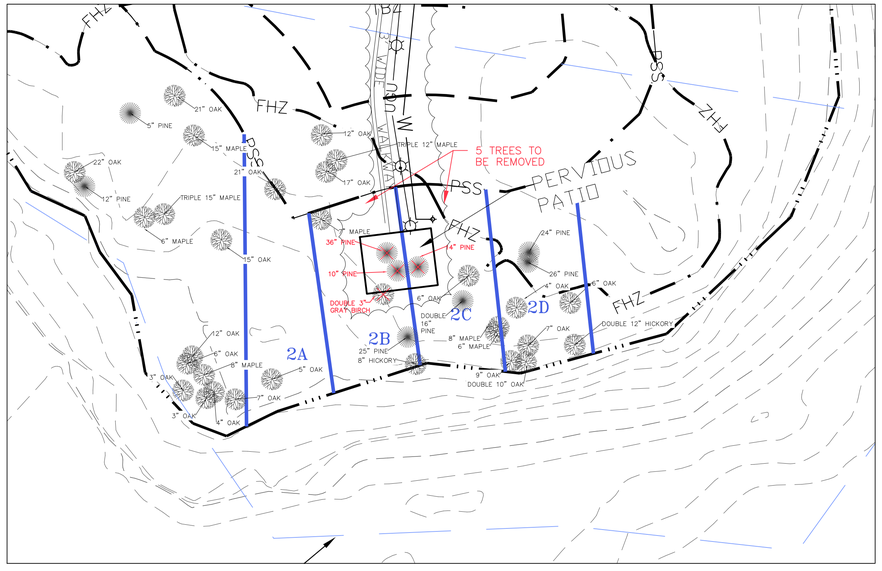




TREE REMOVAL AREA #1

GRID AREA	TREES TO REMAIN
1A	*NO TREES REMOVED*
1B	*NO TREES REMOVED*
1C	10" OAK = 10 POINTS 14" OAK = 15 POINTS TOTAL = 25 POINTS
1D	*NO TREES REMOVED*
1E	*NO TREES REMOVED*

GRID AREA	TREES TO BE REMOVED
1C	5" OAK 6" OAK 6" PINE 12" PINE 14" OAK 15" PINE 24" PINE



TREE REMOVAL AREA #2

GRID AREA	TREES TO REMAIN
2A	*NO TREES REMOVED*
2B	7" MAPLE = 10 POINTS 8" HICKORY = 10 POINTS 25" PINE = 15 POINTS TOTAL = 35 POINTS
2C	6" OAK = 5 POINTS 6" MAPLE = 5 POINTS 8" MAPLE = 10 POINTS DOUBLE 16" PINE = 30 POINTS TOTAL = 50 POINTS
2D	*NO TREES REMOVED*

GRID AREA	TREES TO BE REMOVED
2B	3" BIRCH (DOUBLE) 10" PINE 35" PINE
2C	14" PINE

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LEGEND

- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- 1A — GRID BOUNDARY/NUMBER
- TREE TO REMAIN
- TREE TO BE REMOVED WITHIN 50-FOOT REFERENCE LINE

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
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GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

VEGETATION MANAGEMENT PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	20

PLAN INTENT:

THE INTENT OF THIS PLAN IS TO PROVIDE AN APPROVED LEACH FIELD TO HANDLE THE LOADING FOR A 6 BEDROOM SINGLE-FAMILY RESIDENCE. THE HOUSE, GARAGE, AND PIER SHED WILL UTILIZE GRAVITY FLOW TO TWO SEPTIC TANKS WITH THE SECOND TANK TO PUMP INTO THE D-BOX.

INFILTRATOR NOTE

INFILTRATOR WATER TECHNOLOGIES TREATMENT SYSTEMS ARE APPROVED BY NHDES IN ACCORDANCE WITH PART ENV-WS 1024. THIS SYSTEM IS DESIGNED IN ACCORDANCE WITH THE NH DESIGN AND INSTALLATION MANUAL FOR QUICK4 CHAMBERS IN NEW HAMPSHIRE.

SITE NOTES

1. GRADING SHOWN IS SUGGESTED AND PRIMARILY FOR THE SEPTIC SYSTEM. ADDITIONAL GRADING IS AT THE DISCRETION OF THE CONTRACTOR AND/OR OWNER. MINIMUM FILL EXTENSIONS AND SLOPE REQUIREMENTS MUST BE MAINTAINED.
2. NH-DES REQUIRES A PERIMETER DRAIN IF THE SLAB IS LESS THAN 18" TO THE SHWT. CERTAIN TOWNS REQUIRE A PERIMETER DRAIN AT ALL TIMES - CHECK LOCAL REGULATIONS. BEALS ASSOCIATES, PLLC. RECOMMENDS A PERIMETER DRAIN BE INSTALLED REGARDLESS.
3. BEST MANAGEMENT PRACTICES ARE TO BE FOLLOWED DURING ALL CONSTRUCTION TO PREVENT SITE ALTERATION THAT MAY CAUSE EROSION AND/OR DRAINAGE ISSUES.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONSTRUCT THE FOUNDATION IN SUCH A MANNER AS TO PREVENT WATER INFILTRATION IN THE BASEMENT.
5. PER ENV-WQ 1003.13 (A)(3) THERE ARE NO KNOWN CEMETERIES LOCATED WITHIN 100' OF ANY PART OF THE EFFLUENT DISPOSAL SYSTEM.

THIS PLAN IS NOT A SURVEY

THE BUILDER/SITE CONTRACTOR IS RESPONSIBLE TO CONFIRM THE ZONING DIMENSIONAL REQUIREMENTS AND SETBACK LINE REQUIREMENTS PRIOR TO INITIATING CONSTRUCTION OF THE PROPOSED HOUSE AND SEPTIC SYSTEM. THE ZONING ORDINANCE OF THE MUNICIPALITY IS TO BE COMPLIED WITH. THE BUILDER/SITE CONTRACTOR IS ALSO RESPONSIBLE TO CONTACT THE MUNICIPALITY REGARDING INSPECTIONS PRIOR TO AND DURING CONSTRUCTION, I.E. LOCATION AND BED-BOTTOM INSPECTIONS. THIS PLAN IS NOT INTENDED TO BE USED AS A SITE PLAN.

GENERAL NOTES

1. THIS PLAN DOES NOT REPRESENT A PROPERTY BOUNDARY SURVEY OR ENGINEERED SITE PLAN.
   EVERY ATTEMPT HAS BEEN MADE TO ACCURATELY IDENTIFY THE RELEVANT PROPERTY LINES DEPICTED ON THIS PLAN. HOWEVER, SEPTIC SYSTEM PLANS ARE NOT INTENDED FOR BUILDING LAYOUT. A LICENSED LAND SURVEYOR SHOULD BE RETAINED TO LAY OUT ALL BUILDINGS ON THE SITE AND VERIFY THAT THEY WILL BE IN COMPLIANCE WITH ALL APPLICABLE LOCAL ZONING REQUIREMENTS PRIOR TO CONSTRUCTION.
2. ANY DISCREPANCY BETWEEN THESE PLANS AND THE APPARENT FIELD CONDITIONS TO BE REPORTED TO THE DESIGNER PRIOR TO CONSTRUCTION.
3. BOUNDARY INFORMATION FROM ELECTRONIC SURVEY PLAN BY BERRY SURVEY & ENGINEERING.
4. CHAMBERS TO BE QUICK4 STANARD CHAMBERS IN A CLUSTER DISTRIBUTED BY INFILTRATOR SYSTEMS, INC. OF OLD SAYBROOK, CT OR EQUAL, TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
5. ALL CONCRETE PRODUCTS ARE TO BE MANUFACTURED BY A-I FOSS INC OF FARMINGTON, N.H. OR EQUAL.
6. ALL SEPTIC TANKS MUST HAVE BAFFLES AT INLETS, OUTLETS, AND BETWEEN COMPARTMENTS.
7. CONCRETE STRUCTURES TO BE WATER TIGHT. ALL JOINTS, INLETS, OUTLETS, ETC. TO BE SEALED WITH NON-SHRINK GROUT - "WATER PLUG", "BLOCK BOND", OR EQUAL PER ENV-WQ 1008.04(C). CONCRETE STRUCTURES INSIDE WELL RADIUS MUST BE SEALED TO PREVENT INFILTRATION AND/OR EXFILTRATION.
8. SEPTIC TANK MUST BE A MINIMUM OF 5 FEET FROM FOUNDATION DRAIN. CHAMBERS TO BE A MINIMUM OF 15 FEET FROM FOUNDATION DRAIN. DISCHARGE OF FOUNDATION DRAIN OUTFALL TO BE A MINIMUM OF 25 FEET FROM SEPTIC TANK AND CHAMBERS.
9. 4 INCH GRAVITY SEWER TO BE SDR 35 OR SCHEDULE 40 PVC. WHERE WELL IS <75' FROM SEPTIC TANK, 4" GRAVITY SEWER TO BE SDR 26. FORCE MAINS TO BE SDR 26, SCHEDULE 40 PVC, OR POLYETHYLENE PIPE ("POLY PIPE"), 100-150 PSI RATING.
10. MINIMUM PIPE SLOPES: BUILDING TO TANK = 2%. TANK TO D-BOX = 1%
11. DISTRIBUTION BOX SHALL HAVE FLOW EQUALIZER OUTLET FITTINGS.
12. PROVIDE A MINIMUM OF A 2" DROP BETWEEN DISTRIBUTION BOX OUTLET AND CHAMBER INLET.
13. INLET/OUTLET INTERCONNECTIONS SHALL EXTEND NO MORE THAN 4" INTO CHAMBER BUT NO LESS THAN 2" INTO CHAMBER.
14. SYSTEM MUST BE INSPECTED AND APPROVED BY NH-DES PRIOR TO BACKFILLING.
15. EFFLUENT DISPOSAL AREA MAY BE REBUILT IN PLACE, SHOULD FAILURE OCCUR, PROVIDED THAT THE REQUIREMENTS OF ADMINISTRATIVE RULE ENV-WS 1004.18 ARE MET.
16. CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUFACTURER'S INSTALLATION MANUAL.

SITE PREPARATION AND FILL

1. CHECK DESIGN INTENT AND VERIFY THE ELEVATION OF EXISTING GROUND (UPSLOPE SIDE) BEFORE DISTURBING SITE. THE "DESIGN INTENT" MUST BE MAINTAINED.
2. REMOVE ALL TREES, BRUSH, BOULDERS, AND DEBRIS FROM THE AREA TO BE FILLED. STUMPS NOT TO BE BURIED WITHIN 75' OF EFFLUENT DISPOSAL AREA, UNLESS UPSLOPE (35' MIN.)
3. REMOVE TOPSOIL. LEAVE SUBSOIL IN PLACE. DO NOT COMPACT SUBSOIL WITH MACHINERY. SCARIFY WITH TEETH OF EXCAVATOR BEFORE PLACING FILL. SCARIFY PARALLEL WITH CONTOURS, WORKING FROM THE CENTER OUTWARD. SOIL MUST BE DRY PRIOR TO PREPARATION.
4. MATERIAL SPECIFICATIONS:
   TOPSOIL: 6" OF CLEAN LOAM TO BE PLACED AS BLANKET ON TOP AND SIDE SLOPES.
   CLEAN FILL: PERMEABLE SOIL FREE OF ROOTS, DEBRIS, ORGANICS, AND STONES GREATER THAN 3".
   SEPTIC SAND: FILL TO RAISE THE SYSTEM AND FOR THE SIDE SLOPES AS SHOWN ON THE SCHEMATIC "FILL SECTION A-A" TO MEET THE FOLLOWING SPECIFICATION: MEDIUM TO COARSE TEXTURED SAND, NO GREATER THAN 5% PASSING THE NUMBER 200 SIEVE, AND NO PARTICLES LARGER THAN 3".
   BEDDING SAND: USE CLEAN COARSE SAND MEETING ASTM STANDARD C-33 (CONCRETE SAND). BEDDING SAND USED BETWEEN, 6" MINIMUM AROUND, ABOVE & BELOW CHAMBERS.
5. SAND FILL TO BE PUSHED ONTO PREPARED SURFACE FROM THE SIDE. DO NOT ALLOW EQUIPMENT ON THE SCARIFIED SOIL SURFACE. FILL BETWEEN CHAMBERS TO BE CAREFULLY PLACED WITH EXCAVATOR.
6. PLACE FILL IN 12" LOOSE LAYERS USING A TRACK TYPE TRACTOR WITH BLADE. ALWAYS KEEP A MINIMUM OF 9" OF FILL MATERIAL BENEATH TRACKS OF TRACTOR TO MINIMIZE COMPACTION OF NATURAL SOIL. EACH LAYER SHALL BE SPREAD IN UNIFORM THICKNESS PRIOR TO PLACING NEXT LAYER. CONTINUOUS GRADING AND SHAPING SHALL BE CARRIED OUT TO ASSURE UNIFORM DENSITY THROUGHOUT EACH LAYER.
7. ENTIRE FILLED AREA SHOULD BE COVERED WITH TOPSOIL, SEEDED, AND MULCHED IMMEDIATELY AFTER BACKFILLING TO PREVENT EROSION.
8. BACKFILL DEPTH OVER SYSTEM TO BE 12"-24". CROWN 2% MIN. TO PROVIDE RUNOFF. SYSTEM BACKFILLED WITH MORE THAN 18" MUST BE VENTED.

OPERATION AND MAINTENANCE

1. IT IS THE OWNER'S RESPONSIBILITY TO MAINTAIN THIS SYSTEM IN ACCORDANCE WITH THESE "OPERATION AND MAINTENANCE" INSTRUCTIONS.
2. EVERY SYSTEM'S DESIGN CAPACITY IS LIMITED. CAREFUL AND REASONABLE WATER USE IS REQUIRED TO MAXIMIZE THE SYSTEM'S LIFE.
3. THIS SYSTEM MUST BE OPERATED WITHIN ITS DESIGN CAPACITY. THE AVERAGE DAILY FLOW TO THE EFFLUENT DISPOSAL AREA SHOULD BE NO MORE THAN 1/2 ITS APPROVED DESIGN CAPACITY.
4. SYSTEM IS NOT DESIGNED TO HANDLE WASTE FROM A SEWAGE EJECTOR PUMP.
5. SYSTEM IS NOT DESIGNED FOR A GARBAGE DISPOSAL.
6. DO NOT DISPOSE OF GREASE, CHEMICALS, SOLVENTS ETC. VIA THIS SYSTEM.
7. IT IS NOT RECOMMENDED THAT THE BACKWASH FROM WATER SOFTENERS BE DISCHARGED INTO THE SEPTIC SYSTEM. CURRENT NH-DES RULES ALLOW THAT WATER SOFTENER BACKWASH BE DISCHARGED TO A SEPARATE DRYWELL. NO DESIGN OR APPROVAL IS REQUIRED FOR THIS.
8. SEPTIC TANK MUST BE PUMPED BY A LICENSED HAULER AT LEAST EVERY TWO YEARS. KEEP PUMPING RECEIPTS AS PROOF OF MAINTENANCE. CHECK TANK YEARLY. IF SLUDGE AND SURFACE SCUM EXCEED 1/3 OF LIQUID DEPTH, HAVE TANK PUMPED.
9. DO NOT REMOVE SNOW; ALLOW VEHICULAR, NOR LIVESTOCK TRAVEL OVER COMPONENTS OF SYSTEM NOT DESIGNED TO WITHSTAND AN H-20 WHEEL LOAD. COMPONENTS LOCATED UNDER PAVEMENT WILL BE PROVIDED ACCESS USING RISERS AND MANHOLE COVERS CAPABLE OF WITHSTANDING TRAFFIC.
10. THE OWNER SHOULD KEEP A COPY OF THIS PLAN WITH HIS/HER IMPORTANT DOCUMENTS FOR FUTURE REFERENCE. THIS PLAN SHOULD BE PROVIDED TO FUTURE OWNER. COPIES ARE AVAILABLE FROM THIS OFFICE.
11. IF THIS DESIGN UTILIZES A ZABEL TYPE FILTER, FILTER SHOULD BE CLEANED REGULARLY. REFER TO FILTER'S OWNER MANUAL FOR RECOMMENDED FREQUENCY OF CLEANING.

NITRATE SETBACKS:

PROPOSED DESIGN FLOW = 900 GPD

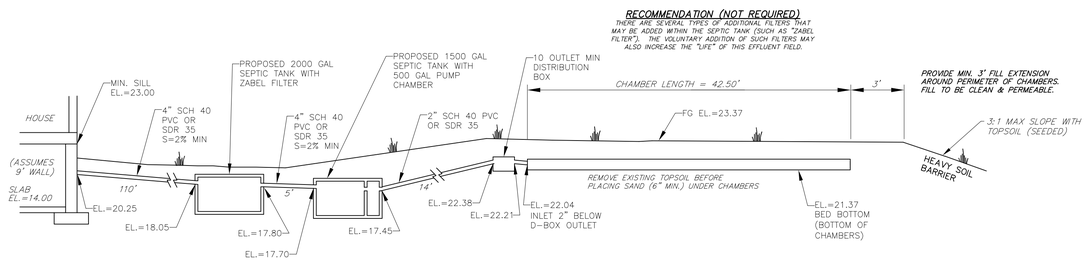
PER NH-DES ENV-WQ 1008.05, FOR DESIGN FLOWS LESS THAN 1,000 GPD, MINIMUM SETBACK DISTANCES FROM PROPERTY LINES:
- 50' HYDRAULICALLY DOWN-GRADIENT
- 25' HYDRAULICALLY SIDE-GRADIENT
- 12' HYDRAULICALLY UP-GRADIENT

ESHWT ELEVATION CALCS.

ORIGINAL GRADE @ HIGHEST POINT = 21.54',
ESHWT = 32" OR 2.67'
ESHWT ELEVATION = 18.87'
MIN. BED BOTTOM = 21.37'

CHAMBER LAYOUT:

SYSTEM TO INCLUDE 9 ROWS OF 10 CHAMBERS WITH EACH ROW TO CONTAIN AN END CAP ON BOTH ENDS IN A CLUSTER CONFIGURATION.



*CONTRACTOR MAY VARY TANK ELEVATIONS TO ACCOMMODATE EXISTING CONDITIONS. MINIMUM SLOPE REQUIREMENTS MUST BE MAINTAINED.

SYSTEM PROFILE
N.T.S.

LOCUS MAP
1"=1500'

NOTES:

1. JURISDICTIONAL FRESHWATER WETLANDS AND WATERCOURSES WERE DELINEATED BY JOHN P. HAYES III, CWS (#18), CSS (#87) ON SEPTEMBER 22 & 23, 2021 IN ACCORDANCE WITH ENV-WT 406 AS REQUIRED BY THE NHDES WETLANDS BUREAU.

DESIGN NOTES:

PERC RATE:
10 MIN/IN

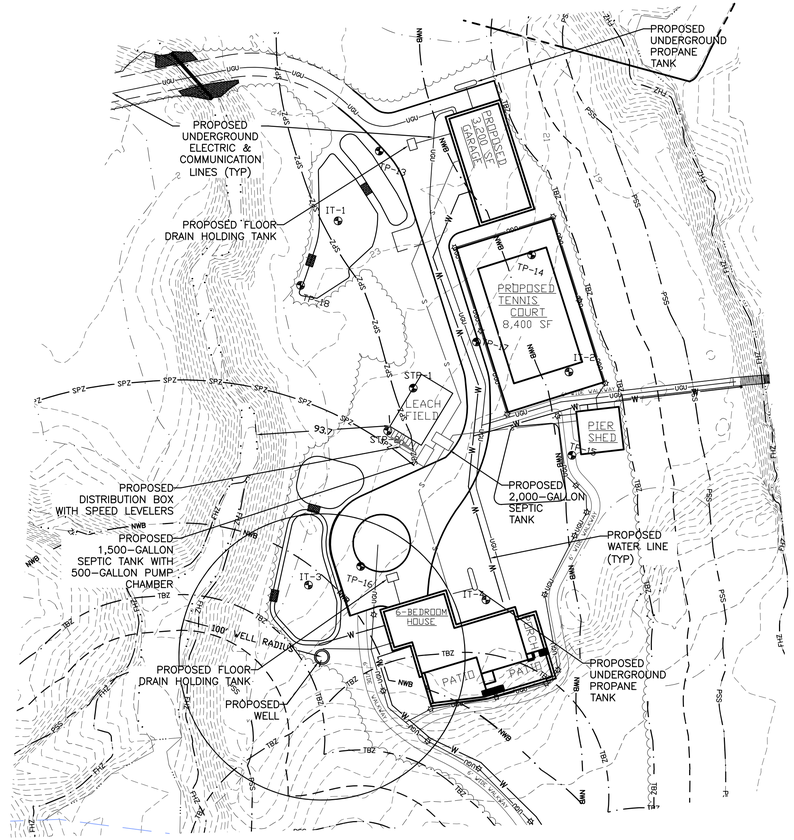
HYDRAULIC LOADING (PER ENV-WQ 1000, TABLE 1008-1):
6 BEDROOM DWELLING X 150 GPD = 900 GPD

EFFLUENT DISPOSAL AREA:
6 BEDROOMS: 1,100 SF + 278 SF x 2 = 1,656 SF
ALLOWED 40% AREA REDUCTION: 1,656 SF x (0.60) = 994 SF

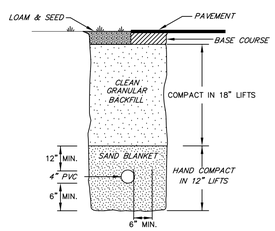
PROVIDED: EDA = 9 ROWS OF 10 CHAMBERS = 90 CHAMBERS
= 90 CHAMBERS x 11.32 SF/CHAMBER = 1,018 SF

SETBACKS TO NEAREST:

ABUTTING WELL:	100'+
SURFACE WATER:	75'+
POORLY DRAINED WETLAND:	50'+
VERY POORLY DRAINED WETLAND:	75'+
OPEN DRAINAGE:	75'+
TOP OF STEEP SLOPE:	20'+
STORMWATER POND NOT INTERCEPTING SHWT:	35'+



GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.



NOTES:
1. MINIMUM COVER SHALL BE 6'+ FOR PLOWED AREAS, 4'+ FOR CROSS COUNTRY
2. MULTIPLE PIPES IN THE SAME TRENCH SHALL BE SEPARATED BY 12"+

STANDARD TRENCH DETAIL
FOR EFFLUENT SEWER OR FORCEMAIN
N.T.S.

TEST PIT LOGS

TEST PITS PERFORMED BY: JAMES GOVE, CSS #004, ON 10/30/24

Test Pit No.	STP-1		
Horizon	Color (Munsell)	Texture	Structure - Consistence - Redox
A 0-10"	10YR3/2	Loamy sand	Granular - Friable - None
B 10-32"	10YR5/4	Sand	Single grain - Loose - None
C 32-65"	2.5Y5/3	Sand	Single grain - Loose - 20% 10YR2/1 & 7.5YR5/6
ESHWT:	32"		
Termination:	65"		
Refusal:	No		
Obs. Water:	None		
Perc Rate:	10 Minutes/Inch @ 32"		

Test Pit No.	STP-2		
Horizon	Color (Munsell)	Texture	Structure - Consistence - Redox
A 0-10"	10YR3/2	Loamy sand	Granular - Friable - None
B 10-36"	10YR5/4	Sand	Single grain - Loose - None
C 36-55"	2.5Y5/3	Sand	Single grain - Loose - 20% 10YR2/1 & 7.5YR5/6
C2 55-65"	2.5Y5/3	Silty Clay Loam	Massive - Firm - 20% 10YR2/1 & 5YR5/6
ESHWT:	36"		
Termination:	65"		
Refusal:	No		
Obs. Water:	None		
Perc Rate:	10 Minutes/Inch @ 36"		

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

OWNER OF RECORD

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043
BOOK 5159, PAGE 995 &
BOOK 4978, PAGE 1003

REVISIONS:	DATE:

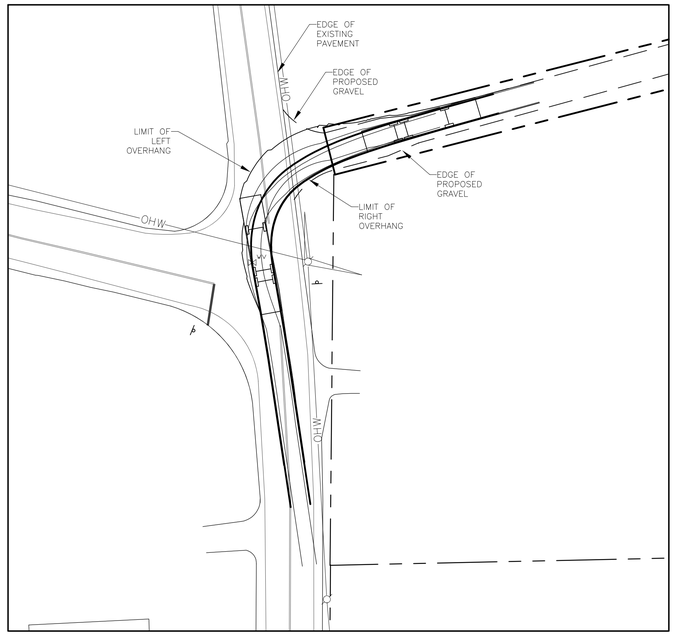
DESIGNER STAMP

NEW HAMPSHIRE Designer of Subsurface Disposal Systems
Christian O. Smith No. 1543
Department of Environmental Services

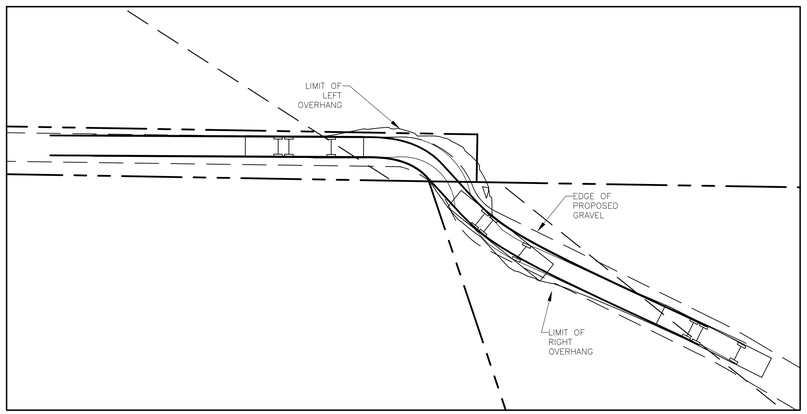
EFFLUENT DISPOSAL PLAN

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

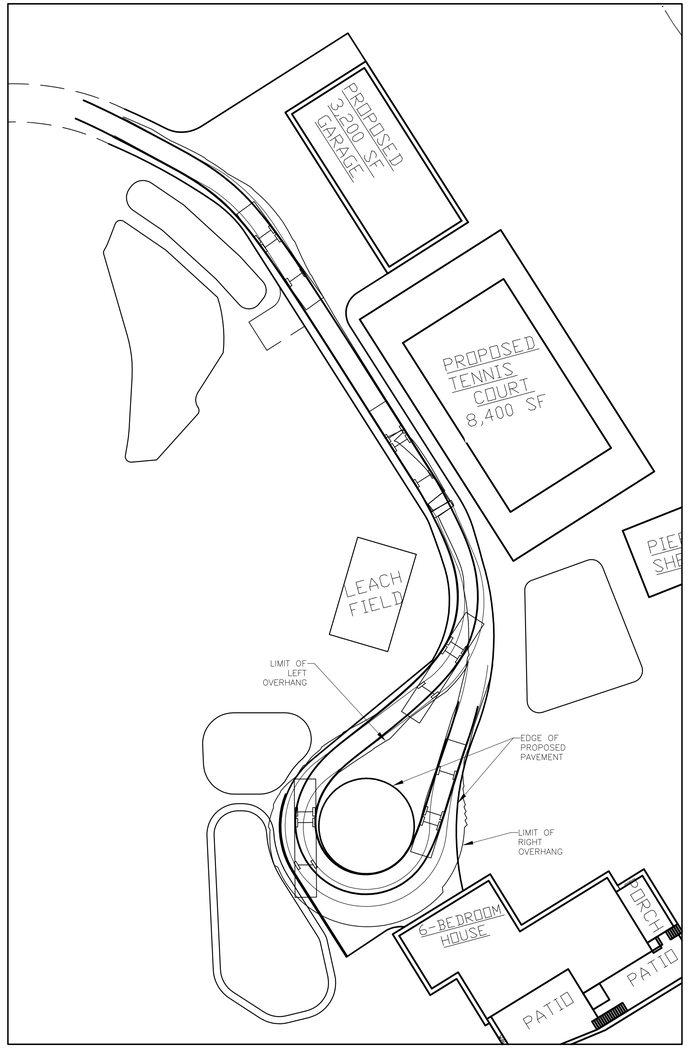
DATE: NOV 12, 2024	SCALE: 1" = 150'
PROJ. N0: NH-1501	SHEET NO. 21



BACK ROAD / GRAVEL DRIVEWAY ENTRANCE



GRAVEL DRIVEWAY PINCH POINT

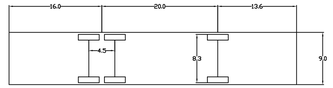


DRIVEWAY & TURN AROUND

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

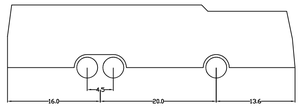
Dover Fire Ladder Truck



FEET

Tire Diameter:	3.6

Dover Fire Ladder Truck



FEET

Vehicle Width:	9
Wheel Width:	8.33
Tire Diameter:	3.6

GRAPHIC SCALE

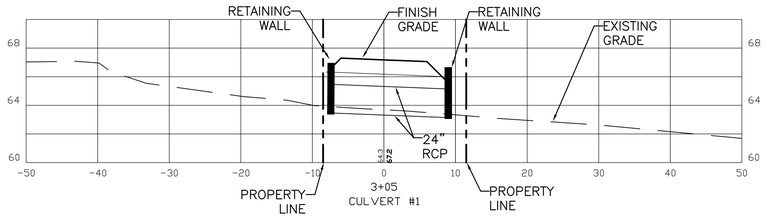
(IN FEET)
1 inch = 30 ft.

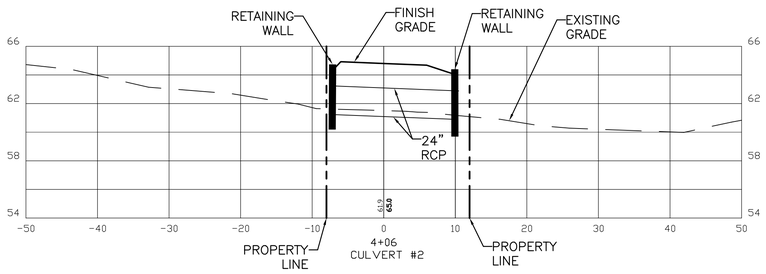
REVISIONS:	DATE:

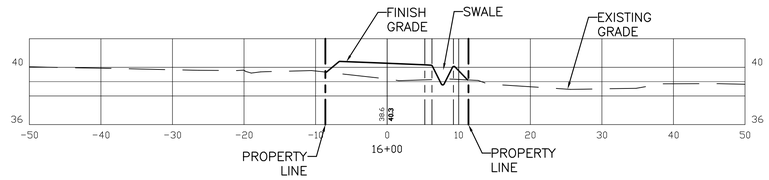
LADDER TRUCK MANEUVERING PLAN

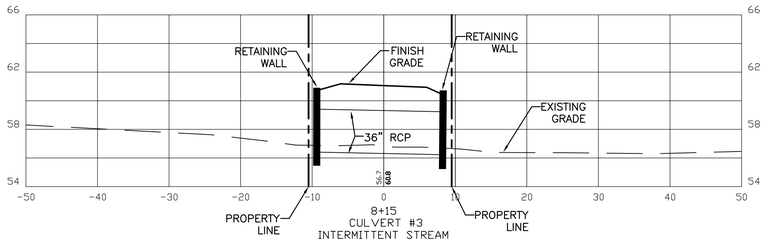
PLAN FOR:
BACK ROAD
DOVER, NH

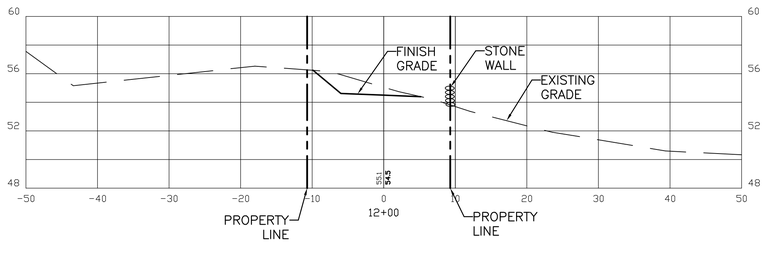
DATE:	NOV 12, 2024	SCALE:	1"=30'
PROJ. N0:	NH-1501	SHEET NO.	22

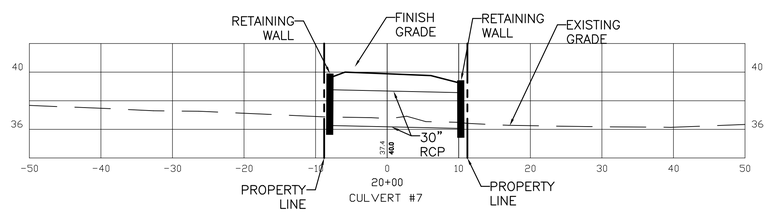


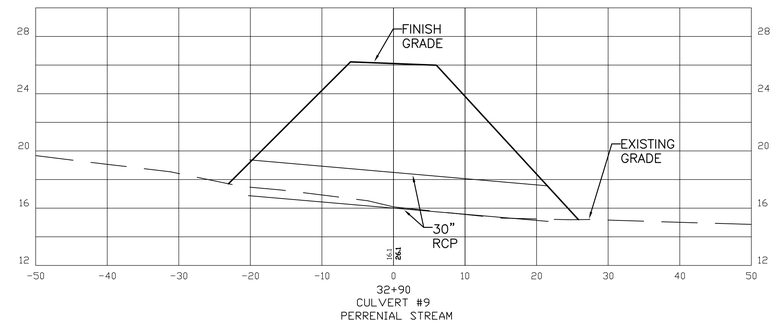












PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
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STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No.9900
PROFESSIONAL ENGINEER

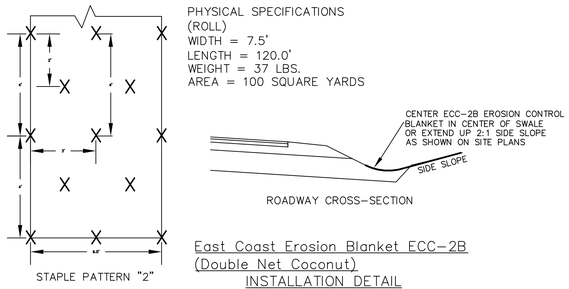
PROFILE SCALES:
HORIZONTAL: 1"=10' VERTICAL: 1"=2'

REVISED PER REVIEW COMMENTS	12.23.24
REVISIONS:	DATE:

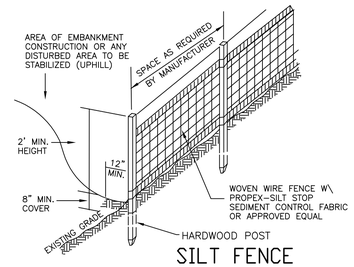
DRIVEWAY SECTIONS

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=10'
PROJ. N0:	NH-1501	SHEET NO.	23



East Coast Erosion Blanket ECC-2B
(Double Net Coconut)
INSTALLATION DETAIL



SILT FENCE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8". 2. THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE-VEGETATED

MAINTENANCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

WINTER MAINTENANCE

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH, SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3-4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLEX II OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3-4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED. PRIOR TO SPRING THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.

2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.

3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15-25% PASSING THE #200 SIEVE AND THE LARGEST STONE SIZE SHALL BE 2". IF THE SITE IS ACTIVE AFTER NOVEMBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.

4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWING SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDED BY THIS DATE. AFTER OCTOBER 15TH, ANY NEW OR DISTURBED PILES SHALL BE MULCHED AT A RATE OF 3-4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1;3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS PER 1,000 SQ. FT..
      NITROGEN(N), 50 LBS PER ACRE OR 1. 1 LBS PER 1,000 SQ.FT.
      PHOSPHATE(P2O5), 100 LBS PER ACRE OR 2. 2 LBS PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS PER ACRE OR 2. 2 LBS PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. A NEW ENGLAND NATIVE SEED MIXTURE SHALL BE USED. REFER TO MANUFACTURER'S SPECIFICATIONS FOR RATES OF SEEDING.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 SQ. FT.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

TEMPORARY EROSION CONTROL MEASURES

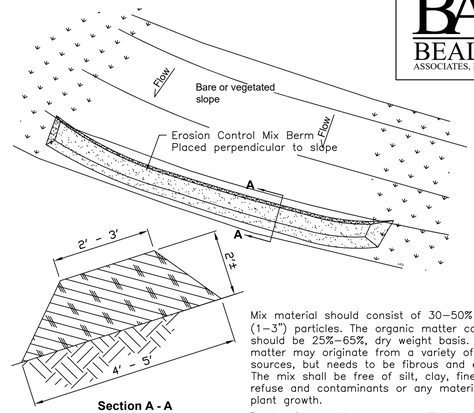
1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT NO MORE THAN 5 ACRES OF LAND SHALL BE EXPOSED BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED OR DIRECTED BY THE ENGINEER ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS.
3. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH NOT LESS THAN 1.10 POUNDS OF SEED PER 1000 SQUARE FEET OF AREA. (48 POUNDS PER ACRE) SEE SEED SPECIFICATIONS THIS SHEET.
4. SILT FENCES AND OTHER EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY RAIN EVENT GREATER THAN 0.25" DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED WITHIN 3 DAYS OF FINAL GRADING, PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF SOIL.
7. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
   - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED.
   - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS RIPRAP HAS BEEN INSTALLED.
   - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
8. WITHIN 50 FEET DISTURBANCE TO ANY WETLAND, A DOUBLE ROW OF EROSION BARRIER (SILT FENCE, SILT SOCK, OR MULCH BERM) SHALL BE INSTALLED.
9. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
10. DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

CONSTRUCTION SPECIFICATIONS

1. STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
2. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION AND AIR AND WATER POLLUTION WILL BE MINIMIZED.
3. WHEN TIMBER STRUCTURES ARE USED, THE TIMBER SHALL EXTEND AT LEAST 18" INTO THE SOIL.
4. STRAW BALES SHALL BE ANCHORED INTO THE SOIL USING 2" X 2" STAKES DRIVEN THROUGH THE BALES AND AT LEAST 18 INCHES IN TO THE SOIL.
5. SEEDING, FERTILIZING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE APPROPRIATED VEGETATIVE BMP.
6. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.
7. THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL TAKE PRECAUTIONS AND INSTRUCTIONS FROM THE PLANNING DEPARTMENT IN ORDER TO PREVENT, ABATE AND CONTROL THE EMISSION OF FUGITIVE DUST INCLUDING BUT NOT LIMITED TO WETTING, COVERING, SHIELDING, OR VACUUMING.
8. THE NH COMMISSIONER OF AGRICULTURE PROHIBITS THE COLLECTION, POSSESSION, IMPORTATION, TRANSPORTATION, SALE, PROPAGATION, TRANSPLANTATION, OR CULTIVATION OF PLANTS BANNED BY NH LAW RSA 430:53 AND NH CODE ADMINISTRATIVE RULES AGR 3800. THE PROJECT SHALL MEET ALL REQUIREMENTS AND THE INTENT OF . RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES
9. THE CONSTRUCTION SITE OPERATOR AND OWNER SHALL SUBMIT A NOTICE OF INTENT (NOI) TO USEPA, WASHINGTON, DC, STORMWATER NOTICE PROCESSING CENTER AT LEAST FORTEEN DAYS PRIOR TO COMMENCEMENT OF WORK ON SITE. EPA WILL POST THE NOI AT http://cfpubl.epa.gov/npdes/stormwater/noi/noisearch.cfm. AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE STATUS".

CONSTRUCTION SEQUENCE

1. WETLAND BOUNDARIES SHALL BE MARKED IN THE FIELD PRIOR TO CONSTRUCTION/START OF CLEARING AS NECESSARY TO AVOID INADVERTENT IMPACTS.
2. INSTALL EROSION CONTROL MEASURES ALONG PROPOSED DRIVEWAY PRIOR TO EARTH MOVING OPERATIONS.
3. CUT AND REMOVE TREES AS DIRECTED OR REQUIRED FOR THE INSTALLATION OF THE PROPOSED DRIVEWAY INTO THE SITE.
4. CONSTRUCT GRAVEL DRIVEWAY AND ASSOCIATED WETLAND/STREAM CROSSINGS ALONG DRIVEWAY.
5. INSTALL EROSION CONTROL MEASURES ALONG PROPOSED WORK BEYOND DRIVEWAY PRIOR TO ADDITIONAL EARTH MOVING OPERATIONS.
6. CUT AND REMOVE TREES AS DIRECTED OR REQUIRED FOR THE DEVELOPMENT OF THE AREA BEYOND THE DRIVEWAY.
7. CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES, AS REQUIRED. EROSION, SEDIMENT, AND FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO ANY EARTH MOVING OPERATION, AND PRIOR TO DIRECTING RUN-OFF TO THEM.
8. CLEAR, CUT, GRUB, AND DISPOSE OF DEBRIS IN APPROVED FACILITIES.
9. EXCAVATE AND STOCKPILE TOPSOIL / LOAM. ALL DISTURBED AREAS INCLUDING CUT/FILL SLOPES SHALL BE STABILIZED AND/OR LOAMED AND SEEDED WITHIN 72-HOURS OF ACHIEVING FINISH GRADE.
10. CONSTRUCT ADDITIONAL DRIVEWAY AND ITS ASSOCIATED DRAINAGE STRUCTURES.
11. CONSTRUCT BUILDING FOUNDATIONS AND SITE AMENITIES.
12. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS REQUIRED OR DIRECTED.
13. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, SEDIMENT TRAPS, ETC. TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS OR PROPERTY.
14. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
15. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
17. ALL SWALES AND DRAINAGE STRUCTURES WILL BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUNOFF BEING DIRECTED TO THEM.
18. FINISH GRAVELING/PAVING ALL ROADWAYS AND STABILIZE MATERIAL STORAGE AREAS.



Section A - A

Mix material should consist of 30-50% large (1-3") particles. The organic matter content should be 25%-65%, dry weight basis. The organic matter may originate from a variety of vegetative sources, but needs to be fibrous and elongated. The mix shall be free of silt, clay, fine sand, refuse and contaminants or any material toxic to plant growth.

Erosion Control Mix berms are effective filters for overland flow conditions and should not be used to filter concentrated flow such as that found in drainage ditchs, streams, etc.

Erosion Control Mix Berm

SEEDING GUIDE

USE	SEEDING MIXTURE*	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
	E	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	FAIR	GOOD	GOOD	EXCELLENT
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	F	FAIR	EXCELLENT	EXCELLENT	**
	G	FAIR	EXCELLENT	EXCELLENT	**

RECOMMENDED

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

* REFER TO SEEDING MIXTURES AND RATES IN TABLE 7-36.
** POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAY AREAS OR ATHLETIC FIELDS.

NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCT. 15, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

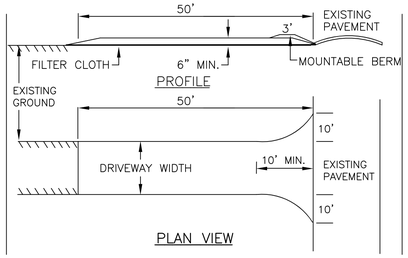
STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH No.9900
PROFESSIONAL ENGINEER

REVISED FOR AOT SUBMITTAL	12.27.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

EROSION CONTROL NOTES & DETAILS

PLAN FOR:
BACK ROAD
DOVER, NH

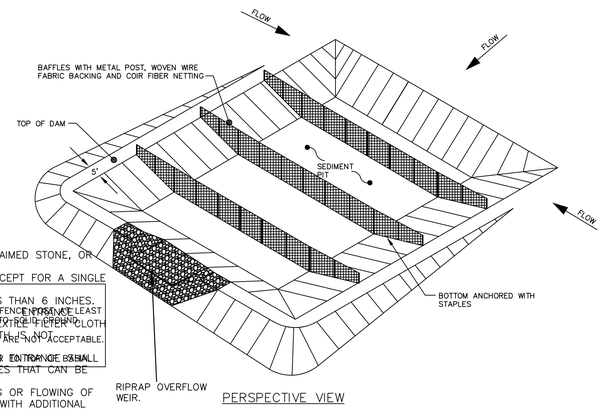
DATE:	AUGUST 2, 2024	SCALE:	NTS
PROJ. N0:	NH-1501	SHEET NO.	24



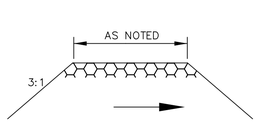
1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF EGRESS WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

NOTES:
1. DRIVE STAKE FENCE POSTS AT LEAST 18 INCHES INTO GROUND.
2. WOOD POSTS ARE NOT ACCEPTABLE.
INSTALLATION ENTRANCE SHALL

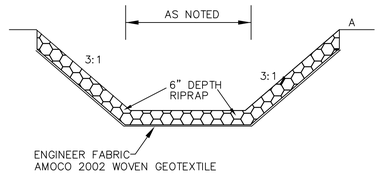
STABILIZED CONSTRUCTION ENTRANCE



TEMPORARY SEDIMENT BASIN



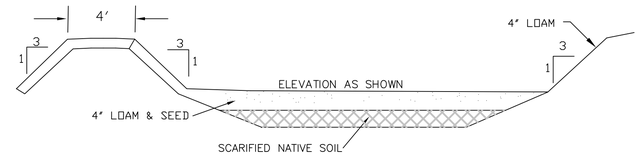
RIPRAP SPILLWAY PROFILE



RIPRAP SPILLWAY DETAILS
WHERE SPECIFIED

Table 4-13. Gradation of Stone for Level Spreader Berm

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
12-inch	100%
6-inch	84% - 100%
3-inch	68% - 83%
1-inch	42% - 55%
No. 4	8% - 12%

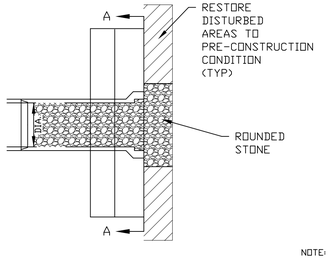


INFILTRATION POND NOTES:

1. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
2. AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
3. DO NOT PLACE INFILTRATION SYSTEM INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

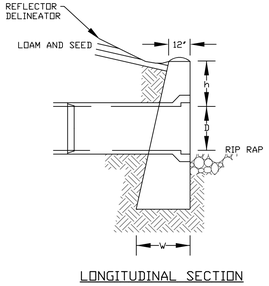
INFILTRATION POND DETAIL

NOT TO SCALE

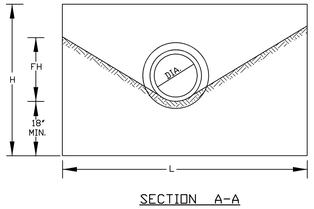


DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4-3	3-9	1-1	1-3	2-0
15"	6-0	4-3	1-7	1-6	2-1
18"	7-0	4-6	1-10	1-6	2-2
24"	9-0	5-0	2-4	1-6	2-3
30"	11-0	5-6	2-10	1-6	2-5
36"	13-0	6-0	3-4	1-6	2-6
42"	15-9	6-9	4-1	1-9	2-9
48"	17-9	7-3	4-7	1-9	2-10

NOTES:
1. ALL DIMENSIONS GIVEN IN FEET AND INCHES EXCEPT PIPE DIAMETER.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. RIP-RAP SHALL BE SIZED TO RESIST THE TRACTIVE VELOCITY FORCES.
4. WHERE MULTIPLE CULVERTS ARE LOCATED, CULVERT SEPARATION SHALL BE MINIMUM 1/2 DIAMETER OF CULVERTS.



LONGITUDINAL SECTION



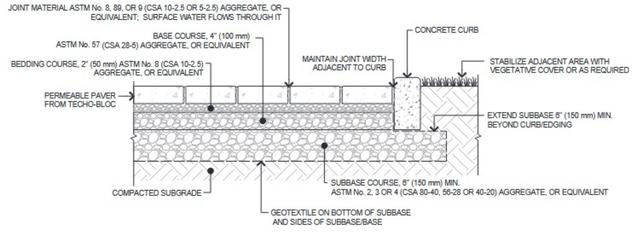
SECTION A-A

CONCRETE HEADWALL DETAIL

NOT TO SCALE

INSTALLATION GUIDE

PERMEABLE PAVER - FULL INFILTRATION TO SOIL SUBGRADE



NOTES:

1. SEE MANUFACTURER'S SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
2. PAVERS SHALL BE PERMEABLE PATIO SLABS BY TECHO-BLOC, OR EQUIVALENT.
3. OWNER TO SELECT FINAL FINISH AND COLOR.

MAINTENANCE NOTES:

1. INSPECT THE PERVIOUS PAVER SYSTEM SEASONALLY AND AFTER LARGE STORMS, LOOKING FOR SIGNS OF CLOGGING SUCH AS PONDING AT THE SURFACE OR ACCUMULATED SEDIMENT.
2. IF CLOGGING OCCURS, REMOVE AND WASH OR REPLACE MATERIAL BETWEEN PAVERS. REMOVE ANY VEGETATIVE GROWTH BETWEEN PAVERS.

PERVIOUS PAVERS

NOT TO SCALE

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

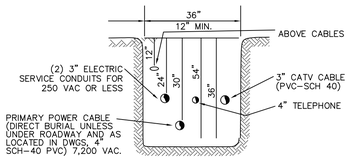
STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
REGISTERED PROFESSIONAL ENGINEER

REVISIONS:	DATE:
REVISED FOR AOT SUBMITTAL	12.27.24
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

CONSTRUCTION DETAILS

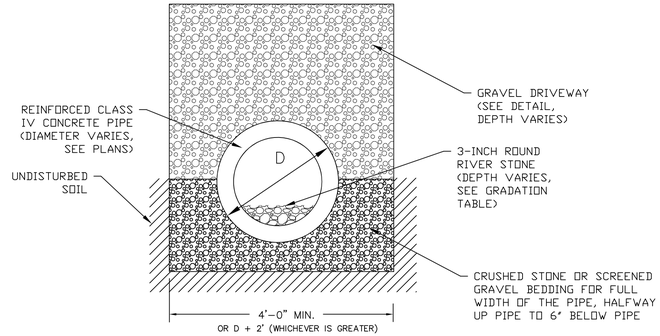
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	NTS
PROJ. NO:	NH-1501	SHEET NO.	25



NOTES:
1. ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.
2. ELECTRIC SERVICE SHALL BE IN SCH 40 PVC EXCEPT UNDER THE UTILITY EASEMENT WHERE IT SHALL BE SCH 80 PVC. WHERE 90 DEGREE SWEEPS ARE REQUIRED THE MATERIAL SHALL BE GALVANIZED RIGID CONDUIT.
3. TELEPHONE, CATV, AND OTHER CABLES SHALL BE NO CLOSER THAN 12" TO ELECTRIC CONDUITS.

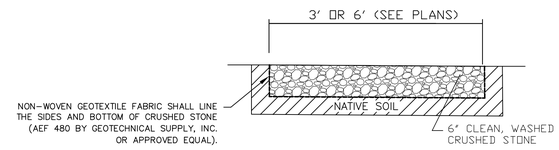
UTILITY TRENCH DETAIL



RECOMMENDED RIVER STONE GRADATION RANGES				
MIN. THICKNESS OF STONE BED = 0.50 FEET				
d50 SIZE=	0.25	FEET	3	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE		SIZE OF STONE (INCHES) FROM		TO
100%		4.5		6
85%		4		4.5
50%		2		4
15%		1		2

TYPICAL DRAINAGE TRENCH DETAIL AT DRIVEWAY WETLAND CROSSINGS

NOT TO SCALE

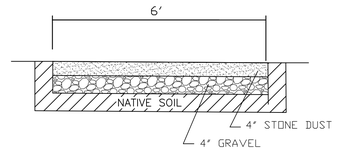


MAINTENANCE NOTES:

1. INSPECT THE CRUSHED STONE WALKWAYS SEASONALLY AND AFTER LARGE STORMS, LOOKING FOR SIGNS OF CLOGGING SUCH AS PONDING AT THE SURFACE OR ACCUMULATED SEDIMENT.
2. IF CLOGGING OCCURS, REMOVE AND WASH OR REPLACE MATERIAL. REMOVE ANY VEGETATIVE GROWTH BETWEEN STONES.

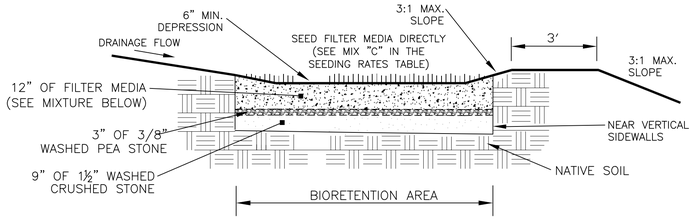
WALKWAY SECTION (CRUSHED STONE INSIDE TBZ)

NOT TO SCALE



WALKWAY SECTION (STONE DUST OUTSIDE TBZ)

NOT TO SCALE



FILTER MEDIA MIXTURE:

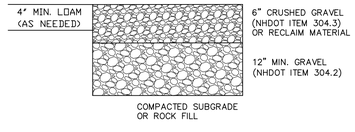
- 20% COMPOST/FINELY SHREDDED BARK OR WOOD MULCH W/ <5% PASSING THE #200 SIEVE
- 30% LOAMY TOPSOIL
- 50% SANDY SOIL (SAND PORTION SHALL BE ASTM C33 FINE AGGREGATE)

BIORETENTION POND NOTES:

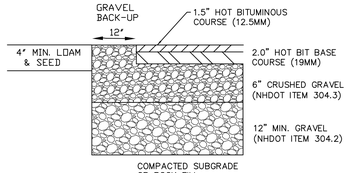
1. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
2. AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
3. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOF, WATER FROM EXCAVATIONS) TO THE BIO-RETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
4. DO NOT PLACE INFILTRATION SYSTEM INTO SERVICE UNTIL THE BIORETENTION POND HAS BEEN PLANTED AND CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. BIORETENTION POND'S FILTER MEDIA CAN BE SEEDED DIRECTLY WITHOUT ADDITIONAL LOAM.

BIORETENTION POND DETAIL

NOT TO SCALE



TYPICAL GRAVEL SECTION



NOTES: * IN AREAS OF BEDROCK, MINIMUM 24" SEPARATION FROM BANK RUN GRAVEL
* PAVEMENT TRENCH PATCH SHALL MATCH EXISTING PAVEMENT DEPTHS.

TYPICAL PAVEMENT SECTION

NEW ASPHALT

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE — CHRISTIAN O. SMITH No.9900 — PROFESSIONAL ENGINEER

REVISIONS:	DATE:
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CONSTRUCTION DETAILS

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	NTS
PROJ. N0:	NH-1501	SHEET NO.	26

Cullen Bay Rd
Cullen Bay Rd
Cullen Bay Rd
Cullen Bay Rd
Back Rd
Back Rd
Back Rd
Middle Rd
Middle Rd
nery Ln
CfB
ScB
WfB
WdB
DeB
SfC
ScA
BzB
WdA
WdE
1S
2S
3S
4S
5S
6S
7S
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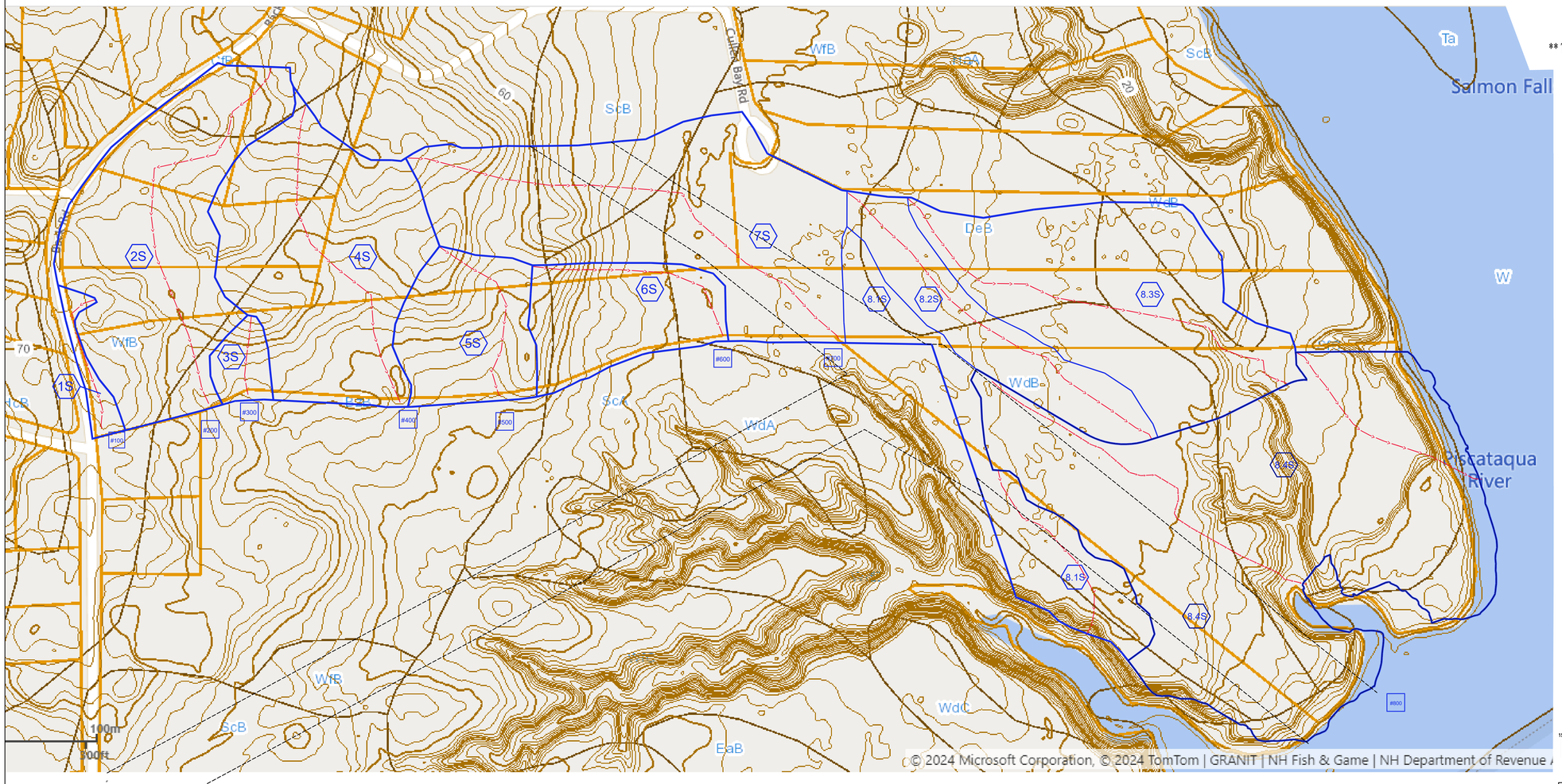

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HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

** THIS DRAWING IS FOR DRAINAGE PURPOSES ONLY **

WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE
150 0 75 150 300 600
(IN FEET)
1 inch = 150 ft.

REVISIONS:	DATE:

EXISTING WATERSHED - OFF-SITE TOPO

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=150'
PROJ. N0:	NH-1501	SHEET NO.	EX-WS-2

SITE SPECIFIC SOIL MAPPING STANDARDS:

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SOIL IDENTIFICATION LEGEND:

MAP UNIT SYMBOL	MAP UNIT NAME	HYDROLOGIC SOIL GROUP
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32	BOXFORD	C
33	SCITICO	C
34	WAREHAM	C
69	SUTTON	B
87	CHATFIELD	B
115	SCARBORO	D
134	MABID	D
313	DEERFIELD	B
327	WINDSOR VARIANT	C
500 (dbadb)	UDORTHENTS	B
536	SUFFIELD	C
538	SQUAMSCOTT	C
915	DEERFIELD VARIANT	C
953	BOXFORD	C

SLOPE PHASES:
A=0-3%, B=3-8%, C=8-15%, D=15-25%, E=25-50%, F=>50%

SOIL INFORMATION OUTSIDE OF THE MAPPED AREA WAS OBTAINED FROM USDA NATURAL RESOURCES CONSERVATION SERVICE (NRCS).

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CfB	CHARLTON FINE SANDY LOAM	B
DeB	DEERFIELD LOAMY FINE SAND	A
ScA	SCANTIC SILT LOAM	C/D
ScB	SCANTIC SILT LOAM	C/D
SfC	SUFFIELD SILT LOAM	C
WdB	WINDSOR LOAMY SAND	A
WfB	WINDSOR LOAMY FINE SAND	A

SLOPE PHASES:
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N

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

** THIS DRAWING IS FOR DRAINAGE PURPOSES ONLY **

WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

MATCH LINE A

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISIONS: DATE:

EXISTING WATERSHED PLAN - 1

PLAN FOR:
BACK ROAD
DOVER, NH

SCALE: 1"=50'
PROJ. N0: NH-1501 SHEET NO. EX-WS-3

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WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

ScB
ScA
ScA
WdB
WdA
DeB
6S
7S
8.1S
8.2S
#600
#700
MATCH LINE A
MATCH LINE B
TP-5
TP-7
TP-9
TP-10
953B
953A
33A/P
32A
915A
34A/P
915A
33A/P
32B
69C
313A
313B
915A

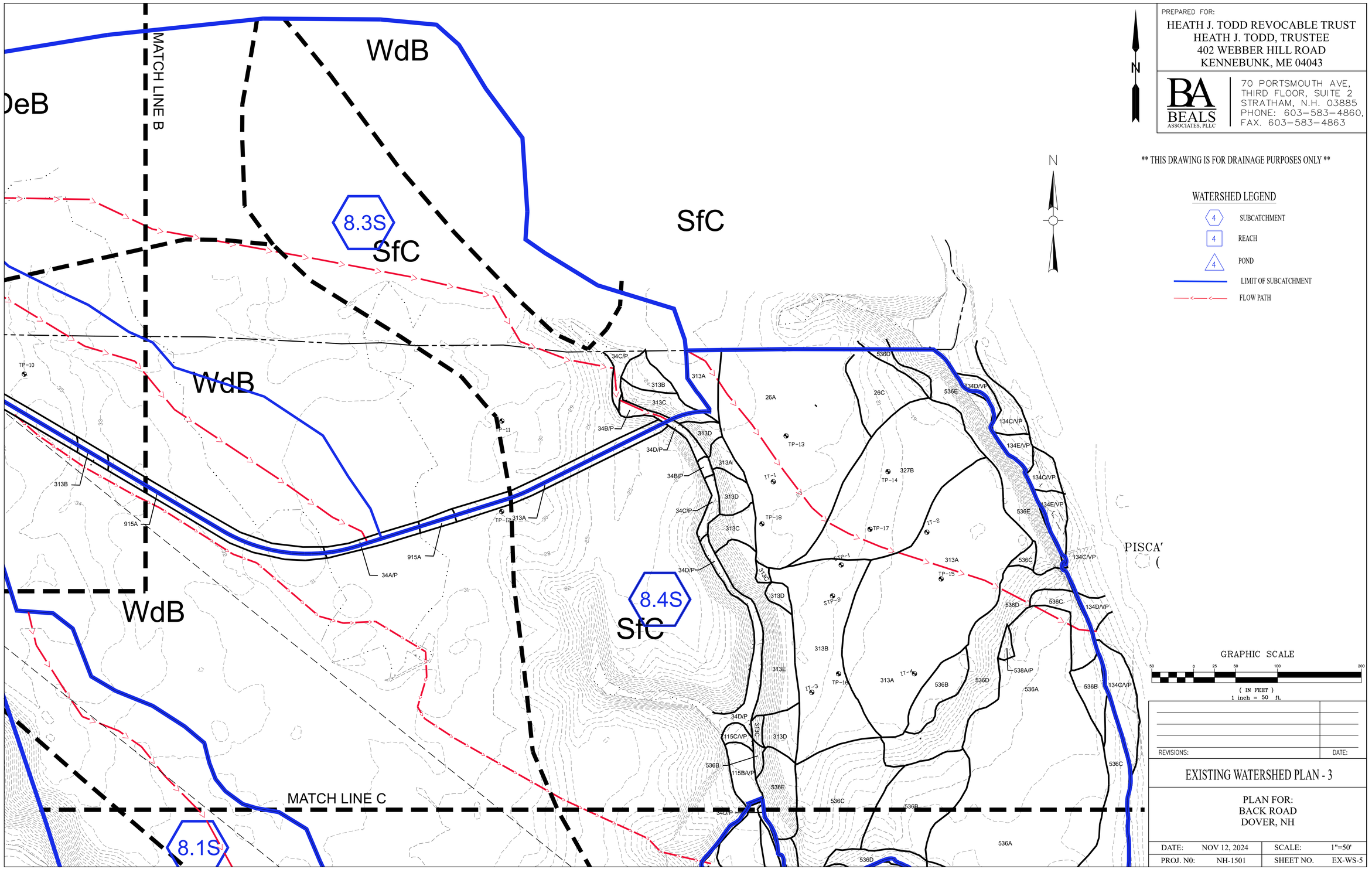
GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:

EXISTING WATERSHED PLAN - 2

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	EX-WS-4



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- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

REVISIONS:	DATE:

EXISTING WATERSHED PLAN - 3

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	EX-WS-5

PREPARED FOR:
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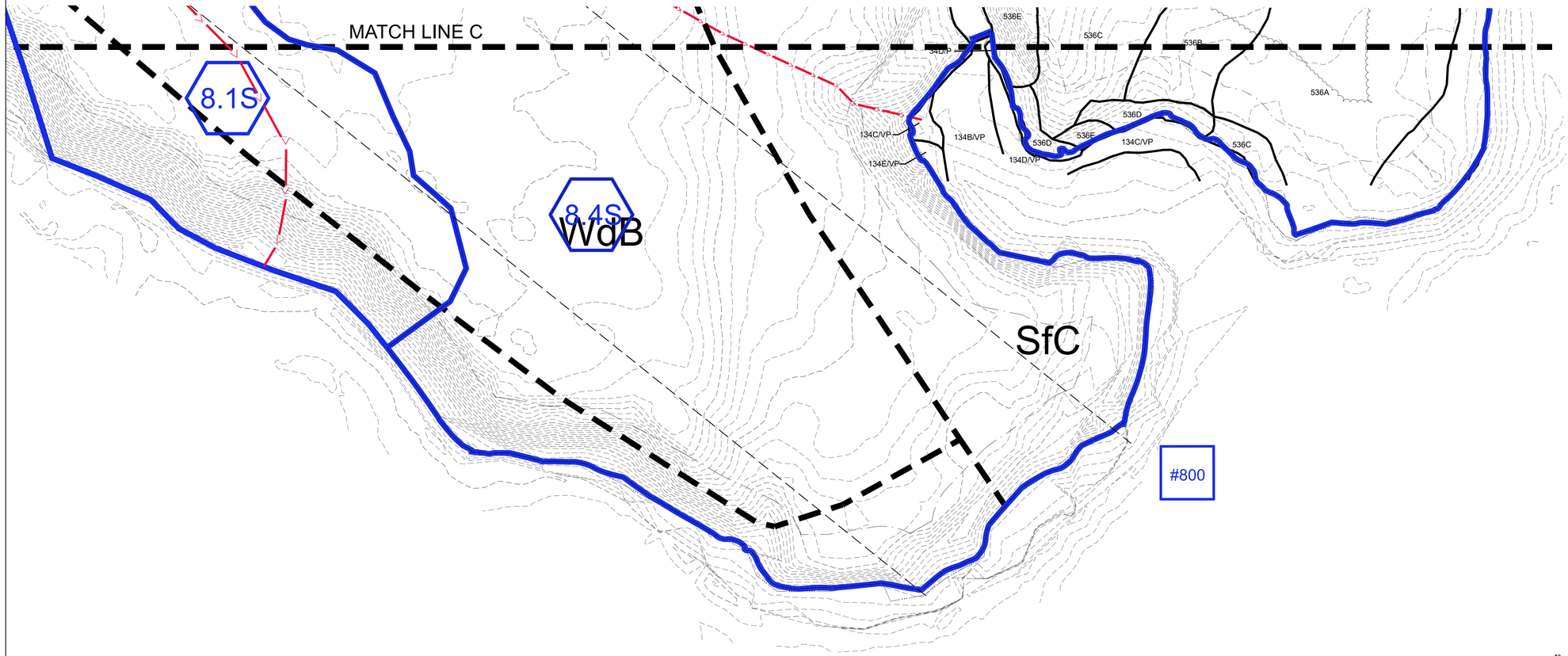


WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE

50 0 25 50 100 200

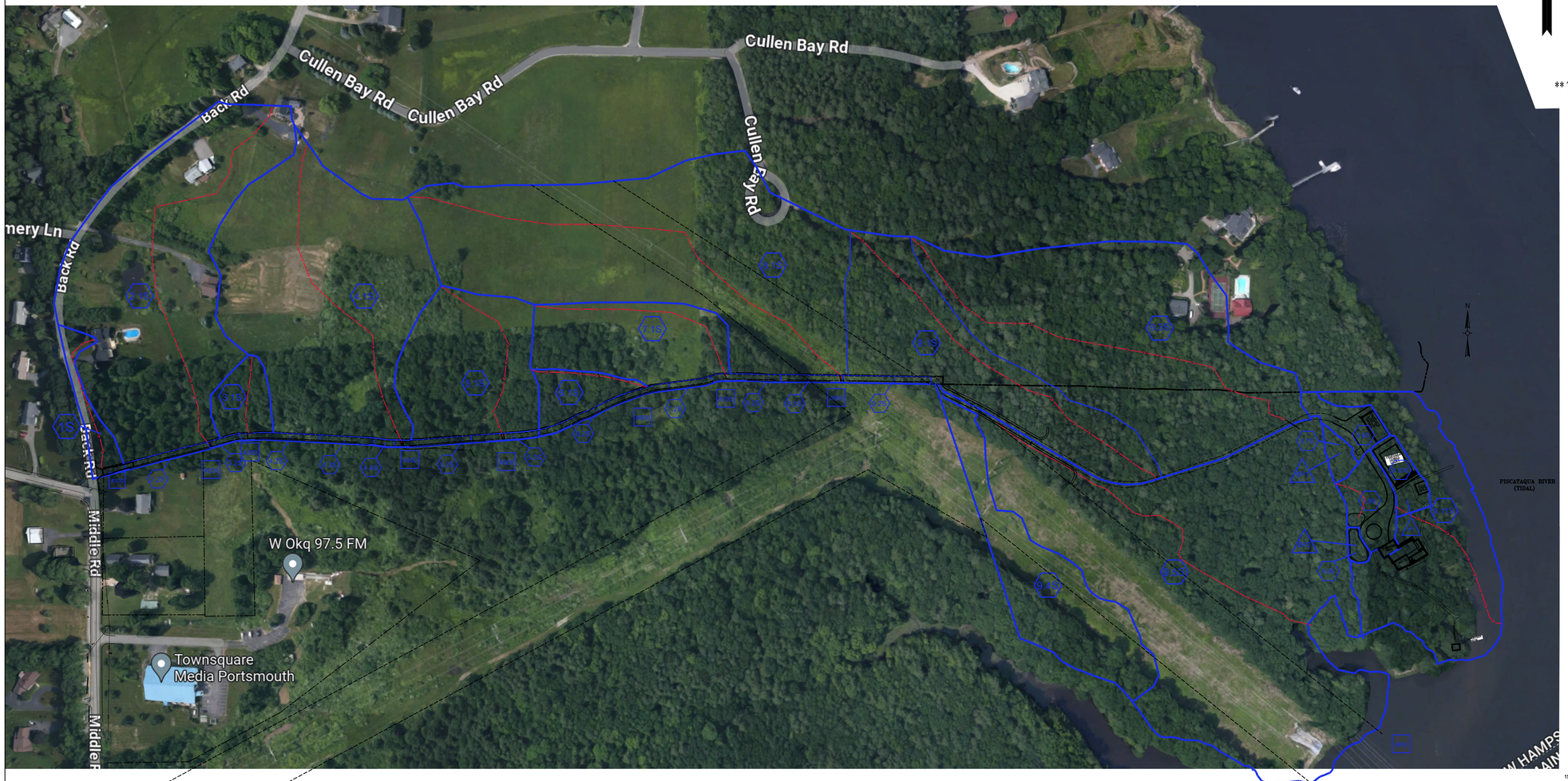
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:

EXISTING WATERSHED PLAN - 4

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	EX-WS-6



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WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE

150 0 75 150 300 600

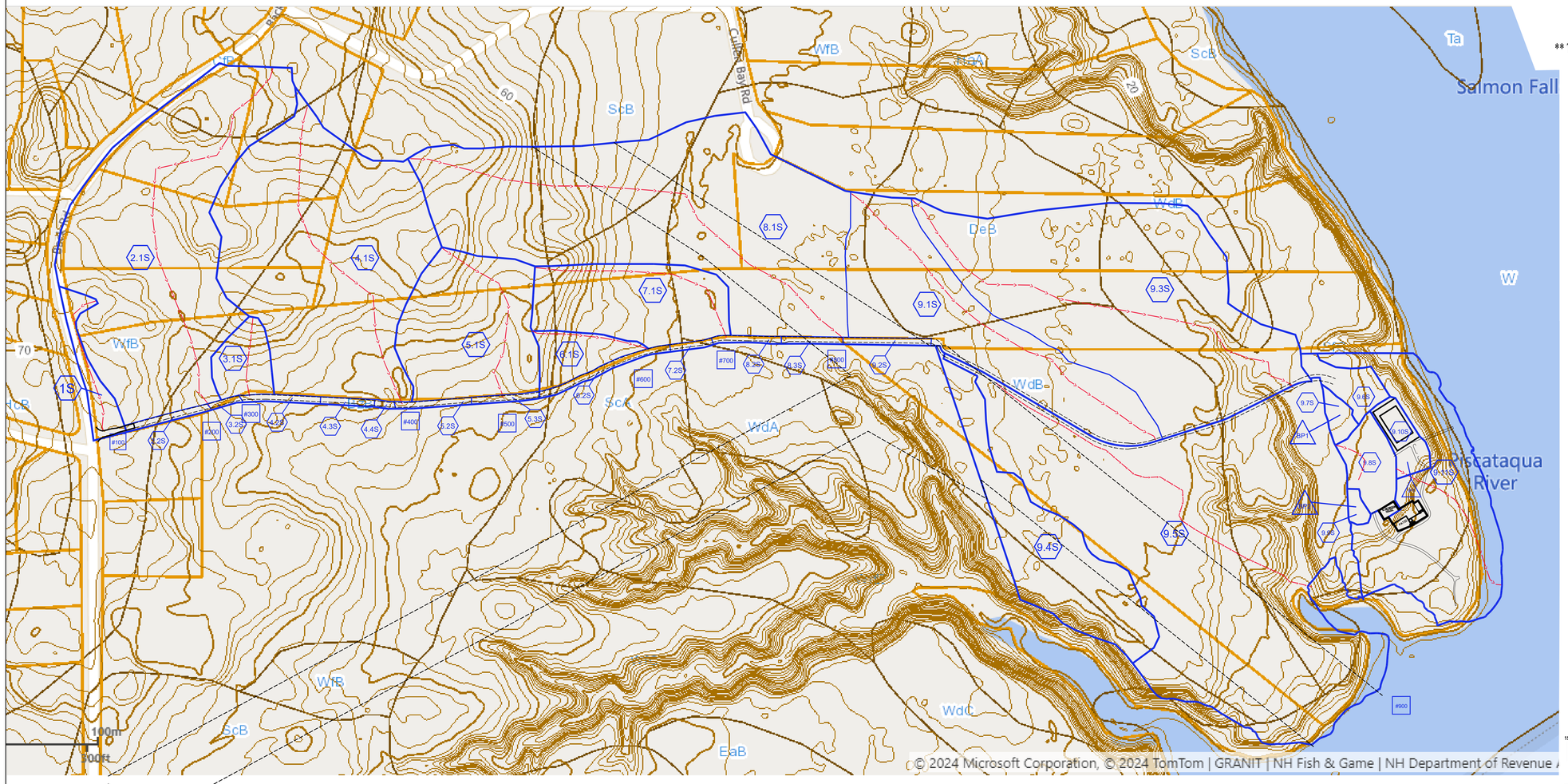
(IN FEET)
1 inch = 150 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

PROPOSED WATERSHED - LAND USE

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=150'
PROJ. N0:	NH-1501	SHEET NO.	PR-WS-1



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WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

PROPOSED WATERSHED - OFF-SITE TOPO

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=150'
PROJ. N0:	NH-1501	SHEET NO.	PR-WS-2

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327	WINDSOR VARIANT	C
500 (dbadb)	UDORTHENTS	B
536	SUFFIELD	C
538	SQUAMSCOTT	C
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953	BOXFORD	C

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N

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WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

PROPOSED WATERSHED PLAN - 1

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	PR-WS-3

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- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

ScB
ScA
ScA
WdB
WdA
DeB
MATCH LINE A
MATCH LINE B
8.1S
7.1S
6.1S
6.2S
7.2S
8.2S
8.3S
9.1S
9.2S
#600
#700
#800
TP-5
TP-6
TP-7
TP-9
TP-10
32B
33A/P
953B
953A
32A
915A
34A/P
313A
313B

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

PROPOSED WATERSHED PLAN - 2

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	PR-WS-4

PREPARED FOR:
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- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

PROPOSED WATERSHED PLAN - 3

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	PR-WS-5

PREPARED FOR:
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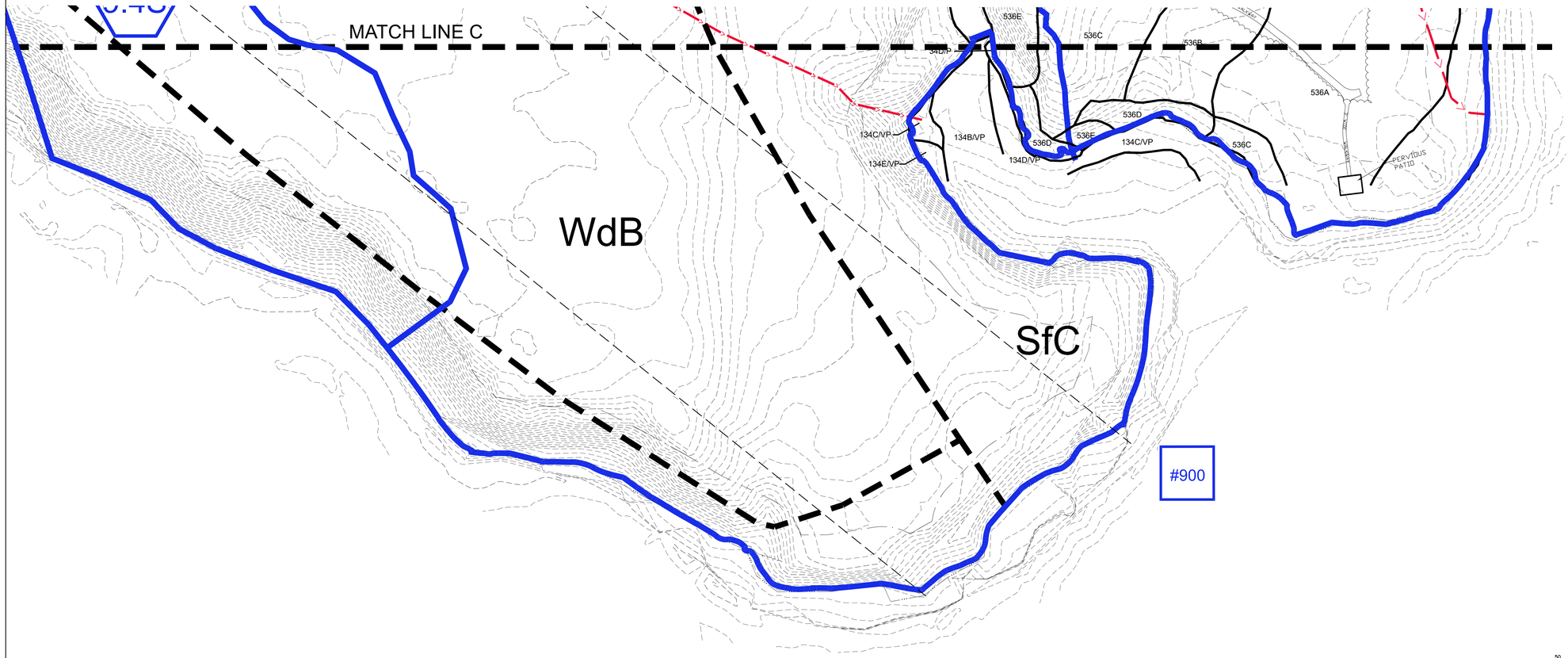

WATERSHED LEGEND

- 4 SUBCATCHMENT
- 4 REACH
- 4 POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

PROPOSED WATERSHED PLAN - 4

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=50'
PROJ. N0:	NH-1501	SHEET NO.	PR-WS-6

PREPARED FOR:
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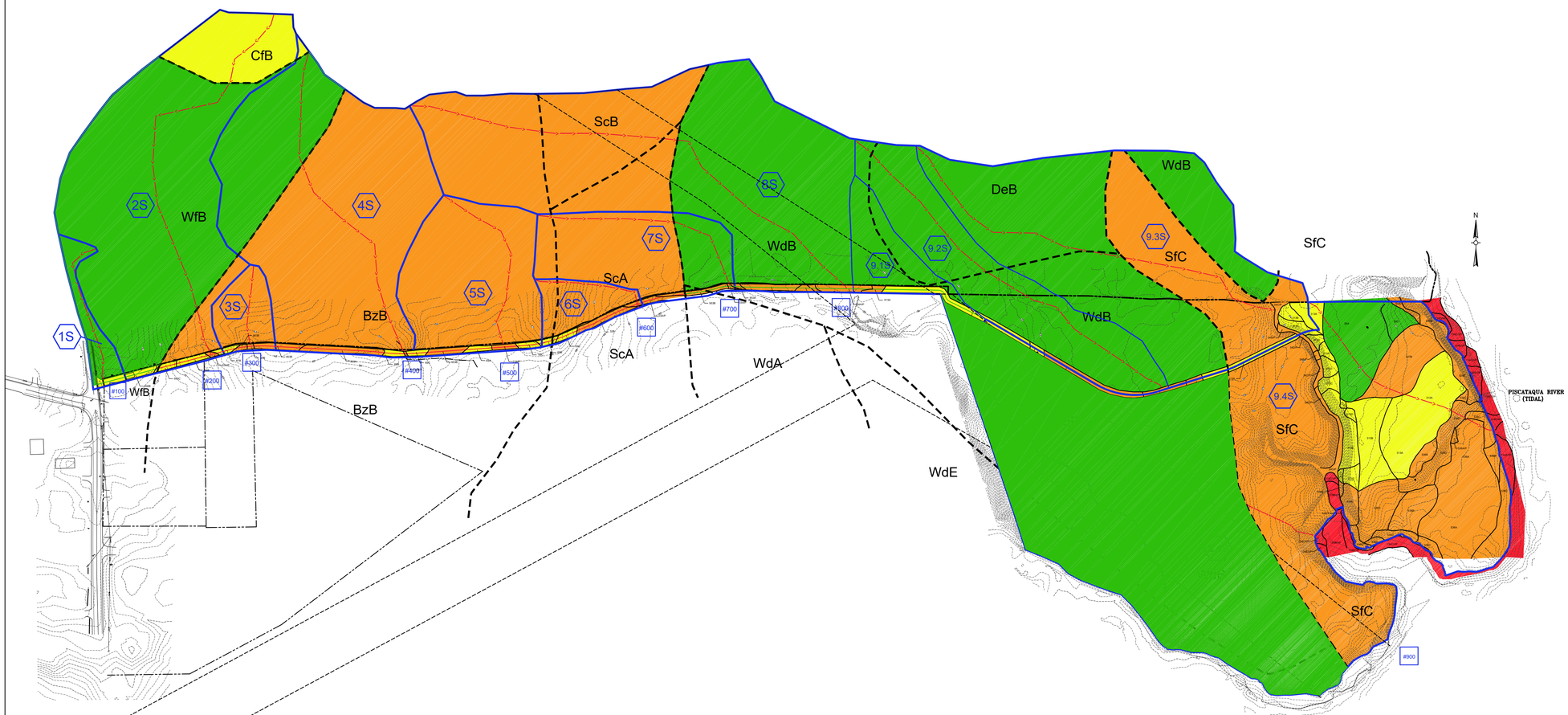

WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

- HSG "A"
- HSG "B"
- HSG "C"
- HSG "D"
- IMPERVIOUS

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

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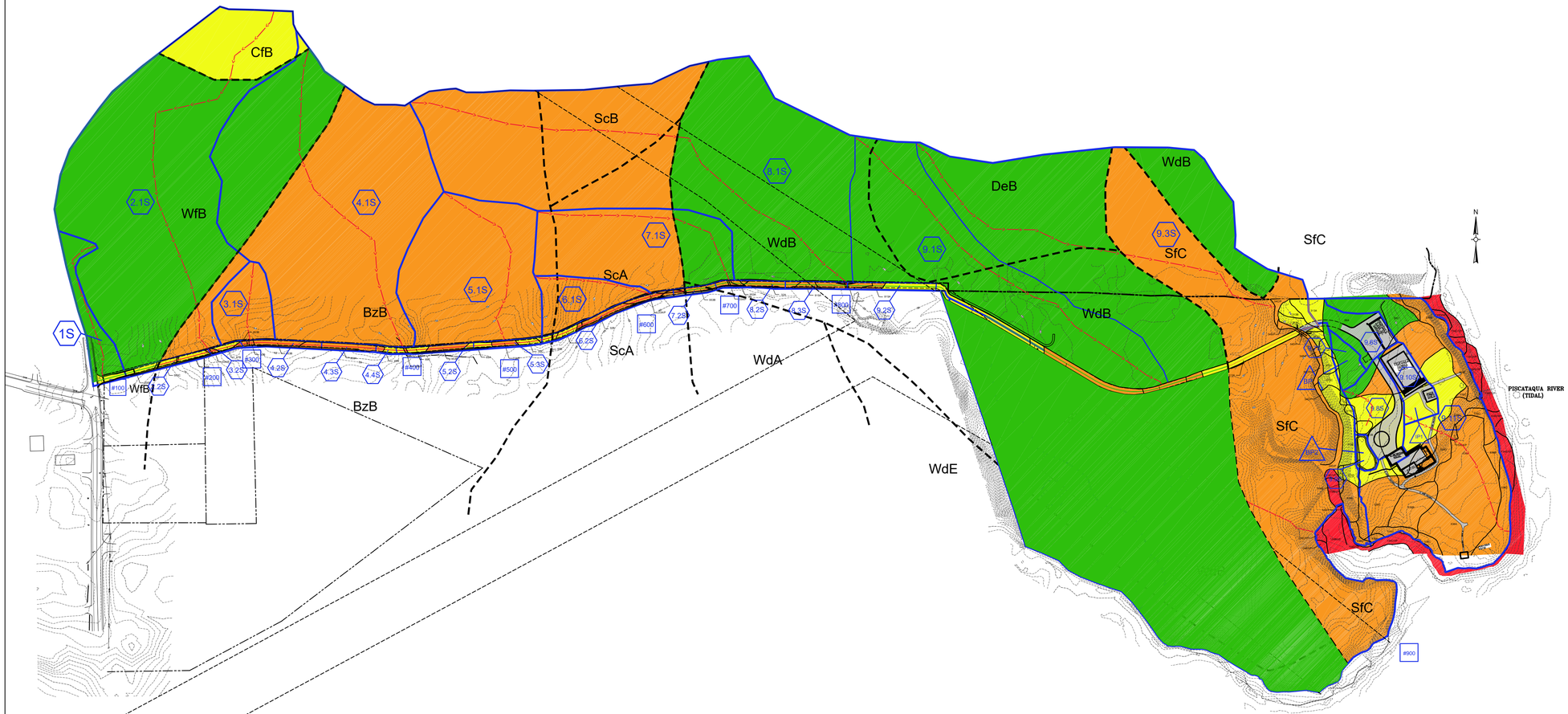
REVISIONS: DATE:

EXISTING COLOR SOILS PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=150'
PROJ. N0:	NH-1501	SHEET NO.	ECS-1



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WATERSHED LEGEND

- SUBCATCHMENT
- REACH
- POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

SOIL COLOR LEGEND

- HSG "A"
- HSG "B"
- HSG "C"
- HSG "D"
- IMPERVIOUS

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

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REVISIONS:	DATE:

PROPOSED COLOR SOILS PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	DEC 23, 2024	SCALE:	1"=150'
PROJ. N0:	NH-1501	SHEET NO.	PCS-1

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0027

Application Type:	Conditional Use Permit
Applicant(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Owner(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Location:	Back Road (Assessor's Map M, Lot 104)
Meeting Date:	February 11, 2025

INTENT: Proposal is for a Conditional Use Permit (CUP) to construct a patio, patio path, and access to a proposed tidal docking structure, with impacts to the Conservation District totaling 1,110± square feet of permanent impact and 73± square feet of temporary impact. *(This project was previously presented to the Planning Board and on August 27, 2024 and tabled before acceptance.)*

AGENDA ITEM #: 4-B

FILE: COND-2024-0027

APPLICANT/OWNER: Heath J. Todd, Trustee, Heath J. Todd Revocable Trust

LOCATION: Back Road (Assessor's Map M, Lot 104)

UNITS PROPOSED: N/A

ACREAGE: 26.02± acres

ZONING DISTRICT: R-40

EXISTING USE: Vacant, Eversource Easement

PROPOSED USE: Residential

SURROUNDING USE: Residential, Cochecho River

PERMITS: - Two (2) City of Dover CUPs - NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit

WAIVERS REQUESTED: N/A

ZBA ACTION: N/A

CONSERVATION COMMISSION: Reviewed and endorsed on 1/13/25.

TRC: 12/5/24

ATTACHMENTS: Application materials including site plan.

Summary of Request and Background

The applicant is proposing to construct a patio accessory structure, an access path to the patio, and a path to a proposed tidal docking structure all within the Conservation District. The proposed structures will be accessory to a proposed single-family residence and additional accessory structures that have been designed outside the Conservation District.

The proposed project will create 1,110± square feet of permanent impact to the Conservation District. There is also 73± square feet of temporary impact. The applicant has also applied for NHDES Wetlands Bureau approvals.

This project was previously heard by the Planning Board on August 27, 2024, and referred back to the Technical Review Committee for further review.

Since the Planning Board previously considered this Conditional Use Permit, (COND-2024-0027), there were no changes related to the proposed impacts to the Conservation District.

The Technical Review Committee reviewed the application at their December 5, 2024 meeting. *(minutes attached)*

The Conservation Commission reviewed and endorsed the application at their January 13, 2025 meeting. *(minutes attached)*

Consistency with Land Use Regulations – CUP 170.27.C

The Conservation District ordinance §170.27.C provides for Conditional Use Permits to allow impacts to the Conservation District if standards related to demonstration that the use is essential to the productive use of land, a soil erosion and sedimentation control plan is submitted, state and federal approvals have been applied for, and a written review by the Conservation Commission has been sought.

Planning Staff feels that the applicant considered and met all of the criteria as specified in §170.27.C per their narrative. Project impacts have been minimized through the placement of the structures, with only accessory structures falling within the Conservation District, and pervious pavers and crushed stone being used for the patio and paths. Temporary impacts are to facilitate project construction and will be restored and no fertilizers or chemicals will be used in the project area. The applicant has also applied for NHDES Wetlands Bureau approvals which have been reviewed and endorsed by the Conservation Commission.

STAFF RECOMMENDATION:

The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

CITY OF DOVER

PLANNING BOARD - STAFF MEMO FILE #COND-2024-0027

Application Type:	Conditional Use Permit
Applicant(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Owner(s):	Heath J. Todd, Trustee, Heath J. Todd Revocable Trust
Location:	Back Road (Assessor's Map M, Lot 104)
Meeting Date:	February 11, 2025

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:

1. Approval of COND-2024-0023;
2. Copies of the NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit submitted to the Planning Department;
3. Include plan note that Design Engineer shall provide signed letter to City Engineer certifying that the stormwater management system has been installed in accordance with approved plans;
4. Add note that relief from the 5-foot side boundary driveway setback, required by § 157-50C(3) has been granted by the Community Services Director.

COND-2024-0027 Back Road

Property Information

Location	BACK RD
Owner	TODD HEATH J TRUSTEE
Land Use	610V
Zoning Code	R-40
Property Id	M0104-000000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PERMIT SNAPSHOT REPORT COND-2024-0027
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	08/07/2024
Work Class:	Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	
Description:	Disrupt land in Conservation District buffers.				

Parcel:	**Address:**	**Zone:**
M0104-000000 Main	Back Rd Main Dover, 03820	R-40(Residential - Rural)

Wetlands Scientist
Michael Parsont
P.O. Box 955
Dover, NH 03821
Business: (603) 767-8633

Engineer
Beals Associates, PLLC
Christian O Smith
70 Portsmouth Avenue
Stratham, NH 03885

Owner
Heath Todd
402 Webber Hill Road
Kennebunk, ME 04043
Home: (603) 591-4976
Business: (603) 330-3600
Mobile: (603) 591-4976

Plan Preparer
Berry Surveying & Engineering
335 Second Crown Point Road
Barrington, NH 03825
Business: (603) 332-2863
Mobile: (603) 781-3403

Permit Custom Fields

Select Permit Type	Conservation District	General Purpose	Alteration / Addition	Project Zone	Residential
What is the parcel zoned?	R-40	Work	See Narrative	permitstatefed	See Narrative

Attachment File Name	Added On	Added By	Attachment Group	Notes
Permit Snapshot Report.pdf	08/07/2024 11:09	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot
2024.08.27_PlanningBoard.Agenda.pdf	08/14/2024 13:56	Blonigen, Rachel		PB Agenda
PB08-27-2024 COND-2024-0027.pdf	08/23/2024 14:13	Blonigen, Rachel		Staff Memo
Abutter Letter, Kageleiry, Chad.pdf	08/27/2024 14:54	Blonigen, Rachel		
2024.09.12_PlanningTechnicalReviewCommittee.Agenda.pdf	09/04/2024 12:30	Blonigen, Rachel		TRC Agenda
2024.08.27_PlanningBoard.Minutes.pdf	10/10/2024 15:04	Blonigen, Rachel		Approved PB Minutes
2024.12.05_PlanningTechnicalReviewCommittee.Agenda.pdf	11/22/2024 13:59	Blonigen, Rachel		TRC Agenda
2024.12.05_PlanningTechnicalReviewCommittee.BackRoad_COND-2024-0023_0027.pdf	12/20/2024 13:41	Blonigen, Rachel		TRC Minutes
2025.01.13-ConservationCommission.Minutes.draft.pdf	01/22/2025 11:40	Blonigen, Rachel		Draft ConCom Mins
2024.02.11_PlanningBoard.Agenda_.pdf	01/29/2025 13:07	Blonigen, Rachel		PB Agenda

Note	Created By	Date and Time Created
1. Physical materials to be delivered 08/20/2024	Rachel Blonigen	08/19/2024 12:10
2. PB continued item to go to TRC before resubmitting to PB.	Rachel Blonigen	08/29/2024 16:06
3. Post TRC steps item to go to ConCom for approval then resubmit for Planning Board	Rachel Blonigen	12/09/2024 11:43

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00008901	Planning General Application Fee	$200.00	$200.00
	Total for Invoice INV-00008901	$200.00	$200.00
INV-00008976	Planning Public Notice in Newspaper	$120.00	$120.00
	Total for Invoice INV-00008976	$120.00	$120.00
INV-00011004	Planning Public Notice in Newspaper	$120.00	$120.00

Total for Invoice INV-00011004	$120.00	$120.00
Grand Total for Permit	**$440.00**	**$440.00**

Activity Type	Activity Number	Name	Workflow Action Name	User	Created On
Recommendation to Planning Board (Permit)	RCMND-000054-2024		Planner Creates Staff Recommendations v.1.00	Rachel Blonigen	08/23/2024

Activity Custom Fields

Agenda Item	4-G	Application Complete?	Yes	Attachments	INTENT: Proposal is for a Conditional Use Permit (CUP) to construct a patio, patio path, and access to a proposed tidal docking structure, with impacts to the Conservation District totaling 1,110± square feet of permanent impact and 73± square feet of temporary impact. AGENDA ITEM #: 4-G FILE: COND-2024-0027 APPLICANT/OWNER: Heatl J. Todd, Trustee, Heath J. Todd Revocable Trust LOCATION: Back Road (Assessor's Map M, Lot 104) UNITS PROPOSED: N/A ACREAGE: 26.02± acres ZONING DISTRICT: R-40 EXISTING USE: Vacant, Eversource Easement PROPOSED USE: Residential SURROUNDING USE: Residential, Cochecho River PERMITS: - Two (2) City of Dover CUPs - NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit WAIVERS REQUESTED: N/A ZBA ACTION: N/A CONSERVATION COMMISSION: Reviewed and endorsed on 8/12/24. TRC: N/A ATTACHMENTS: Application materials including site plan. Summary of Request and Background The applicant is proposing to construct a patio accessory structure, an access path to the patio, and a path to a proposed tidal docking structure all within the Conservation District. The proposed

structures will be accessory to a proposed single-family residence and additional accessory structures that have been designed outside the Conservation District.
The proposed project will create 1,110± square feet of permanent impact to the Conservation District.
There is also 73± square feet of temporary impact.
The applicant has also applied for NHDES Wetlands Bureau approvals.
The Conservation Commission reviewed and endorsed the application at their August 12, 2024 meeting. (minutes attached)
Consistency with Land Use Regulations – CUP 170.27.C
The Conservation District ordinance §170.27.C provides for Conditional Use Permits to allow impacts to the Conservation District if standards related to demonstration that the use is essential to the productive use of land, a soil erosion and sedimentation control plan is submitted, state and federal approvals have been applied for, and a written review by the Conservation Commission has been sought.
Planning Staff feels that the applicant considered and met all of the criteria as specified in §170.27.C per their narrative. Project impacts have been minimized through the placement of the structures, with only accessory structures falling within the Conservation District, and pervious pavers and crushed stone being used for the patio and paths.
Temporary impacts are to facilitate project construction and will be restored and no fertilizers or chemicals will be used in the project area. The applicant has also applied for NHDES Wetlands Bureau approvals which have been reviewed and endorsed by the Conservation Commission.
STAFF RECOMMENDATION:
The Planning Department recommends that the Planning Board accept the application as complete, note it is not of regional impact, hold a public hearing, make the necessary and supporting findings of fact, and vote to approve the Conditional Use Permit with the following subsequent conditions:

Subsequent Conditions to Be Met Prior to Issuance of a Conditional Use Permit:
1. Approval of COND-2024-0023;
2. Copies of the NHDES Alteration of Terrain, Individual Sewage Disposal System, Dredge and Fill, Shoreland Permit, and Construction General Permit submitted to the Planning Department.
3. Request relief from the 5-foot side boundary driveway setback, required by § 157-50C(3), or provide a detailed narrative describing any hardships for review and potential acceptance by the Community Services Director;
4. The Technical Review Committee review fire access and the impervious area (including gravel) to ensure stormwater regulations are met.

Summary Request & Background	The applicant is proposing to construct a patio accessory structure, an access path to the patio, and a path to a proposed tidal docking structure all within the Conservation District. The proposed structures will be accessory to a proposed single-family residence and additional accessory structures that have been designed outside the Conservation District. The proposed project will create 1,110± square feet of permanent impact to the Conservation District. There is also 73± square feet of temporary impact. The applicant has also applied for NHDES Wetlands Bureau approvals. The Conservation Commission reviewed and endorsed the application at their August 12, 2024 meeting. (minutes attached)

PERMIT SNAPSHOT REPORT (COND-2024-0027)

Recommendation to Planning Board (Permit)	RCMND-000017-2025	Planner Creates Staff Recommendations v.1.00	Rachel Blonigen	01/30/2025

Hearing Type	Location	Scheduled Date	Status	Subject
Planning Board Hearing v.1	Council Chambers	08/27/2024	Continued	CUP

Comments: PB continued item to go to TRC 08.27.2024 before resubmitting to PB.

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	Approved	08/07/2024	09/04/2024	08/14/2024	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Kaspari, Jackson	Approved	08/07/2024	09/04/2024	08/14/2024

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	Approved	01/02/2025	01/03/2025	01/22/2025	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Bassegio, Erin	Approved	01/02/2025	01/30/2025	01/22/2025

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		08/07/2024 11:21	08/14/2024 14:01
Confirm application complete v.1	Generic Action		08/07/2024 11:21
Confirm application complete v.1	Generic Action		01/02/2025 16:08
Conditional Use Review v.1	Receive Submittal	01/02/2025 0:00	01/22/2025 11:43
Conditional Use Review v.1	Receive Submittal	08/07/2024 0:00	08/14/2024 14:01
Planning Board v.1		01/22/2025 11:45	
Planning Board Agenda v.1	Task	01/22/2025 11:45	01/29/2025 13:08
Planning Board Agenda v.1	Task	08/14/2024 14:01	08/14/2024 14:01
Invoice for Notices v.1	Task	08/14/2024 14:01	08/23/2024 14:13
Invoice for Notices v.1	Task	01/29/2025 13:08	01/29/2025 13:08
Send Notices v.1	Task	01/29/2025 13:09	01/30/2025 14:22
Send Notices v.1	Task	08/23/2024 14:11	08/23/2024 14:13
Planner Creates Staff Recommendations v.1	Permit Activity	08/23/2024 14:12	08/23/2024 14:13
Planner Creates Staff Recommendations v.1	Permit Activity	01/30/2025 14:22	
Distribute Planning Board Materials v.1	Task		
Distribute Planning Board Materials v.1	Task	08/23/2024 14:12	08/23/2024 14:13
Planning Board Hearing v.1	Hold Hearing	08/23/2024 14:12	01/22/2025 11:44
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Permit Activity		
Planning Board Decision v.1	Permit Activity		01/22/2025 11:44
NOD Sent to Applicant v.1	Create Report		01/22/2025 11:44
NOD Sent to Applicant v.1	Create Report		
Issue Permit v.1			
Verify Fees Prior to Permit v.1	Generic Action		
Issue and Review Permit v.1	Generic Action		
Print and Email Permit v.1	Generic Action		
Plans uploaded to Treeno v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Recording v.1	Task		

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

RECEIVED
Planning Office
AUG 05 2024
Dover, New Hampshire

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Heath J. Todd, Trustee - Heath J. Todd Revocable Trust Telephone # 603-591-4976

Address of Applicant: 402 Webber Hill Road, Kennebunk, ME 04043

E-Mail Address: heath@apex-constructioninc.com

Name of Property Owner (if different from applicant): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # M Lot(s) # 104

Address of Property: Back Road

Zoning District(s) R-40 Rural Residential Overlay District(s) Conservation + Wetland Protection

Existing Use of Property: None - Vacant land (Eversource easement crosses property - transmission line)

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☒ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

See separate narrative.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Alteration of Terrain (pending), NHDES Individual Sewage Disposal System (pending), NHDES Wetlands Bureau Dredge and Fill (pending), NHDES Shoreland (pending), Construction General Permit (pending)

Name of Professional That Prepared Plans: Christian O. Smith, P.E. (Beals Associates, PLLC)

Address 70 Portsmouth Avenue, Stratham, NH 03885 Telephone #: 603-583-4860

Professional License #: 9900 E-mail address: cSmith@bealsassociates.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 8/2/2024

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent: _____ Date: 8/2/2024

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/2/2024

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
M	104	Heath J. Todd Revocable Trust	402 Webber Hill Rd, Kennebunk, ME 04043

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Kenneth A. Berry, LLS	Berry Survey + Engineering	335 Second Crown Pt. Rd, Barrington, NH 03825
Christian O. Smith, PE	Beals Associates, PLLC	70 Portsmouth Ave., Stratham, NH 03885
Michael L. Parsons, CWS	Stable Growth Environmental LLC	P.O. Box 713, Somersworth, NH 03878

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

COND-2024-0027 **BACK ROAD**

Property ID	Location	Owner 1	Owner 2	Owner Address 1	City	State	Zip
M0091-000000	286 MIDDLE RD	STRANGE EDWARD S TTS	FRENCH FARM 2023 REV TRUST	286 MIDDLE RD	DOVER	NH	03820
M0091-A00000	290 292 MIDDLE RD	TOWNSQUARE MEDIA PORTSMOUTH LLC		PO BOX 576	DOVER	NH	03821-0576
M0091-B00000	278 MIDDLE RD	MCKENNA JAMES F & JOANNE E TRUSTEES	MCKENNA JAMES AND JOANNE REVOCABLE LIVIN	278 MIDDLE ROAD	DOVER	NH	03820
M0091-C00000	MIDDLE RD	WATERSIDE LAND HOLDINGS LLC	C/O SUMMIT LAND DEVELOPMENT LLC	340 CENTRAL AVE STE 202	DOVER	NH	03820
M0092-A00000	BACK RD	LANGS PATRICIA		10 HAWTHORN ROAD	DOVER	NH	03820
M0092-B00000	CULLEN BAY RD	CULLEN BAY HOMEOWNERS ASSC	C/O MICHELLE TROCHALAKIS TREASURER	7 CULLEN BAY RD	DOVER	NH	03820
M0092-H00000	CULLEN BAY RD	HEBERT MARIE V TRUSTEE	HEBERT MARIE V REVOCABLE TRUST	6 CULLEN BAY RD	DOVER	NH	03820
M0102-000000	277 MIDDLE RD	DRISCOLL BRENDAN C		277 MIDDLE RD	DOVER	NH	03820
M0102-001000	268 MIDDLE RD	MINEROWICZ EDWARD & MARCIA TRUSTEES	THE RED ISLAND TRUST	268 MIDDLE RD	DOVER	NH	03820
M0102-012000	HAYDEN DR	CATHERINEBERG CONDOMINIUM UNIT OWNERS AS		38 BEECHWOOD DR	STRAFFORD	NH	03884
M0102-012DRV	HAYDEN DR	100 BROWNING LLC		38 BEECHWOOD DR	STRAFFORD	NH	03884
M0104-000000	BACK RD	TODD HEATH J TRUSTEE	TODD HEATH J REVOCABLE TRUST	402 WEBBER HILL RD	KENNEBUNK	ME	04043
		KENNETH A. BERRY, LLS	BERRY SURVEYING & ENGINEERING	335 SECOND CROWN POINT	BARRINGTON	NH	03825
		CHRISTIAN O. SMITH, PE	BEALS ASSOCIATES, PLLC	70 PORTSMOUTH AVENUE	STRATHAM	NH	03885
		MICHAEL L PARSONT, CWS	STABILE GROWTH ENVIRONMENTAL, LLC	P.O. BOX 713	SOMERSWOF	NH	03878

The purpose of this application is to request access through the Wetland Protection District (WPD) and 50-foot wetland buffers, as well as the Conservation District (CD), including 50 feet from streams, to reach the developable upland portion of a 26-acre lot, where one single-family residence and accessory structures are proposed to be built. There is only one access approach available from Back Road to reach the broader parcel of land that contains the buildable upland area of the lot, as a result there are no alternative approaches with less impact to WPD or CD areas. The driveway access from Back Road to the broader parcel is limited to within a 20-foot-wide strip of land that is owned by the applicant, over a length of approximately 2,250 linear feet (LF). The proposed gravel driveway will need to cross six previously-disturbed WPD areas and their buffers, including one CD area (50 feet either side of a Tier 1 intermittent stream) in order to reach the broader parcel.

Once the driveway reaches the broader parcel, there are two additional crossings of WPD areas and their buffers, and one CD crossing necessary in order to access the buildable area, over an additional length of approximately 1,190 LF. All except for the last 40 LF is proposed to be gravel, the remainder will be paved. These WPD/buffers and CD crossings include a pit-and-mound wetland and 50 feet either side of a Tier 1 perennial stream, and have been designed to avoid and minimize impacts upon the resource areas to the greatest extent practicable. The route layout chosen for the pit-and-mound WPD/buffers crossing reduces wetland impact as much as possible while avoiding close proximity to a natural drainage swale to the east, which carries surface water runoff to tidal shoreland areas within approximately 300 feet. This layout also maintains a practical driveway curve that will minimize safety risks, especially in low visibility conditions. The wetland/stream/wetland buffer impact areas for each crossing are shown on the four enclosed Plan & Profile sheets.

The project engineers have designed the wetland/stream crossings with culverts strategically installed to manage north-to-south stormwater flow so there will be no increase of flooding, ponding or other negative impact on abutting properties upgradient or downgradient. Each culvert was positioned based on existing topography, targeting low points along the driveway to prevent ponding and ensure uninterrupted drainage flow towards the south. Their sizing and design were calculated to maintain natural water flows and velocities, preserving the pre-development conditions of the surrounding undeveloped land. To minimize impact on wetlands, wetland buffers, and neighboring properties, retaining walls were employed. The design approach of the culverts was primarily driven by the need to facilitate the crossings over the intermittent and perennial streams. Culverts were intentionally oversized to handle stormwater more effectively and were lined with stone at the base to reduce water velocity. These design principles were consistently applied across all culverts, ensuring that both pre-development and post-development flow conditions will be effectively managed, even during severe weather events such as the 100-year storm.

The total proposed permanent impact to WPD areas is 8,880 square feet (SF), all of which is within forested and/or scrub-shrub wetland systems, and the total permanent impact to 50-foot wetland buffers is 29,176 SF, including 1,216 SF adjacent to a small isolated wetland near the buildable area (the wetland will not be impacted). No compensatory mitigation is required by State rules, since the total jurisdictional impact is less than 10,000 SF and both streams are Tier 1. Applications have been submitted to NHDES Wetlands Bureau and are pending review.

A wetlands functional assessment was completed for wetlands on the project site using the USACE Highway Methodology by Michael L. Parsont, CWS. Multiple site visits were done between February and June 2024 to gather data for this purpose. Wetland 1 is an ephemeral drainageway that will be crossed twice; it has surface water runoff piped from an upgradient parcel. It is shown on the 2020 Wildlife Action Plan as "highest ranked habitat in NH" and the Natural Heritage Bureau reported NE Cottontail observations/habitat to the south of the project area; as a result, it was designated as a principal function/value. However, the driveway crossing location is highly disturbed with significant dominance of invasive species and had no signs of wildlife use or habitat present for the NE Cottontail.

Wetland 2 contains an intermittent stream within a forested area and has no assessed principal functions or values. Wetland 3 crossing is in a forested area with no concentrated flow and has no assessed principal functions or values. Wetland 4 is a 1,714 SF isolated disturbed wetland entirely within the 20-foot-wide corridor that was forested/scrub-

shrub prior to disturbance and has no assessed principal functions or values. Wetland 5 crossing is in a forested area, has two associated impacts and has no assessed principal functions or values.

Wetland 6 was forested/scrub-shrub prior to disturbance, though it is entirely within a maintained transmission line utility easement and the vegetation has been cleared. It has no assessed principal functions or values. Wetland 7 is a forested pit-and-mound wetland that has flood storage potential designated as a principal function/value. The proposed crossing should not have significant impact on this function; it includes an equalizing culvert to allow any water that accumulates to pond or move in accordance with what existing conditions allow. Wetland 8 contains a perennial stream within a forested system and has no assessed principal functions or values. Wetland 9 is a 429 SF isolated wetland within the protected shoreland zone that has no vegetation, is surrounded by woods, and has no assessed principal functions/values.

There are minimal additional impacts proposed within the Conservation District, within 100 feet of the reference line for the Piscataqua River. The single-family residence and accessory structures are designed to be built within the protected shoreland between 100 and 250 feet of the reference line/highest observable tide line, outside the CD. The project proposes 1,110 SF of permanent and 73 SF of temporary impact within the CD to construct a patio accessory structure, a path to access the patio, and a path to access a tidal docking structure (a separate application is being submitted for the tidal dock structure by another consultant). These impacts have been minimized to the greatest extent practicable, with the patio set back greater than 20 feet from the reference line and each affected waterfront buffer grid segment meets the minimum required tree point score. The patio is being built using pervious pavers and the paths within the TBZ will be constructed using crushed stone to keep them pervious. The access way from the path to the docking structure covers 131 SF and is impervious. Temporary impacts are to facilitate construction of the patio and will be restored. No fertilizers or chemicals will be used in this area. All applicable state and federal approvals have been applied for.

Throughout the duration of construction, drainage treatment and erosion control measures will be maintained (see enclosed Erosion Control Details and Construction Details plan sheets). The initial phase involves constructing a driveway into the project site, necessitating the removal of existing vegetation and organic material from the designated area. These cuts in relatively flat terrain are expected to minimize runoff and will swiftly be stabilized with compacted gravel. At points where culverts are planned across the wetlands, intermittent stream, and perennial stream, existing material will be excavated and replaced with a stable gravel base beneath the culverts. Once in place, these culverts will be filled with 6 inches of riprap, followed by immediate stabilization of the surrounding area. Beyond the driveway, the project area slopes towards the Piscataqua River to the east and south, away from the wetlands to the west. Erosion control measures will be strategically placed at the limits of disturbance downslope from construction activities. Additionally, a vegetative buffer zone of at least 50 feet of woods between disturbed project areas and the river will serve as an additional protective barrier, ensuring no sediment from the project reaches the river. Any disturbed areas will be promptly stabilized using vegetation or other stabilized materials. Regular inspection and maintenance will uphold the effectiveness of erosion control measures throughout the project's duration, as outlined in the Stormwater Pollution Prevention Plan. Any damaged measures will be promptly repaired or replaced to prevent sedimentation and maintain compliance with environmental regulations.

December 24, 2024

Kristin Duclos, Wetlands Specialist
NHDES Wetlands Bureau
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

Re: Request for More Information – Wetlands Permit Application
NHDES File Number 2024-02319
Back Road, Dover – Tax Map M, Lot 104

Dear Ms. Duclos,

This letter transmits our responses and support materials addressing the referenced Request for More Information dated September 25, 2024. Included are revised application materials and site plans reflecting changes since the original submittal, as well as a check for the revised application fee due to an increase in the overall impact area.

If you have any questions or require additional information, please contact me.

Sincerely,

Michael L. Parsont, CWS, CPESC
Environmental Consultant
Wetland Scientist/Erosion Control Specialist

Stable Growth Environmental LLC
P.O. Box 713, Somersworth, NH 03878
(603) 767-8633
mparsont@stablegrowth.net

Cc: City of Dover Municipal Clerk/Conservation Commission
Heath J Todd

HEATH J TODD
402 WEBBER HILL RD
KENNEBUNK, ME 04043-6335

2454
54-49/114 NH
1555

12/23/24
Date

Pay to the Order of Treasurer State of New Hampshire $ 750.80

Seven Hundred Fifty and 80/100 Dollars

Photo Safe Deposit® Details on back

BANK OF AMERICA

ACH R/T 011400495

For D&F

Heath J TM

MP

⑆011400495⑆ 009488718913⑈ 2454

Response to Request for More Information (RFMI - dated September 25, 2024)

Enclosed are revised application materials that reflect changes since the original submittal to the requested impacts within jurisdictional areas for the project, as well as a check for the revised application fee as a result of these additional impacts. The materials include a revised Impact Area Summary (Section 11), a revised Shoreland Application Worksheet, a revised plan set, and revised paragraphs from the initial submittal narrative.

Additionally, itemized responses are provided below to address each requirement as outlined in the RFMI.

1) A complete mitigation proposal for the total impacts of the project is enclosed. See separate narrative.
2) Documentation is provided to support the original highest observable tide line (HOTL) delineation, including the original jurisdictional delineations report and photographs taken on October 15, 2024 at the channelized ravine location in question. See separate narrative,
3) Copies of follow-up email communications with NHB and NHF&G are enclosed. Recommendations have been incorporated into the proposed project and are shown in the enclosed plan set (see Sheet 0, NHF&G Plan).
4) Cowardin wetland classifications have been added to the plan set. See Wetland Impact Plans (Sheets 13-16), Restoration Plan (Sheet 12) and Tidal Buffer Impact Plan (Sheet 17).
5) The impact and improvement areas for the wetland and stream crossings have been made more readable by adding new Wetland Impact Plans (Sheets 13-16) at a smaller scale. Additionally, the roadway centerline profiles on Sheets 5-8 have been updated to show wetland limits, and cross-sections through the intermittent and perennial streams have been added to Sheet 23.
6) The riprap within the culverts has been revised to 3-inch rounded stone with a minimum of 6-inch depth (see Sheet 26 for detail and stone gradation). The oversized reinforced concrete culverts will be installed into the existing substrate, which consists of forest floor material over native soils. To prevent erosion within the culverts, the round river stones will help collect forest floor material over time, creating a seamless transition with the surrounding area. This approach has been reviewed and approved by the NH Fish & Game Department.
7) A new culvert (culvert #5) has been added at Wetland Impact 4. Plans and the drainage analysis have been revised to address this additional culvert (see Sheet 14).
8) In lieu of a restoration plan being created in advance of construction, a note has been added to Sheet 17 to catalog and replant shrubs and ground cover, so that post-construction conditions will be restored to pre-construction natural vegetated conditions.
9) The temporary impacts around the proposed pervious patio and walkway have been revised to allow sufficient space for construction equipment to maneuver in the area. Additional fees associated with this revision have been provided as part of this re-submission.
10) The pervious walkway detail of crushed stone within the tidal buffer zone has been revised on Sheet 26 to show geotextile material wrapped around the clean, washed crushed stone, along with maintenance notes to keep the crushed stone free of sediment and vegetative growth to allow stormwater infiltration.
11) The Vegetation Management Plan (Sheet 20) has been revised to provide clarity on the trees to be removed as well as the trees to remain.

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent (PERM.) impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary (TEMP.) impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERM. SF	PERM. LF	PERM. ATF	TEMP. SF	TEMP. LF	TEMP. ATF
Wetlands	Forested Wetland (Existing/ATF)			☐	1,309		☒
	Scrub-shrub Wetland	651		☐	100		☐
	~~Emergent~~ Wetland / Forested	*8,287		☐	*66		☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface	Intermittent / ~~Ephemeral~~ Stream		22	☐		1	☐
	Perennial Stream ~~or River~~ (Existing/ATF)			☐		29	☒
	~~Lake / Pond~~ Perennial Stream		*130	☐		*4	☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River	*1,573	6	☐	179		☒
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)	1,110		☐	*1,706		☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		*11,621	*158		*3,360	*34	

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I) * = revised numbers as of 12-23-24

☐ **MINIMUM IMPACT FEE**: Flat fee of $400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking):	14,981 SF	× $0.40 =	$5,992.40
Seasonal docking structure:	SF	× $2.00 =	$
Permanent docking structure:	SF	× $4.00 =	$
Projects proposing shoreline structures (including docks) add $400 =			$
		Total =	$5,992.40
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			$5,992.40

- 5,241.60 PD.
$ 750.80 owed

The following paragraphs from the initial submittal narrative have been revised to reflect new impact numbers as of December 23, 2024 ("*" designates revised numbers):

The total proposed permanent impact to jurisdictional wetland/stream areas is *8,938 square feet (SF), all of which is within forested and/or scrub-shrub systems. The wetland/stream impact areas for each crossing are shown on the four enclosed Wetland Impact Plan sheets; descriptions of the wetland systems are included in the Wetlands Functional Assessment. Changes to wetland impact areas include Impact Area 3, which is less 74 SF for a new total of *1,305 SF permanent impact; and Impact Area 8, which is an additional 132 SF for a new total of *253 SF permanent impact. There were no vernal pools identified within the project areas. Permanent stream impacts include 22 LF for the intermittent channel and *130 LF for the perennial channel/banks, for a total of *152 LF, including *1,573 SF of perennial stream bank outside of the wetland boundaries. Temporary impacts during construction that will be restored include *166 SF of wetlands and *5 LF of intermittent/perennial stream channel. The after-the-fact wetland impacts to be restored include 1,309 SF of forested wetland/stream area, 29 LF of perennial stream channel/banks, and 179 SF of perennial stream bank outside of the wetland boundaries.

The majority of the buildable upland area is within the protected shoreland zone adjacent to the Piscataqua River, and a Shoreland Permit Application is being submitted concurrently with this application for the development occurring between 100 and 250 feet from the reference line/highest observable tide line. The single-family residence and accessory structures are proposed to be built within the protected shoreland outside the tidal buffer zone (TBZ). This application also requests 1,110 SF of permanent and *1,706 SF of temporary impact within the undeveloped TBZ to construct a patio accessory structure, a path to access the patio, and a path to access a tidal docking structure (a separate application is being submitted for the tidal dock structure by another consultant). These impacts have been minimized to the greatest extent practicable, with the patio set back greater than 20 feet from the reference line and each affected waterfront buffer grid segment meets the minimum required tree point score. The patio is being built using pervious pavers and the paths within the TBZ will be constructed using crushed stone to keep them pervious. The access way from the path to the docking structure covers 131 SF, affects 6 LF along the river, and is impervious.

SHORELAND APPLICATION WORKSHEET

This worksheet *must* be submitted to the NHDES Wetlands Bureau with every Shoreland Permit Application. **A separate shoreland application worksheet must be submitted for each individual lot of record where impacts are proposed.**

For the purposes of this worksheet, "**pre-construction**" impervious surface area[3] means all human made impervious surfaces[4] currently present within the protected shoreland of a lot, whether to be removed or to remain after the project is completed. "**Post-construction**" impervious area means all impervious surfaces that will exist within the protected shoreland of a lot upon completion of the project, including both new and any remaining pre-construction impervious surfaces. All answers shall be given in square feet.

Calculating the Impervious Area of a Lot

CALCULATING THE IMPERVIOUS AREA OF A LOT WITHIN 250 FEET OF THE REFERENCE LINE (Env-Wq 1406.12)			
	STRUCTURE DESCRIPTION	PRE-CONSTRUCTION IMPERVIOUS AREAS	POST-CONSTRUCTION IMPERVIOUS AREAS
PRIMARY STRUCTURE(S) House and all **attached** decks and porches.	House with deck and attached garage + patio	0 FT²	4,860 FT²
	Eversource concrete foundations	700 FT²	700 FT²
ACCESSORY STRUCTURES All other impervious surfaces excluding lawn furniture, well heads, and fences. Common accessory structures include, but are not limited to: driveways, walkways, patios, and sheds.	paved driveway	0 FT²	13,347 FT²
	tennis court	0 FT²	8,400 FT²
	stand-alone garage	0 FT²	3,200 FT²
	gravel drive/walkway	0 FT²	5,386 FT²
	pier utility bldg	0 FT²	900 FT²
	pier access way	0 FT²	131 FT²
	TOTAL:	(A) 700 FT²	(B) 36,924 FT²
Area of the lot located within 250 feet of reference line:			(C) 633,143 FT²
Percentage of lot covered by pre-construction impervious area within 250 feet of the reference line: *[divide (A) by (C) x 100]*			(D) 0.11 %
Percentage of lot to be covered by post-construction impervious area within 250 feet of the reference line upon completion of the project: *[divide (B) by (C) x 100]*			(E) 5.83 %

[3] **"Impervious surface area"** as defined in Env-Wq 1402.13 means, for purposes of the impervious surface limitation specified in RSA 483-B:9, V(g), the sum total of the footprint of each impervious surface that is located within the protected shoreland.

[4] **"Impervious Surface"** as defined in RSA 483-B:4, VII-b means any modified surface that cannot effectively absorb or infiltrate water. Examples of impervious surfaces include, but are not limited to, roofs, and unless designed to effectively absorb or infiltrate water, decks, patios, and paved, gravel, or crushed stone driveways, parking areas, and walkways.

RFMI Item #1

Compensatory mitigation requirements shall be satisfied by an in-lieu fee payment to the Aquatic Resource Compensatory Mitigation Fund (ARM Fund). The in-lieu fee payment amount has been calculated in accordance with Env-Wt 803.07, utilizing the ARM Fund In-Lieu Fee Payment Calculator and submitted electronically on December 23, 2024. This includes impacts to wetlands, streams and tidal buffer zone areas, with the impacts breakdown and associated fees listed below.

- Forested Wetlands: 8,287 SF; estimated payment $65,003.90
- Tidal Wetlands (TBZ): 1,110 SF; estimated payment $17,413.86
- Other Jurisdictional Areas (Scrub-shrub Wetlands): 651 SF; estimated payment $5,106.50
- Streams: 152 LF; estimated payment $67,789.34
- Total Estimated Payment: $155,313.60

The enclosed plan set includes the size and classification type of the proposed project impact areas, see sheets titled Wetland Impact Plans and Shoreland Impact Plan. A Wetland Functional Assessment of the impacted jurisdictional areas was included with the permit application materials. Stream crossing information was also provided for the two stream impact locations.

The Dover Conservation Commission did not provide compensatory mitigation recommendations. No impacts are proposed within a designated river corridor.

Impacts associated with a proposed pier and dock structure at the same location were addressed via a separate application process (NHDES File Number 2024-02301). A separate mitigation proposal was submitted for those impacts.

RFMI Item #2

The original highest observable tide line (HOTL) delineation at the channelized ravine was an accurate line, in accordance with Env-Wt 602.23, defined as "… a line defining the farthest landward limit of tidal flow, not including storm events, that can be recognized by indicators such as the presence of a strand line of flotsam and debris, the landward margin of salt-tolerant vegetation, or a physical barrier that blocks inland flow of the tide." Enclosed is documentation to support the original HOTL delineation as accurate.

The original jurisdictional delineations were completed on the subject property on September 22 and 23, 2021 by John P. Hayes III, CWS, CSS and Michael L. Parsont, CWS for the previous landowner (see enclosed Jurisdictional Delineations report dated September 28, 2021). An additional site inspection was performed by Mr. Hayes and Mr. Parsont approximately one hour after peak high tide on October 15, 2024, specifically to re-assess the delineations completed in the vicinity of the channelized ravine location specified in the September 25, 2024 RFMI. Photos are enclosed that were taken at this location; there is a pink flag adjacent to the stump in Photograph 1 and in the foreground of Photograph 2 that identifies the HOTL boundary location (remaining photos are on the landward side).

The following information supports the HOTL as originally delineated and that it does not extend further landward into the channelized ravine. The photos taken support these observations.

- Immediately landward of the HOTL boundary there is an elevation change with a restriction and large quantities of stick debris piled up.
- Immediately landward of the HOTL boundary there is a clear change in depth of organic material, as it becomes much shallower than on the tidal side.
- Within the wetland area starting just landward of the HOTL boundary there is vegetation present that is not salt tolerant, including skunk cabbage, highbush blueberry, cinnamon fern, winterberry holly, aster and poison ivy.
- Peak high tide was only one hour earlier, and the water level is well below the location of the HOTL boundary.

These are all indicators that support the original HOTL delineation as accurate, including a strand line of debris, landward margin of salt-tolerant vegetation, as well as elevation change, restriction of the channel and high tide water observation.

Stable Growth Environmental LLC
P.O. Box 955, Dover, NH 03821
(603) 767-8633

September 28, 2021

Attn: Miles Cook
NM Cook Development LLC
22 Isaac Lucas Circle
Dover, NH 03820

Re: Jurisdictional Delineations: HOTL, wetlands/pd soils, vpd soils, and salt marsh
Back Road Property, Lot M-104, Dover, New Hampshire

Dear Miles:

This letter reports the completion of the jurisdictional delineations conducted on the referenced property, as noted, by John P. Hayes III, CWS, CSS and Michael Parsont, CWS on September 22 and 23, 2021. The parcel is 20.7 acres in size and is located east of Middle/Back Road on the Piscataqua River in Dover, NH. John Hayes delineated the wetlands/poorly drained soils and very poorly drained soils, while Michael Parsont delineated the highest observable tide line (HOTL) and designated salt marsh areas.

The wetland area between the R line and the M and V lines contain pit and mound topography, where there is a mix of somewhat poorly and poorly drained soils. In these areas, the jurisdictional wetlands flagged were areas with more than 50% pits or low areas. All HOTL delineated areas and salt marsh areas contain very poorly drained soils.

The wetland delineations were conducted in accordance with the 1987 Army Corps of Engineers Wetlands Delineation Manual using the Routine Determinations Method, as required by the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau and the United States Army Corps of Engineers (ACOE). The following standards were used to determine jurisdiction under the Manual and to classify the wetland systems on the site.

1) *Field Indicators for Identifying Hydric Soils in the United States,* Version 7.0, 2010.
2) *Field Indicators for Identifying Hydric Soils in New England,* New England Hydric Soils Technical Committee, 3rd Edition, April 2004.
3) *National List of Plant Species That Occur in Wetlands: 2012 New Hampshire,* United States Department of the Interior Fish and Wildlife Service.
4) *Corps of Engineers Wetlands Delineation Manual,* Wetlands Research Program Technical Report Y-87-1, January 1987.
5) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North central and Northeast Region Version 2.0. 2012*
6) *Classification of Wetlands and Deepwater Habitats of the United States,* U.S. Department of the Interior Fish and Wildlife Service, December 1979.

The wetland and very poorly drained soils delineations comply with the poorly and very poorly drained soil criteria defined in *High Intensity Soil Map of New Hampshire Standards*, SSSNNE Special Publication No. l, April 2008, as well as City of Dover definitions. Wetland soils meet hydric soil criteria II, IV, VII and XI as defined in the first standard referenced above. The HOTL delineation was performed utilizing wrack

line, topo gradient and salt tolerant vegetation indicators in compliance with NHDES Wetlands Bureau requirements. The salt marsh designations were based on the presence of salt marsh vegetation species, including saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow hay (*Spartina patens*) and/or salt grass (*Distichlis spicata*).

Wetland boundaries identified on the non-tidal portion of the property are witnessed in the field with pink flagging tape for jurisdictional wet areas and blue flagging tape for areas with very poorly drained soils, hung periodically on vegetation using an alpha-numeric system as follows:

M1 to M70 (connect M70 to HOTL 24)
N1 to N32 (stop) (connect N1 to HOTL 25)
O1 to O14 (connect) (VPD)
P1 to P12 (connect) (VPD)
Q1 to Q19 (stop)
R1 to R47 (connect to I5 from 8/27/21 delineation)
S1 to S6 (connect)
T1-T2 (connect T1 to HOTL 83 and T2 to HOTL 84) (VPD)
U1 to U12 (connect U1 to HOTL 83 and U12 to HOTL 84)
V1 to V10 (stop)

The HOTL delineation is identified in the field with pink-and-black striped flagging tape, hung periodically on vegetation using an alpha-numeric system as follows:

HOTL 1 to HOTL 88 (stop)

Salt marsh areas are designated by their locations as related to HOTL flags as follows:

HOTL 1 to 10
HOTL 32 to 34 ("shelf")
HOTL 38 to 52
HOTL 61 to 68
HOTL 75 to 81 (connect 81 to 86; salt marsh is continuous seaward of this line)
HOTL 86 to 88

Two sketches of the approximate flagged lines with start and stop points are enclosed with this letter. These sketches are general spatial representations of the locations of the delineations intended to aid your survey location of the flags. There is no representation of their accuracy. It is strongly recommended that the flagged line(s) be survey located as soon as possible and depicted on a base plan.

According to the *Classification of Wetlands and Deepwater Habitats of the United States*, the inland non-tidal wetland areas are classified as Palustrine, Forested, Broad-Leaved Deciduous systems that are seasonally flooded and/or saturated (PFO1E), or Palustrine, Forested, Broad-Leaved Deciduous systems that are seasonally flooded and/or saturated, with organic soils present (PFO1Eg); and the tidal areas are classified as Estuarine, Intertidal, Unconsolidated Shore/Mud that are irregularly flooded (E2US3P), or the salt marsh areas are Estuarine, Intertidal, Persistent Emergent that are irregularly flooded (E2EM1P).

The plant species located in or near the freshwater wetlands include, but are not limited to: red maple *(Acer rubrum)*, white pine *(Pinus strobes)*, yellow birch *(Betula alleghaniensis)*, grey birch *(Betula populifolia)*, red oak *(Quercus rubra)*, highbush blueberry *(Vaccinium corymbosum)*, northern arrow-wood *(Viburnum dentatum)*, winterberry holly *(Ilex verticillata)*, Canada mayflower *(Maianthemum canadense)*, gold thread *(Coptis trifolia)*, partidgeberry *(Mitchella repens)*, wintergreen *(Gaultheria procumbens)*, cinnamon fern *(Osmunda cinnamomea)*, sensitive fern *(Onoclea sensibilis)*, and royal fern *(Osmunda regalis)*.

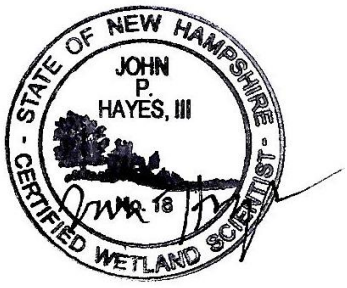
Please contact us if you have any questions.

Sincerely,
STABLE GROWTH ENVIRONMENTAL LLC

Michael L. Parsont, CWS, CPESC
Environmental Consultant
Wetland Scientist/Erosion Control Specialist
mparsont@stablegrowth.net

John P. Hayes III CWS, CSS
Wetland Scientist/Soil Scientist
603-205-4396
johnphayes@comcast.net

Encl: Two sketches with approximate flagged lines



Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

HOTL at channelized ravine

Photographs taken October 15, 2024

PHOTOGRAPH 1: Facing southerly (seaward) from just landward of original HOTL boundary.

PHOTOGRAPH 2: Facing northerly (landward) from original HOTL boundary.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken October 15, 2024

PHOTOGRAPH 3: Skunk cabbage on landward side of original HOTL boundary.

PHOTOGRAPH 4: Highbush blueberry on landward side of original HOTL boundary.

Heath J. Todd Rev Trust Property
Tax Map-Lot M-104
Back Road, Dover NH

Photographs taken October 15, 2024

PHOTOGRAPH 5: Facing southerly (seaward) towards original HOTL boundary from within channelized ravine.

NHB Communications

From: "DNCR: NHB Review" <nhbreview@dncr.nh.gov>
Date: September 3, 2024 at 1:12:13 PM EDT
To: Heath Todd <heath@apex-constructioninc.com>
Cc: mcook@metrocast.net
Subject: RE: NHB Review: NHB23-3169

Hi Heath,

I received the proposed plans, representative site photos, and a project description in the mail for NHB23-3169.

Thank you for having Stable Growth Environmental assess the wetlands proposed to be impacted. Having detailed descriptions, lists of vegetation, and photos of each wetland crossing is very helpful for me to determine if surveys are necessary.

Based on the provided information, none of the proposed wetland impacts are within wet meadows which is the most likely habitat rufous bulrush (*Scirpus pendulus*) would be found in. The wetland most likely to support this species is Wetland 6 which was previously forested/scrub-shrub and is now a regularly cleared transmission line ROW. Although the nearby occurrence of rufous bulrush was found within a utility ROW, this species does not generally occur in scrub-shrub habitat so it is less likely for the species to be present in this wetland.

Based on the provided report, Stable Growth Environmental did a thorough job assessing each wetland over multiple site visits. During the site visits, vegetation lists were compiled for each wetland which includes other bulrush species. Because of the thoroughness of these visits and the fact that bulrush was visible at the time of the visits, it is likely that if rufous bulrush were present in these wetlands, it would have been observed.

Although the wetlands proposed to be impacted could support rufous bulrush, it is not highly likely that this species is present within these habitats. In addition, because the wetlands proposed to be impacted were thoroughly assessed and the nearby known occurrence of rufous bulrush has not been seen in over 20 years, it is unlikely that this species would be present within the proposed impact areas. Because of this, **NHB has no further concerns regarding NHB23-3169.**

Please let me know if you have any questions.

Best,

Madeline (Maddie) Severance (*she/her/hers*)
Environmental Reviewer
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
N.H. Department of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603)-271-2834 (note the new number)
nhbreview@dncr.nh.gov
nhdfl.dncr.nh.gov
NHB DataCheck Tool

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Tuesday, November 7, 2023 10:57 AM
To: heath@apex-constructioninc.com
Cc: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; mcook@metrocast.net
Subject: NHB Review: NHB23-3169

Attached, please find the review of the NH Natural Heritage Bureau's (NHB) database to determine whether the proposed project could impact rare species and exemplary natural communities.

If you received a comment on the DataCheck Letter from NHB, please reply to this email with any documents, photos, or information requested.

If you received a comment on the DataCheck Letter from NHFG, please follow the consultation requirements listed on the DataCheck Letter and coordinate with NHFGreview@wildlife.nh.gov

Best,
Maddie

Maddie Severance
Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-0687

If there are problems with your DataCheck letter or you need help using the DataCheck Tool, contact Maddie Severance: (603) 271-0687

If there is a rare plant or exemplary natural community and an NHB Comment on your DataCheck letter, contact Ashley Litwinenko for any environmental review questions: (603) 271-2834

If there is a rare wildlife species and an NHFG comment on your DataCheck Letter, contact Kim Snyder for any environmental review questions: (603) 271- 0467

NHF&G Communications

From: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Sent: Wednesday, December 11, 2024 8:21 AM
To: Heath Todd <heath@apex-constructioninc.com>; Michael Parsont <mparsont@stablegrowth.net>
Cc: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>; Aures, Rosemary <Rosemary.E.Aures@des.nh.gov>; John Lorden <jlorden@bealsassociates.com>
Subject: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Final Recommendations

Hello Mr. Todd,

We do not recommend placing stones inside of a HDPE pipe at a wetland crossing. There is potential for stones within the HDPE pipe with a smooth interior to be washed out of the pipe into the wetland area or be piled up and block the pipe during a flood event. We recommend a partially buried RCP culvert at wetland crossing 8 and all other wetland crossings as indicated in our recommendations. NHFG has decided to not amend the recommendations for NHB23-3169.

NHB23-3169 New Hampshire Fish and Game Recommended Permit Conditions:

1. Blanding's Turtle (State Endangered), New England Cottontail (State Endangered), Shortnose Sturgeon (State Endangered), and Spotted Turtle (State Threatened) occur within the vicinity of the project area. Recommendations for Shortnose Sturgeon were issued by NHFG for NHB24-0953 on May 14, 2024. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information. See Plan sheet(s) XXXXX ***Include attached flyers to plan sheet set.***

2. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings prior to work commencement during the construction phase of the project. See Plan sheet(s) XXXXX.

3. NHFG recommends driveway construction occur between October 15th and April 15th to avoid impacting turtles during the active season. If project activities cannot be completed between October 15th and April 15th and must occur between April 16th and October 14th, searches and sweeps shall be conducted by trained individuals immediately before the start of work and movement of equipment in order to minimize the chance of animals entering an area between the sweep and work. A trained individual shall be defined as any contractor who has gone through project-species protection education conducted by the qualified biologist on rare wildlife species at the site. Sweeps (e.g. visual observations made while walking transects) shall consist of trained individuals moving through the area and surrounding vicinity that will be impacted by the current activities and actively looking for turtles (and other wildlife) that may be impacted by project activities.

4. All culverts shall be oversized, partially buried RCP culverts.

5. Staging of construction equipment/material and vehicle parking shall not occur in shrub cover and shrub cover shall not be removed.

6. Fertilizer shall not be applied in or near the wetlands along the driveway. Fertilizer applied in all other areas shall be slow-release or controlled-release.

7. Turtles may be attracted to disturbed ground during the nesting season (May 15th – June 30th). Turtle nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Josh Megyesy at NHFG immediately for further consultation. See Species Flyers, See Plan sheet(s) XXXXX for NHFG contact information.

    a. The nest or suspected nest shall be marked (surrounding roped off or cone buffer deployed) and avoided; this shall be communicated to all personnel onsite.

    b. Site activities shall not occur in the area surrounding the nest or suspected nest until further guidance is provided by NHFG.

8. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches. See Plan sheet(s) XXXXX.

9. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation.

    a. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible.

10. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.

    a. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone if in direct harm from project activities.

    b. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading.

    c. NHFG shall be contacted immediately if this action occurs.

11. NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

NHFG has completed our review of materials submitted for consultation under FIS 1004. No further coordination with NHFG is requested at this time. Please note that additional or a new consultation may be required in accordance with Fis 1004.08(b)4 if there are changes in project design that is referenced above which might result in potential impacts to threatened and endangered species, whether suggested to avoid harm to the species, or which could serve to increase the potential of adverse

impacts to species. These recommendations have been transmitted to the applicable permitting agency. Questions or concerns on NHFG recommendations provided in this communication **must** follow FIS 1004.12 that requires a written request for further consultation provided within 10 days of receipt of this communication. Note that NHFG recommendations may be withdrawn pursuant to FIS 1004.13.

Respectfully,

Brit Nahorney

Brit Nahorney
Wildlife Biologist

New Hampshire Fish and Game Department
11 Hazen Drive, Concord, NH 03301
p. 603-271-0788 | **c.**
e. Brittany.K.Nahorney@wildlife.nh.gov
wildlife.nh.gov

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Please provide shapefiles/KMZ/KMLs of the project site (and relevant features if applicable) with your submittal. Review statements provided in the NHB DataCheck Results letter for additional guidance.

Did you know? N.H. Fish and Game manages almost 84,000 acres of land for outdoor recreation.

From: Heath Todd <heath@apex-constructioninc.com>
Sent: Tuesday, December 10, 2024 11:03 AM
To: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>; Michael Parsont <mparsont@stablegrowth.net>
Cc: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>; Aures, Rosemary <Rosemary.E.Aures@des.nh.gov>; John Lorden <jlorden@bealsassociates.com>
Subject: Re: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Further Consultation

---

Good morning Ms. Nahorney,

Thanks for the email. In response to below, refer to text in green.

Heath J. Todd, P.E.

Apex Construction, Inc.
361 RT 108, Unit 1
Somersworth, NH 03878
P: (603)330-3600
heath@apex-constructioninc.com

From: "Nahorney, Brittany" <Brittany.K.Nahorney@wildlife.nh.gov>
Date: Tuesday, December 10, 2024 at 10:15 AM
To: Heath Todd <heath@apex-constructioninc.com>, Michael Parsont <mparsont@stablegrowth.net>
Cc: "FGC: NHFG review" <NHFGreview@wildlife.nh.gov>, "Duclos, Kristin" <Kristin.L.Duclos@des.nh.gov>, "Aures, Rosemary" <Rosemary.E.Aures@des.nh.gov>, John Lorden <jlorden@bealsassociates.com>
Subject: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Further Consultation

Good morning Mr. Todd,

The request for further consultation for NHB23-3169 has been received. NHFG requests the below information to re-review this project.

1. Please explain why a partially buried RCP culvert can no longer be installed at wetland crossing 8. A partially buried 30" RCP *can* be used in this location, but the preference is to use 48" HDPE, since the cover over the top of the pipe is sufficient to allow this type of pipe from a structural standpoint. HDPE provides several advantages, including ease of install, less prone to cracking, having longer lifespan due to corrosion resistance, requiring less frequent replacement and associated impact to the wetland/ stream. The installation and restoration can happen more quickly to return the perennial stream to full function over shorter construction period.

2. Is the interior of the proposed HDPE culvert corrugated? Please clarify if the proposed HDPE culvert is 48" in width. HDPE culverts with smooth interiors are not recommended and the smooth interior of the pipe can increase the velocity of the water, which may lead to erosion and make it difficult for some wildlife species to pass through the culvert. Additionally, a HDPE culvert with a smooth interior may change the hydrology at crossing 8 which would impact Blanding's Turtle and Spotted Turtle habitat. Corrugated interior HPDE is only available up to 15" pipe size. The proposed pipe is 48" diameter with double wall which has a smooth interior. Since we are installing stones in the invert bottom, and have proposed increasing the diameter to 48", our understanding is that the concerns related to velocity and wildlife access should be alleviated.

This email serves as a request for Further Consultation under Fis 1004.12. There will be an additional standard 30-day extension under FIS 1004.10(A) for NHB23-3169 Back Road Dover until January 9, 2025.

Thank you,

Brit Nahorney

Brit Nahorney
Wildlife Biologist

New Hampshire Fish and Game Department
11 Hazen Drive, Concord, NH 03301
p. 603-271-0788 | **c.**
e. Brittany.K.Nahorney@wildlife.nh.gov
wildlife.nh.gov

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Please provide shapefiles/KMZ/KMLs of the project site (and relevant features if applicable) with your submittal. Review statements provided in the NHB DataCheck Results letter for additional guidance.

Did you know? N.H. Fish and Game manages almost 84,000 acres of land for outdoor recreation.

From: Heath Todd <heath@apex-constructioninc.com>
Sent: Monday, December 9, 2024 1:31 PM
To: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>; Michael Parsont <mparsont@stablegrowth.net>
Cc: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>; Aures, Rosemary <Rosemary.E.Aures@des.nh.gov>; John Lorden <jlorden@bealsassociates.com>
Subject: Re: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Recommendations

---

Hi Brit,

Thanks for getting back to us in your email below. We don't have questions or concerns related to the recommendations issued to date, but we do need to make a revision to the plans, which DES has indicated should be subject to your review.

It has come to our attention that at Wetland Crossing 8, the perennial stream crossing just before entry to the building lot area, the culvert design as shown has shear face headwalls that are large/ high enough to present a long term safety issue. Smaller headwalls at culverts along the driveway don't raise concern, but at this location, near the house and yard and near a curve in the road, the high vertical walls and narrow roadway are not the safest approach for vehicles or people. We believe an adjustment to a 16-foot wide driveway surface with 1:1 sloped riprap embankments to tie in grades is required. This modification appears to increase the culvert length to approximately 43 LF, along with the associated SF embankment modification. We believe that

through use of riprap slopes at 1:1 instead of vertical headwalls, we are still minimizing impact while providing the most safe and practical long term solution to this crossing.

In addition, the question has come up regarding culvert material selection and the use of partially buried inverts. At Crossing 8, where culvert depth of cover is >5', HDPE drain pipe presents no concerns from a structural and loading perspective and RCP is not required. Since invert is buried, it would seem any restriction on culvert material from an ecological perspective can be lifted also. Please confirm use of HDPE culvert at this location, so long as invert is buried per plans, is acceptable to NHFG.

Would you support this revision as described, per attached, and be able to revise your recommendations accordingly, pursuant to DES applications? Our hope is to have your revision this week in order to allow full response to NHDES RFMI related to these applications by 12/18.

If you would like to discuss Crossing 8, please don't hesitate to contact me by phone at 603-591-4976.

Thank you for your time and consideration of this matter!

Heath J. Todd, P.E.
Apex Construction, Inc.
361 RT 108, Unit 1
Somersworth, NH 03878
P: (603)330-3600
heath@apex-constructioninc.com

From: "Nahorney, Brittany" <Brittany.K.Nahorney@wildlife.nh.gov>
Date: Friday, December 6, 2024 at 3:40 PM
To: Michael Parsont <mparsont@stablegrowth.net>
Cc: Heath Todd <heath@apex-constructioninc.com>, "FGC: NHFG review" <NHFGreview@wildlife.nh.gov>, "Duclos, Kristin" <Kristin.L.Duclos@des.nh.gov>, "Aures, Rosemary" <Rosemary.E.Aures@des.nh.gov>
Subject: RE: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Recommendations

Hello Mr. Parsont,

What questions and concerns do you have regarding the conditions in NHFG's recommendations?

In the provided project plans, all culverts are labeled as 24", 30", or 36" RCP culverts which are considered oversized RCP culverts. *All culverts shall be oversized, partially buried RCP culverts* references the culverts in the project plans and an agreement in an RFAI response that all culverts would be installed six inches deep into the existing substrate. There would be no changes to the culverts proposed in the plans.

Thank you,
Brit Nahorney

Brit Nahorney
Wildlife Biologist

New Hampshire Fish and Game Department
11 Hazen Drive, Concord, NH 03301
p. 603-271-0788 | **c.**
e. Brittany.K.Nahorney@wildlife.nh.gov
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Please provide shapefiles/KMZ/KMLs of the project site (and relevant features if applicable) with your submittal. Review statements provided in the NHB DataCheck Results letter for additional guidance.

Did you know? N.H. Fish and Game manages almost 84,000 acres of land for outdoor recreation.

From: Michael Parsont <mparsont@stablegrowth.net>
Sent: Thursday, December 5, 2024 1:44 PM
To: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Cc: heath@apex-constructioninc.com; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>; Aures, Rosemary <Rosemary.E.Aures@des.nh.gov>
Subject: RE: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Recommendations

---

Brit,

I would like to request further consultation to address questions and concerns regarding the NHFG recommendations provided below.

Also, if you could please provide us with any guidelines you have regarding length vs. diameter culvert requirements for openness or light considerations that would be helpful.

Thank you,

Michael L. Parsont, CWS, CPESC
Environmental Consultant
Wetland Scientist/Erosion Control Specialist

Stable Growth Environmental LLC
P.O. Box 713, Somersworth, NH 03878
(603) 767-8633
mparsont@stablegrowth.net

Wetland Science & Natural Resource Services

Local, State and Federal Regulatory Permitting

Water Quality and Groundwater Level Monitoring

Environmental Impact Assessment

Erosion and Sediment Control Services

Construction and Post-Construction Monitoring

From: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Sent: Tuesday, November 19, 2024 2:43 PM
To: Michael Parsont <mparsont@stablegrowth.net>
Cc: heath@apex-constructioninc.com; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>; Aures, Rosemary <Rosemary.E.Aures@des.nh.gov>
Subject: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG Recommendations

Hello Mr. Parsont,

On November 19, 2024, New Hampshire Fish and Game has completed review of materials submitted for consultation for NHB23-3169 on September 16, 2024 (materials submitted September 16, 2024) prepared by Heath Todd. The project proposes to construct a single family home with a septic system, well, gravel and paved driveway, and a shoreland dock and boat launch on Piscataqua. This project requires a lengthy driveway with wetland impacts to access buildable area on the property. The site is located at Back Road in Dover, NH (Tax Map M, Lot 104).

Permit applications associated with this project include:

NHDES WETLAND DREDGE & FILL – FILE# 2024-02319
NHDES SHORELAND STANDARD – FILE# 2024-02318

Note: If you apply for other permits not listed above, you must notify NHFG and request a response to see if recommendations provided below can be applied to other permit applications. All anticipated permits that may be required or will be applied for MUST be identified on the NHB datacheck results letter or the NHB letter is not considered valid and cannot be applied to a consultation/permit application review

Based on the NHB datacheck results letter and the information provided in the submission as well as in communications and materials provided during our consultation review, we request the following recommended permit conditions. THESE RECOMMENDED PERMIT CONDITIONS ARE APPLICABLE ONLY TO STATE PERMITS LISTED ABOVE.

- **For consideration in the AoT permit review process, please incorporate recommendations along with associated materials as detailed, into the final sheet plans as written below (update highlighted text as applicable) and provide to NHDES for final review and copy NHFG.**

- **For all other permits, please include recommended permit conditions in final plan sheets plans as written below (update highlighted text as applicable) and provide to NHDES for final review**

and copy NHFG. Permit reviewers will adopt/include NHFG permit conditions in the permit if approved.

NHB23-3169 New Hampshire Fish and Game Recommended Permit Conditions:

1. Blanding's Turtle (State Endangered), New England Cottontail (State Endangered), Shortnose Sturgeon (State Endangered), and Spotted Turtle (State Threatened) occur within the vicinity of the project area. Recommendations for Shortnose Sturgeon were issued by NHFG for NHB24-0953 on May 14, 2024. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information. See Plan sheet(s) XXXXX ***Include attached flyers to plan sheet set.***

2. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings prior to work commencement during the construction phase of the project. See Plan sheet(s) XXXXX.

3. NHFG recommends driveway construction occur between October 15th and April 15th to avoid impacting turtles during the active season. If project activities cannot be completed between October 15th and April 15th and must occur between April 16th and October 14th, searches and sweeps shall be conducted by trained individuals immediately before the start of work and movement of equipment in order to minimize the chance of animals entering an area between the sweep and work. A trained individual shall be defined as any contractor who has gone through project-species protection education conducted by the qualified biologist on rare wildlife species at the site. Sweeps (e.g. visual observations made while walking transects) shall consist of trained individuals moving through the area and surrounding vicinity that will be impacted by the current activities and actively looking for turtles (and other wildlife) that may be impacted by project activities.

4. All culverts shall be oversized, partially buried RCP culverts.

5. Staging of construction equipment/material and vehicle parking shall not occur in shrub cover and shrub cover shall not be removed.

6. Fertilizer shall not be applied in or near the wetlands along the driveway. Fertilizer applied in all other areas shall be slow-release or controlled-release.

7. Turtles may be attracted to disturbed ground during the nesting season (May 15th – June 30th). Turtle nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Josh Megyesy at NHFG immediately for further consultation. See Species Flyers, See Plan sheet(s) XXXXX for NHFG contact information.

    a. The nest or suspected nest shall be marked (surrounding roped off or cone buffer deployed) and avoided; this shall be communicated to all personnel onsite.

    b. Site activities shall not occur in the area surrounding the nest or suspected nest until further guidance is provided by NHFG.

8. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches. See Plan sheet(s) XXXXX.

9. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation.

    a. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible.

10. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.

    a. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone if in direct harm from project activities.

    b. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading.

    c. NHFG shall be contacted immediately if this action occurs.

11. NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

NHFG has completed our review of materials submitted for consultation under FIS 1004. No further coordination with NHFG is requested at this time. Please note that additional or a new consultation may be required in accordance with Fis 1004.08(b)4 if there are changes in project design that is referenced above which might result in potential impacts to threatened and endangered species, whether suggested to avoid harm to the species, or which could serve to increase the potential of adverse impacts to species. These recommendations have been transmitted to the applicable permitting agency. Questions or concerns on NHFG recommendations provided in this communication **must** follow FIS 1004.12 that requires a written request for further consultation provided within 10 days of receipt of this communication. Note that NHFG recommendations may be withdrawn pursuant to FIS 1004.13.

Respectfully,

Brit Nahorney

Brit Nahorney
Wildlife Biologist

New Hampshire Fish and Game Department
11 Hazen Drive, Concord, NH 03301
p. 603-271-0788 | **c.**
e. Brittany.K.Nahorney@wildlife.nh.gov
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From: Michael Parsont <mparsont@stablegrowth.net>
Sent: Monday, November 18, 2024 6:02 PM
To: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Cc: heath@apex-constructioninc.com; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>
Subject: RE: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG RFAI

Brit,

The goal is to complete construction of the driveway by April 15, 2025. If it cannot be completed by then, we will perform the recommended sweeps in the area of equipment usage immediately prior to the start of work.

Thank you,

Michael L. Parsont, CWS, CPESC
Environmental Consultant
Wetland Scientist/Erosion Control Specialist

Stable Growth Environmental LLC
P.O. Box 713, Somersworth, NH 03878

(603) 767-8633
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Local, State and Federal Regulatory Permitting

Water Quality and Groundwater Level Monitoring

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From: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Sent: Thursday, November 14, 2024 3:36 PM
To: Michael Parsont <mparsont@stablegrowth.net>
Cc: heath@apex-constructioninc.com; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>
Subject: RE: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG RFAI

Hello Mr. Parsont,

Thank you for your responses.

1. We are concerned that turtles moving between the wetlands during the active season may be impacted by driveway construction. Can the driveway be constructed between October 15th and April 15th?

    a. If the driveway cannot be completed between October 15th and April 15th, we recommend that between April 16th and October 14th searches and sweeps should be conducted by trained individuals immediately before the start of work and movement of equipment in order to minimize the chance of animals entering an area between the sweep and work. A trained individual should be defined as any contractor who has gone through project-species protection education conducted by the qualified biologist on rare wildlife species at the site. Sweeps (e.g. visual observations made while walking transects) should consist of trained individuals moving through the area and surrounding vicinity that will be impacted by the current activities and actively looking for turtles (and other wildlife) that may be impacted by project activities.

We will issue recommendations shortly after we receive a response to the above conditions.

Thank you,
Brit Nahorney

Brit Nahorney
Wildlife Biologist

New Hampshire Fish and Game Department
11 Hazen Drive, Concord, NH 03301
p. 603-271-0788 | **c.**
e. Brittany.K.Nahorney@wildlife.nh.gov
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From: Michael Parsont <mparsont@stablegrowth.net>
Sent: Saturday, November 9, 2024 4:43 PM
To: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Cc: heath@apex-constructioninc.com; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>
Subject: RE: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG RFAI

Brit,

Please see the attached document for the responses to these questions. Let me know if you need any additional information.

Thank you,

Michael L. Parsont, CWS, CPESC
Environmental Consultant
Wetland Scientist/Erosion Control Specialist

Stable Growth Environmental LLC
P.O. Box 713, Somersworth, NH 03878
(603) 767-8633
mparsont@stablegrowth.net

Wetland Science & Natural Resource Services

Local, State and Federal Regulatory Permitting

Water Quality and Groundwater Level Monitoring

Environmental Impact Assessment

Erosion and Sediment Control Services

Construction and Post-Construction Monitoring

From: Nahorney, Brittany <Brittany.K.Nahorney@wildlife.nh.gov>
Sent: Monday, October 14, 2024 10:59 AM
To: Michael Parsont <mparsont@stablegrowth.net>
Cc: heath@apex-constructioninc.com; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Duclos, Kristin <Kristin.L.Duclos@des.nh.gov>
Subject: Back Road_Dover_NHB23-3169_NHDES Wetland D&F File# 2024-02319_NHDES Shoreland File# 2024-02318 - NHFG RFAI

Hello Mr. Parsont,

On 9/16/2024 the New Hampshire Fish and Game Department (NHFG), Nongame & Endangered Wildlife Program reviewed your request for consultation for **NHB23-3169 Back Road Dover** (materials submitted September 16, 2024). The project is located at Back Road in Dover, NH (Tax Map M, Lot 104).

NHFG determined additional information is necessary for us to continue our review. Please send all missing components as a single submission. Submissions must be deemed satisfactory in order to continue our review. Please respond to the following questions so we can proceed with our consultation.

1. What is the duration of the project from start to finish? What is the expected start time for the project?

2. In the pictures provided, it appears that there is already an existing road on the property. Will the proposed driveway be built on the existing road? Will the proposed driveway deviate at all from the existing road?

3. New England Cottontail are found in thick shrub cover such as the habitat found along the existing road on the property. Were New England Cottontail surveys conducted? We recommend that shrub cover on the property, such as along the existing road, should not be removed and should not be trampled by vehicles or equipment.

4. Will proposed culverts be partially buried? We recommend all culverts be partially buried oversized RCP containing substrate/material similar to that found on either side of the culverts.

5. What restoration plans are proposed for the after-the-fact wetland ATV ruts?

6. NHFG recommends that fertilizer, lime application, and hydroseeding should be avoided throughout the duration of the project because it may negatively impact wildlife species in the project site and runoff into the wetland areas.

NHFG is requesting that the above information be received within **30 days** of the date of this request (**no later than 11/13/2024**).

Should additional time be necessary to submit the requested information, an extension of the deadline may be requested. If this deadline is not met or extended, you may be required to resubmit for consultation.

Thank you and please let me know if you have any questions,

Brit Nahorney

Brit Nahorney
Wildlife Biologist
NH Fish & Game Department
11 Hazen Drive
Concord NH 03301
Phone: (603) 271-0788
Email: Brittany.K.Nahorney@wildlife.nh.gov

New Hampshire Fish and Game requirements for environmental review consultation can be found at: https://gencourt.state.nh.us/rules/state_agencies/fis1000.html. ALL requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent hardcopy by mail. **The NHB DataCheck results letter number needs to be included in the email subject line to read as "NHB*xx-xxxx_Project Name*_FIS 1004 Consultation Submittal".**

The requirements for consultation (Fis 1004) shall not apply to the following: statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule. Review requests for these projects or other project types should be submitted to NHFGreview@wildlife.nh.gov or can be sent hardcopy by mail – email or mail subject line for these review requests should read **"NHBxx-xxxx_Project Name_ Env. Review Request".**

Please provide shapefiles/KMZ/KMLs of the project site (and relevant features if applicable) with your submittal. Review statements provided in the NHB DataCheck Results letter for additional guidance.

Did you know? N.H. Fish and Game manages over 60,000 acres of land for outdoor recreation.

From: FGC: NHFG review <NHFGreview@wildlife.nh.gov>
Sent: Tuesday, September 17, 2024 10:30 AM
To: Michael Parsont <mparsont@stablegrowth.net>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>
Cc: heath@apex-constructioninc.com
Subject: RE: NHB23-3169 Back Road - Dover

Hi Mike,

Thank you for sending all this over to us. A reviewer will be in touch with questions or comments. If you have any questions in the meantime, please don't hesitate to reach out.

Have a great day!

Hayley Bibaud
Environmental Review Planner
NH Fish & Game Department
11 Hazen Drive
Concord NH 03301
Phone: (603) 271 - 0467
Email: hayley.a.bibaud@wildlife.nh.gov

SHORELAND PERMIT APPLICATION

Water Division/ Land Resources Management

Shoreland Program

Check the Status of your Application

RSA/Rule: RSA 483-B, Env-Wq 1400

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

This is an application for a permit to excavate, fill, construct new structures, or remove structures within the protected shoreland as regulated under RSA 483-B.

SECTION 1 - PROJECT DESCRIPTION (Env-Wq 1406.07)

Provide a concise description of the proposed project: To construct a driveway with wetland and stream crossings approximately 3,440 linear feet (mostly within a 20-foot-wide strip of land), to access a buildable upland area on a broader 25 acre parcel of land, and to construct a single family residence with accessory structures within the Protected Shoreland outside the Tidal Buffer Zone.

SECTION 2 - PROJECT LOCATION (Env-Wq 1406.07)

ADDRESS: Back Road	TOWN/CITY: Dover	STATE: NH	ZIP CODE: 03820
WATERBODY NAME: Piscataqua River	TAX MAP/ BLOCK/LOT NUMBER : M-104-0-0		

SECTION 3 - PROPERTY OWNER & DEED INFORMATION (Env-Wq 1406.07)

The legal name of each property owner must be as it appears on the deed of record. If the owner is a trust or a company, then the name of the trust or company should be written as the owner's name.

LAST NAME, FIRST NAME, M.I: Todd, Heath J. (Trustee) - Heath J. Revocable Trust

MAILING ADDRESS: 402 Webber Hill Road	TOWN/CITY: Kennebunk	STATE: ME	ZIP CODE: 04043
PHONE: (603) 591-4976	EMAIL (if available): heath@apex-constructioninc.com		

REGISTRY OF DEED COUNTY Strafford , BOOK NUMBER 5159 , PAGE NUMBER 995

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER), IF DIFFERENT THAN OWNER (Env-Wq 1406.07)

If the applicant is a trust or a company, then the name of the trust or company should be written as the applicant's name. If the applicant is the owner, leave blank and check the following box: ☒.

LAST NAME, FIRST NAME, M.I:

MAILING ADDRESS:	TOWN/CITY:	STATE:	ZIP CODE:

PHONE:	EMAIL (if available):

SECTION 5 - CONTRACTOR OR AGENT (OPTIONAL)

LAST NAME, FIRST NAME, M.I: Parsont, Michael L.			
ADDRESS: P.O. Box 713	TOWN/CITY: Somersworth	STATE: NH	ZIP CODE: 03878
PHONE: (603) 767-8633	EMAIL (if available): mparsont@stablegrowth.net		

SECTION 6 - CRITERIA (Env-Wq 1406.07)

Please check at least one of the following criteria:

☒ This shoreland permit application requires neither a proposal to make the property more nearly conforming nor a request for a waiver of a minimum standard.

☐ This shoreland permit application includes a proposal to make the structures and/or the property more nearly conforming in accordance with RSA 483-B:11.

☐ This shoreland permit application includes a request for a waiver of the following minimum standard(s): RSA 483-B:9, V .

SECTION 7 - RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT (Env-Wq 1406.14)

Please indicate if any of the following permits are required and, if required, the status of the application.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit per RSA 485-A:17	☒ YES ☐ NO	unknown	☐ APPROVED ☒ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:29	☒ YES ☐ NO	unknown	☐ APPROVED ☒ PENDING ☐ DENIED
Subdivision Approval per RSA 485-A:29	☐ YES ☒ NO		☐ APPROVED ☐ PENDING ☐ DENIED
Wetlands Permit per RSA 482-A	☒ YES ☐ NO	unknown	☐ APPROVED ☒ PENDING ☐ DENIED

SECTION 8 - REFERENCE LINE ELEVATION (Env-Wq 1406.07)

Required for projects located on the protected shoreland of lakes or ponds. The reference line elevations for most lakes, ponds, and artificial impoundments greater than 10 acres in size are listed in the Consolidated List of Waterbodies Subject to the Shoreland Water Quality Protection Act. Please see RSA 483-B:4, XVII for the definition of reference line.

REFERENCE LINE ELEVATION: feet above sea level. N/A

SECTION 9 - APPLICATION FEE & SUBMITTAL (RSA 483-B:5-b, I(b); RSA 483-B:5-b, X)

A non-refundable permit application fee of $200 plus $0.20 per total square feet of impact for restoration of water quality improvement projects, or $400 plus $0.20 per total square feet of impact for all other projects is required at the time the application is submitted. **Applications for projects solely funded by municipal, county, state, or federal entities shall incur a permitting fee no greater than $3,750.**

Please mail or hand deliver this application and all required attachments to the NHDES Wetlands Bureau, PO Box 95, Concord, NH 03302-0095. Missing information will delay processing your application and may result in denial of a shoreland permit application. **Please make checks payable to the Treasurer, State of NH.**

SECTION 10 - CALCULATING TOTAL IMPACT AREA/ PERMIT APPLICATION FEE (RSA 483-B:5-b, I(b); RSA 483-B:5-b, X)

Total impact area is calculated by determining the sum of all areas disturbed by regrading, excavating, filling, construction, or structure removal. Impacts often include, but are not limited to: constructing new driveways, constructing new structures, areas disturbed when installing septic systems and foundations, creating temporary access roads to drill a new well, and regrading associated with landscaping activities.

TOTAL AREA IMPACTED WITHIN THE PROTECTED SHORELAND = 100,615 **(A) square feet** EXCLUDING 100' TBZ

- **For restoration of water quality improvement projects:**
  Multiply line (A) by $0.20 **and** add $200. **[(A) × $0.20 + $200]** = $ _____ **Permit fee[1]**
- **For all other projects:**
  Multiply line (A) by $0.20 **and** add $400. **[(A) × $0.20 + $400]** = $ 20,523.00 **Permit fee[1]**

SECTION 11 - REQUIRED CERTIFICATIONS (Env-Wq 1406.08; Env-Wq 1406.10(a))

By initialing within the blank before each of the following statements, and signing below, you are certifying that:

Initials: HJT	The information provided is true, complete, and not misleading to the knowledge and belief of the signer.
Initials: HJT	I understand that: • Any permit or waiver granted based on false, incomplete, or misleading information shall be subject to revocation. • I am subject to the applicable penalties in RSA 641, Falsification in Official Matters. And • Obtaining a shoreland permit shall not exempt the work proposed from other state, local, or federal approvals.
Initials: HJT	I have notified the governing body of the municipality or municipalities in which the property is located by certified mail, in accordance with Env-Wq 1406.13.
Initials: HJT	I have notified all abutters[2] of the proposed impacts via certified mail, in accordance with Env-Wq 1406.13.
Initials: HJT	☐ This project is within ¼ mile of a designated river and I have notified the Local River Management Advisory Committee (LAC) by providing the LAC with a copy of the complete application, including all supporting materials, via certified mail, in accordance with Env-Wq 1406.13. ☒ This project is **not** within ¼ mile of a designated river.
Initials: HJT	For any project proposing that the impervious area be at least 15% but not more than 20% within the protected shoreland, I certify that the impervious area is not more than 20%. ☒ N/A

SECTION 12 - REQUIRED SIGNATURES (Env-Wq 1406.08)

Both the property owner and applicant must sign the application.

SIGNATURE (OWNER): Heath J. Todd	PRINT NAME LEGIBLY: HEATH J. TODD, TRUSTEE	DATE: 8/2/2024
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:

[1] Applications for projects solely funded by municipal, county, state, or federal entities shall incur a permitting fee no greater than $3,750.

[2] "Abutter" means any person who owns property that is immediately contiguous to the property on which the proposed work will take place, or who owns flowage rights on such property. The term does not include those properties separated by a public road or more than ¼ mile from the limits of the proposed work. If contiguous properties are owned by the person who is proposing the work, then the term includes the person owning the next contiguous property, subject to the ¼ mile limitation.

RESIDENTIAL SITE PLAN
BACK ROAD
DOVER, NEW HAMPSHIRE
TAX MAP M, LOT 104

AUGUST 2, 2024

NOT FOR CONSTRUCTION

CIVIL ENGINEERS:

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

LAND SURVEYORS:

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT ROAD
BARRINGTON, NH 03825
1-603-332-2863

WETLAND CONSULTANTS:

MICHAEL L. PARSONT, CWS, CPESC
STABLE GROWTH ENVIRONMENTAL LLC
PO Box 713
SOMERSWORTH, NH 03878
1-603-767-8633

TFMORAN, INC.
170 COMMERCE WAY, SUITE 102
PORTSMOUTH, NH 03801
1-603-431-2222

SOIL CONSULTANT:

JOHN P. HAYES CSS, CWS
7 LIMESTONE WAY
NORTH HAMPTON, NH 03862
1-603-205-4396

RECORD OWNER/APPLICANT

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

PLAN SET LEGEND

FRESHWATER WETLAND BOUNDARY	UTILITY POLE
FRESHWATER WETLAND/ STREAM BUFFER	SEWER MANHOLE
PROPERTY LINE	EXISTING LIGHT POLE
HOTL / REFERENCE LINE	EXISTING CATCH BASIN
FLOOD HAZARD ZONE (FHZ)	WATER GATE
50' NHDES PRIMARY STRUCTURE SETBACK (PSS)	WATER SHUT OFF
100' NHDES TIDAL BUFFER ZONE (TBZ)	HYDRANT
150' NHDES NATURAL WOODLAND BUFFER SETBACK (NWB)	OVERHEAD ELEC. LINE (OHW)
250' NHDES PROTECTED SHORELAND ZONE (SPZ)	FENCING (X)
NATURAL WOODLAND AREA REQUIREMENT	DRAINAGE LINE (D)
	SEWER LINE (S)
	GAS LINE (G)
	WATER LINE (W)
	STONE WALL
	TREE LINE
	PINES, ETC.
	MAPLES, ETC.
	EXIST. CONTOUR (100)
	PROP. CONTOUR (100)
	SOIL LINES
	EXIST. SPOT GRADE (96x69)
	PROP. SPOT GRADE (96x69)
	DOUBLE POST SIGN
	SINGLE POST SIGN

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22 LADDER TRUCK MANEUVERING PLAN
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REQUIRED STATE AND FEDERAL PERMITS

NHDES ALTERATION OF TERRAIN PERMIT	PENDING SUBMITTAL
NHDES INDIVIDUAL SEWAGE DISPOSAL SYSTEM PERMIT	PENDING SUBMITTAL
NHDES SHORELAND IMPACT PERMIT	2024-02318
NHDES WETLANDS BUREAU DREDGE AND FILL	2024-02319
CONSTRUCTION GENERAL PERMIT	PENDING SUBMITTAL

	REVISIONS:	DATE:
1	REVISED PER REVIEW COMMENTS	11.12.24
2	REVISED PER REVIEW COMMENTS	12.23.24
3		
4		
5		

NH-1501 PROPOSED SITE PLAN

NHB23–3169 New Hampshire Fish and Game Recommended Permit Conditions:

1. Blanding's Turtle (State Endangered), New England Cottontail (State Endangered), Shortnose Sturgeon (State Endangered), and Spotted Turtle (State Threatened) occur within the vicinity of the project area. Recommendations for Shortnose Sturgeon were issued by NHFG for NHB24–0953 on May 14, 2024. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information. See this sheet.

2. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings prior to work commencement during the construction phase of the project. See this sheet.

3. NHFG recommends driveway construction occur between October 15th and April 15th to avoid impacting turtles during the active season. If project activities cannot be completed between October 15th and April 15th and must occur between April 16th and October 14th, searches and sweeps shall be conducted by trained individuals immediately before the start of work and movement of equipment in order to minimize the chance of animals entering an area between the sweep and work. A trained individual shall be defined as any contractor who has gone through project–species protection education conducted by the qualified biologist on rare wildlife species at the site. Sweeps (e.g. visual observations made while walking transects) shall consist of trained individuals moving through the area and surrounding vicinity that will be impacted by the current activities and actively looking for turtles (and other wildlife) that may be impacted by project activities.

4. All culverts shall be oversized, partially buried RCP culverts.

5. Staging of construction equipment/material and vehicle parking shall not occur in shrub cover and shrub cover shall not be removed.

6. Fertilizer shall not be applied in or near the wetlands along the driveway. Fertilizer applied in all other areas shall be slow–release or controlled–release.

7. Turtles may be attracted to disturbed ground during the nesting season (May 15th –June 30th). Turtle nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Josh Megyesy at NHFG immediately for further consultation. See Species Flyers, See this sheet for NHFG contact information.

    a. The nest or suspected nest shall be marked (surrounding roped off or cone buffer deployed) and avoided; this shall be communicated to all personnel onsite.

    b. Site activities shall not occur in the area surrounding the nest or suspected nest until further guidance is provided by NHFG.

8. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than ¼ inches. See Erosion Control Notes & Details sheet.

9. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603–271–2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation.

    a. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible.

10. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.

    a. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone if in direct harm from project activities.

    b. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading.

    c. NHFG shall be contacted immediately if this action occurs.

11. NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

PLEASE REPORT OBSERVATIONS OF RARE TURTLES

The NH Fish & Game Department is requesting observations of the following turtle species

Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th)

Turtles are most active from April 15th - October 15th - maintain silt fences during this time

Blanding's turtle
(State Endangered)

Large, dark/black domed shell with lighter speckles.

Distinct yellow throat/chin.

Aquatic but often moves on land.

Spotted turtle
(State Threatened)

Small, mostly aquatic with black or dark brown with yellow spots.

Fairly flat shell compared to Blanding's turtle.

Spots vary in color and number.

Fis 1401.03 (a) No person shall take or possess a spotted turtle (*Clemmys guttata*)...Blanding's turtle (*Emydoidea blandingii*)...or any egg or part thereof.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Josh Megyesy 603-271-1125 or 978-578-0802 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603–583–4860,
FAX. 603–583–4863

GRAPHIC SCALE

120 0 60 120 240 480

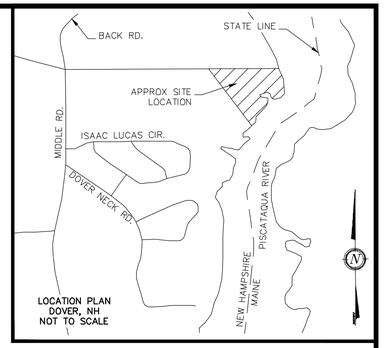
(IN FEET)
1 inch = 120 ft.

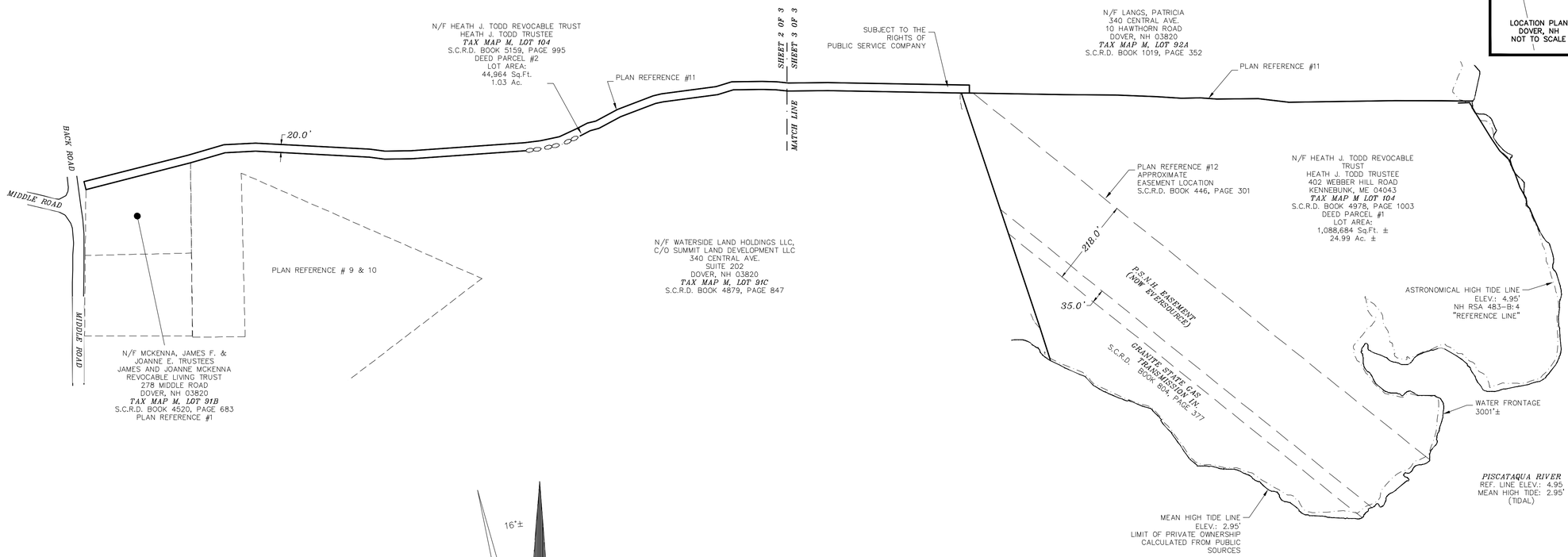
REVISIONS:	DATE:

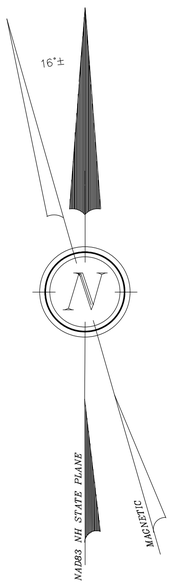
NH FISH & GAME PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	DEC 23, 2024	SCALE:	NTS
PROJ. N0:	NH-1501	SHEET NO.	0







PLAN REFERENCES:

1.) "SUBDIVISION PLAN FOR MARK PHILIPS & PETER RUSSELL DOVER, NEW HAMPSHIRE"
BY: FRANK EMERY
DATED: MAY 22, 1973
S.C.R.D. POCKET #12, FOLDER #2, PLAN #36

2.) "SUBDIVISION OF LAND FOR EDMUND J. O'BRIEN JR. IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 9, 1981
S.C.R.D. PLAN #21A-87

3.) "SUBDIVISION OF LAND CULLEN BAY DEVELOPMENT IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 4, 1984
S.C.R.D. PLAN #24A-59

4.) "SUBDIVISION OF LAND FOR ARTHUR AND LINDA THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: JULY 30, 1986
S.C.R.D. PLAN #26-78

5.) "FINAL PLAN BRICKYARD ESTATES MIDDLE ROAD DOVER, N.H."
BY: G.L. DAVIS & ASSOCIATES
DATED: OCTOBER 1, 1985
S.C.R.D. PLAN #29-35

6.) "SUBDIVISION OF LAND FOR GEORGE & DOROTHY PRESCOTT AND ARTHUR G. THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
RECORDED: OCTOBER 13, 1983
S.C.R.D. PLAN #29A-61

PLAN REFERENCES (cont.):

7.) "PLAN OF LAND FOR FRANCIS & VALERIE CHENEVERT MIDDLE ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES
DATED: MAY, 1989
S.C.R.D. PLAN #38-48

8.) "LOT LINE REVISION ISAAC LUCAS CIRCLE DOVER, N.H. FOR CITADEL BROADCASTING COMPANIES AND NELSON MILES COOK, III"
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: MARCH 13, 2002
S.C.R.D. PLAN #66-70

9.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY:MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. 12348

10.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. PLAN #12349

11.) "PLAN OF LAND OF GEORGE & DOROTHY PRESCOTT DOVER, N.H. SHOWING PARCEL SOLD TO ALAN R. & PATRICIA WILSON"
BY: RICHARD P. TOWLE
DATED AUGUST 1972

12.) "EASEMENT WORKSHEET"
BY: DOUCET SURVEY
ON FILE AT THIS OFFICE

LEGEND:

- "DAVIS" STEEL STAKE (FND)
- ½" REBAR (FND)
- DRILL HOLE (FND)
- ¾" REBAR W/ID CAP (TO BE SET)
- FENCE POST W/BARBED WIRE
- ABUTTING PROPERTY LINE
- MATCH LINE
- SURVEY TIE LINE
- ASTRONOMICAL HIGH TIDE LINE "REFERENCE LINE"
- PSNH EASEMENT LINE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- EXISTING TREE OR STUMP W/BARBED WIRE

NOTES:

1.) OWNER: HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

2.) TAX MAP M, LOT 104

3.) LOT AREA: 1,088,684 Sq. Ft., 24.99 Ac.
44,964 Sq.Ft., 1.03 Ac. (20' WIDE CONNECTION TO MIDDLE ROAD)

4.) S.C.R.D. BOOK 5159, PAGE 995

5.) THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES OF TAX MAP M, LOT 104 IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT AND ORIGINAL LEGAL DESCRIPTIONS, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

6.) BOUNDARY LINES BASED ON A CLOSED TRAVERSE WITH A CLOSURE BETTER THAN 1 PART IN 10,000 PERFORMED BY THIS OFFICE IN 2022

7.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD.
REF.: FEMA COMMUNITY #330145, MAP #33017C0340E,
DATED: SEPTEMBER 30, 2015.

8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

9.) THE LAND IS IN CURRENT USE. S.C.R.D. BOOK 1753, PAGE 613.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

6-26-24

KENNETH A. BERRY L.L.S. 805 DATE

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

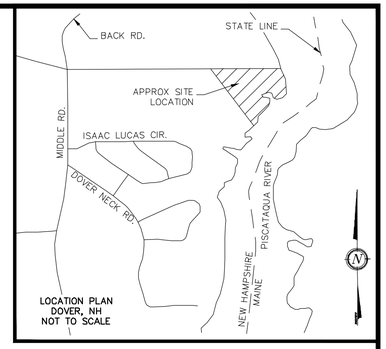
REVISION	DATE	DESCRIPTION
#1	5-21-24	REVISE OWNERSHIP

BOUNDARY SURVEY
LAND OF
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
LAND OFF MIDDLE ROAD
&
PISCATAQUA RIVER
DOVER, N.H.
TAX MAP M, LOT 104

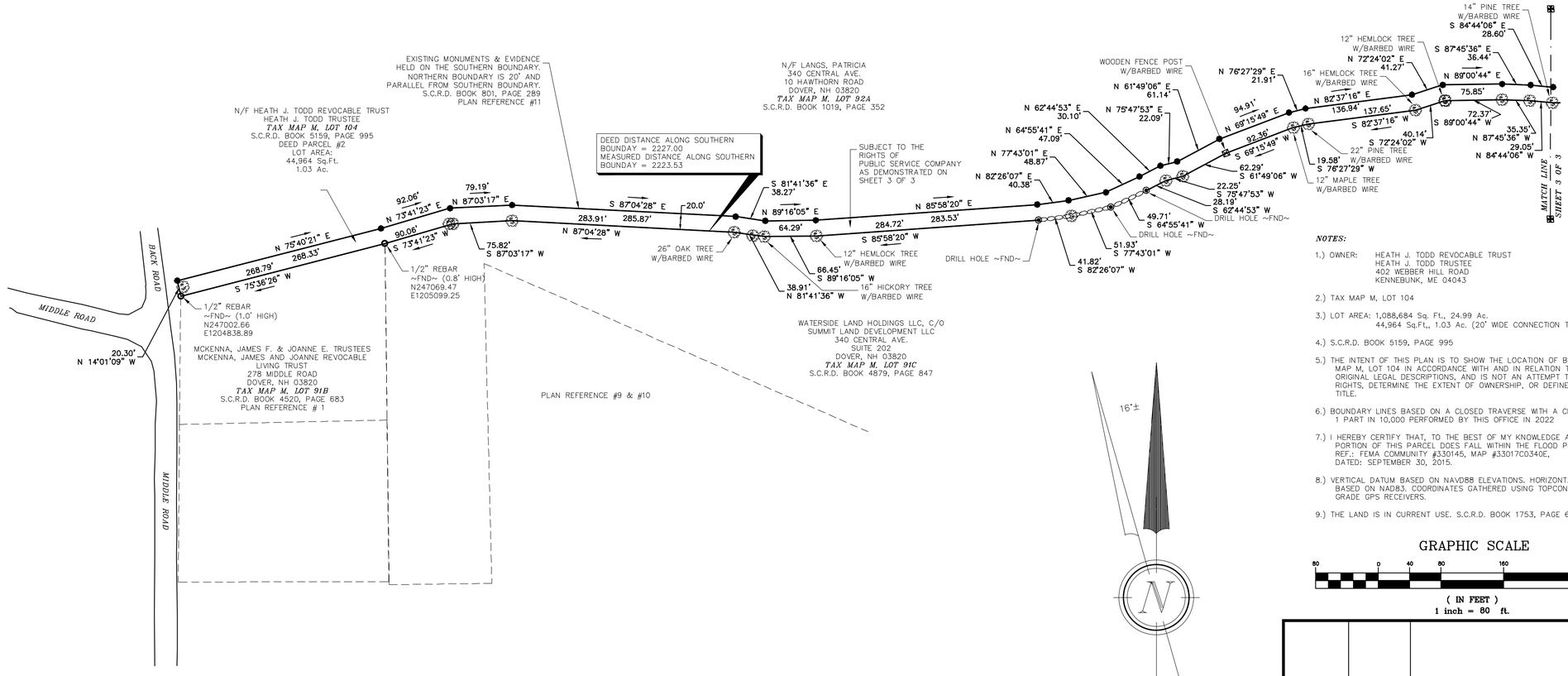
STATE OF NEW HAMPSHIRE — NO. 805 — LICENSED LAND SURVEYOR
KENNETH A BERRY
SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 150 FT.
DATE : DECEMBER 16, 2022
FILE NO. : DB 2021 - 087



LOCATION PLAN
DOVER, NH
NOT TO SCALE



PLAN REFERENCES:

1.) "SUBDIVISION PLAN FOR MARK PHILIPS & PETER RUSSELL DOVER, NEW HAMPSHIRE"
BY: FRANK EMERY
DATED: MAY 22, 1973
S.C.R.D. POCKET #12, FOLDER #2, PLAN #36

2.) "SUBDIVISION OF LAND FOR EDMUND J. O'BRIEN JR. IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 9, 1981
S.C.R.D. PLAN #21A–87

3.) "SUBDIVISION OF LAND CULLEN BAY DEVELOPMENT IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: MAY 4, 1984
S.C.R.D. PLAN #24A–59

4.) "SUBDIVISION OF LAND FOR ARTHUR AND LINDA THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
DATED: JULY 30, 1986
S.C.R.D. PLAN #26–78

5.) "FINAL PLAN BRICKYARD ESTATES MIDDLE ROAD DOVER, N.H."
BY: G.L. DAVIS & ASSOCIATES
DATED: OCTOBER 1, 1985
S.C.R.D. PLAN #29–35

6.) "SUBDIVISION OF LAND FOR GEORGE & DOROTHY PRESCOTT AND ARTHUR G. THOMITS IN DOVER, N.H."
BY: BRUCE L. POHOPEK
RECORDED: OCTOBER 13, 1983
S.C.R.D. PLAN #29A–61

7.) "PLAN OF LAND FOR FRANCIS & VALERIE CHENEVERT MIDDLE ROAD DOVER, NEW HAMPSHIRE"
BY: K.E. MOORE & B.G. STAPLES
DATED: MAY, 1989
S.C.R.D. PLAN #38–48

8.) "LOT LINE REVISION ISAAC LUCAS CIRCLE DOVER, N.H. FOR CITADEL BROADCASTING COMPANIES AND NELSON MILES COOK, III"
BY: NORWAY PLAINS ASSOCIATES, INC.
DATED: MARCH 13, 2002
S.C.R.D. PLAN #66–70

9.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY:MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. 12348

10.) "MINOR SUBDIVISION OF LAND PREPARED FOR TOWNSQUARE MEDIA PORTSMOUTH LLC TAX MAP M, LOT 91A 292 MIDDLE ROAD CITY OF DOVER COUNTY OF STRAFFORD STATE OF NEW HAMPSHIRE"
BY: MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND
DATED: JANUARY 22, 2021
S.C.R.D. PLAN #12349

11.) "PLAN OF LAND OF GEORGE & DOROTHY PRESCOTT DOVER, N.H. SHOWING PARCEL SOLD TO ALAN R. & PATRICIA WILSON"
BY: RICHARD P. TOWLE
DATED AUGUST 1972

12.) "EASEMENT WORKSHEET"
BY: DOUCET SURVEY
ON FILE AT THIS OFFICE

NOTES:

1.) OWNER: HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

2.) TAX MAP M, LOT 104

3.) LOT AREA: 1,088,684 Sq. Ft., 24.99 Ac.
44,964 Sq.Ft., 1.03 Ac. (20' WIDE CONNECTION TO MIDDLE ROAD)

4.) S.C.R.D. BOOK 5159, PAGE 995

5.) THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES OF TAX MAP M, LOT 104 IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT AND ORIGINAL LEGAL DESCRIPTIONS, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

6.) BOUNDARY LINES BASED ON A CLOSED TRAVERSE WITH A CLOSURE BETTER THAN 1 PART IN 10,000 PERFORMED BY THIS OFFICE IN 2022

7.) I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, A PORTION OF THIS PARCEL DOES FALL WITHIN THE FLOOD PLAIN FLOOD HAZARD. REF.: FEMA COMMUNITY #330145, MAP #33017C0340E, DATED: SEPTEMBER 30, 2015.

8.) VERTICAL DATUM BASED ON NAVD88 ELEVATIONS. HORIZONTAL COORDINATES BASED ON NAD83. COORDINATES GATHERED USING TOPCON HIPER SR SURVEY GRADE GPS RECEIVERS.

9.) THE LAND IS IN CURRENT USE. S.C.R.D. BOOK 1753, PAGE 613.

LEGEND:

- ⊕ "DAVIS" STEEL STAKE (FND)
- ○ ½" REBAR (FND)
- ◉ DRILL HOLE (FND)
- ● ½" REBAR W/ID CAP (TO BE SET)
- ⊠ FENCE POST W/BARBED WIRE
- ABUTTING PROPERTY LINE
- MATCH LINE
- SURVEY TIE LINE
- ASTRONOMICAL HIGH TIDE LINE
- "REFERENCE LINE"
- PSNH EASEMENT LINE
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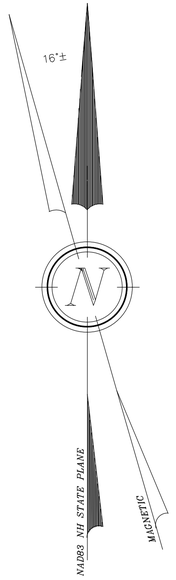
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- EXISTING TREE OR STUMP W/BARBED WIRE



GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

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6-26-24

KENNETH A. BERRY L.L.S. 805 DATE

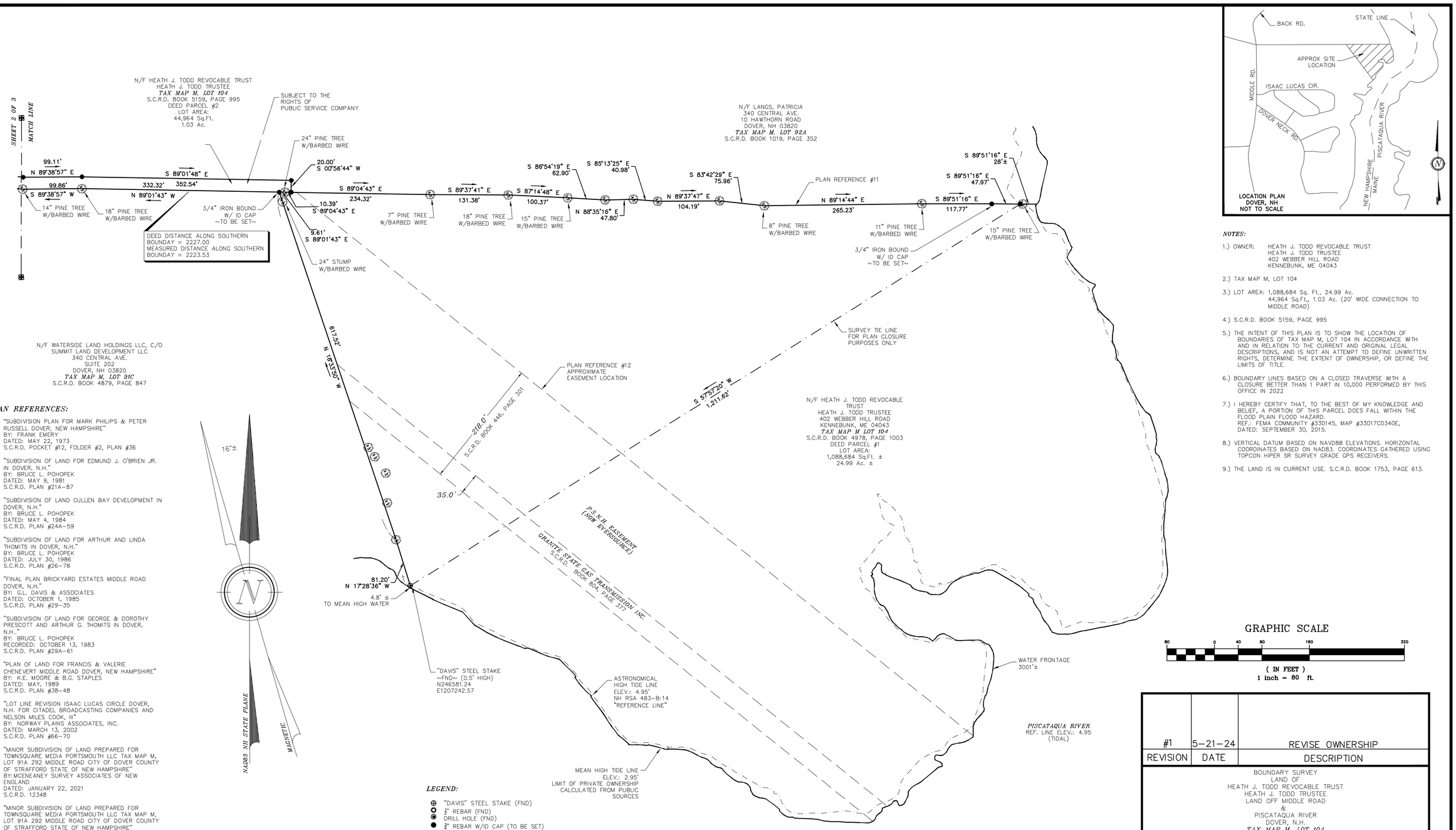
REVISION	DATE	DESCRIPTION
#1	5–21–24	REVISE OWNERSHIP

BOUNDARY SURVEY
LAND OF
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
LAND OFF MIDDLE ROAD
&
PISCATAQUA RIVER
DOVER, N.H.
TAX MAP M, LOT 104

STATE OF NEW HAMPSHIRE — No. 805 — KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332–2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : DECEMBER 16, 2022
FILE NO. : DB 2021 – 087



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S.C.R.D. 12348

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- PSNH EASEMENT LINE
- FND FOUND
- TYP TYPICAL
- S.C.R.D. STRAFFORD COUNTY REGISTRY OF DEEDS
- EXISTING TREE OR STUMP W/BARBED WIRE

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1.) OWNER: HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

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6-26-24

KENNETH A. BERRY L.L.S. 805 DATE

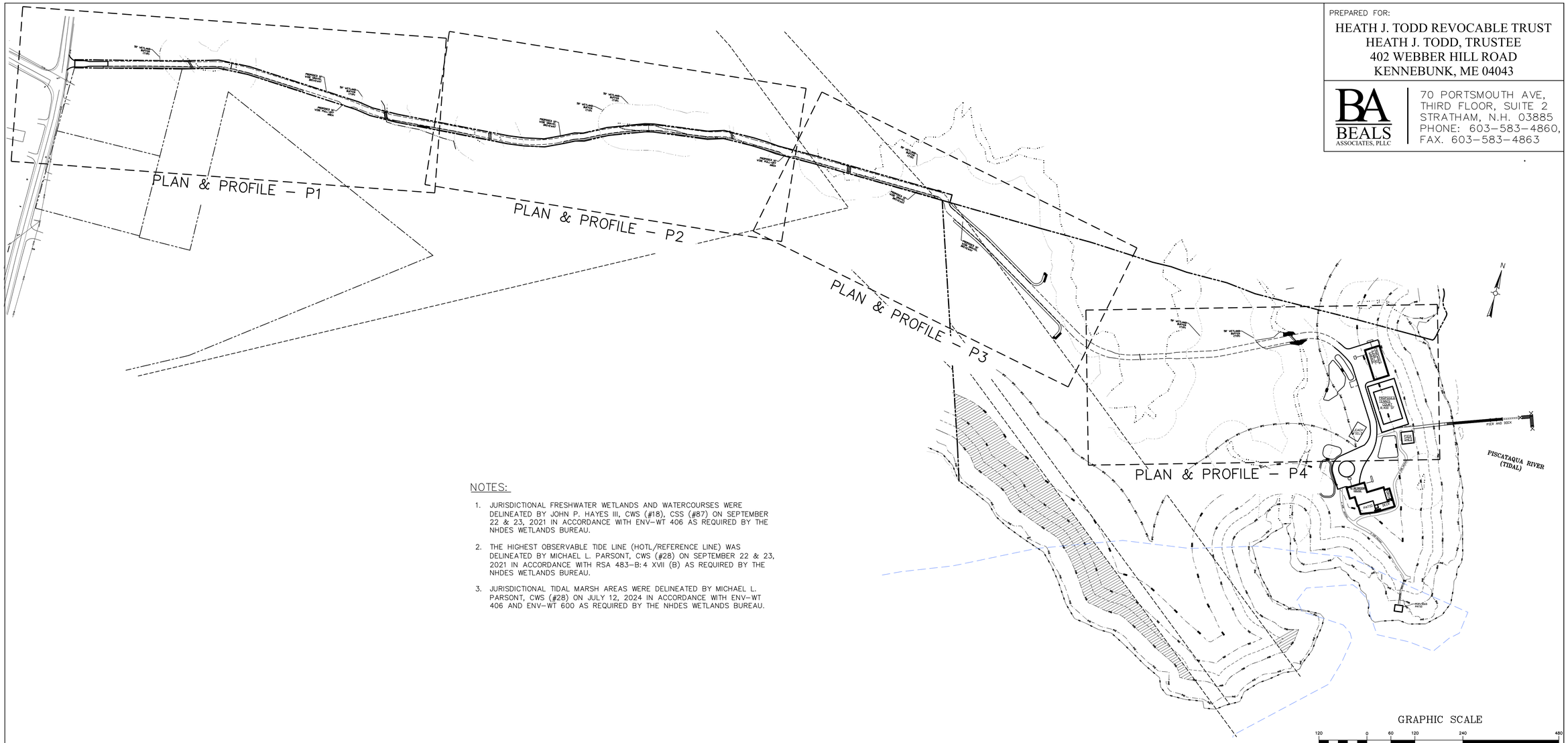
REVISION	DATE	DESCRIPTION
#1	5-21-24	REVISE OWNERSHIP

BOUNDARY SURVEY
LAND OF
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD TRUSTEE
LAND OFF MIDDLE ROAD
&
PISCATAQUA RIVER
DOVER, N.H.
TAX MAP M, LOT 104

STATE OF NEW HAMPSHIRE — NO. 805 KENNETH A. BERRY — LICENSED LAND SURVEYOR — SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. (603)332-2863

SCALE : 1 IN. EQUALS 80 FT.
DATE : DECEMBER 16, 2022
FILE NO. : DB 2021 – 087



NOTES:

1. JURISDICTIONAL FRESHWATER WETLANDS AND WATERCOURSES WERE DELINEATED BY JOHN P. HAYES III, CWS (#18), CSS (#87) ON SEPTEMBER 22 & 23, 2021 IN ACCORDANCE WITH ENV–WT 406 AS REQUIRED BY THE NHDES WETLANDS BUREAU.
2. THE HIGHEST OBSERVABLE TIDE LINE (HOTL/REFERENCE LINE) WAS DELINEATED BY MICHAEL L. PARSONT, CWS (#28) ON SEPTEMBER 22 & 23, 2021 IN ACCORDANCE WITH RSA 483–B:4 XVII (B) AS REQUIRED BY THE NHDES WETLANDS BUREAU.
3. JURISDICTIONAL TIDAL MARSH AREAS WERE DELINEATED BY MICHAEL L. PARSONT, CWS (#28) ON JULY 12, 2024 IN ACCORDANCE WITH ENV–WT 406 AND ENV–WT 600 AS REQUIRED BY THE NHDES WETLANDS BUREAU.

GRAPHIC SCALE

120 0 60 120 240 480

(IN FEET)
1 inch = 120 ft.

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

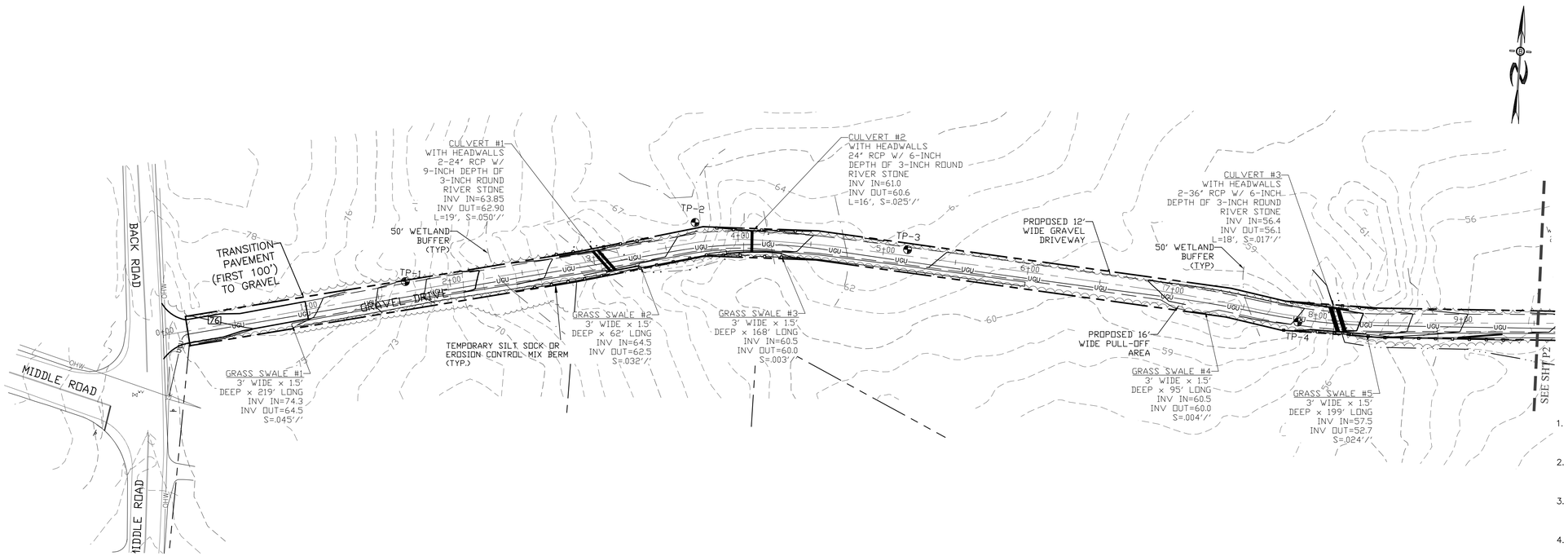
INDEX PLAN

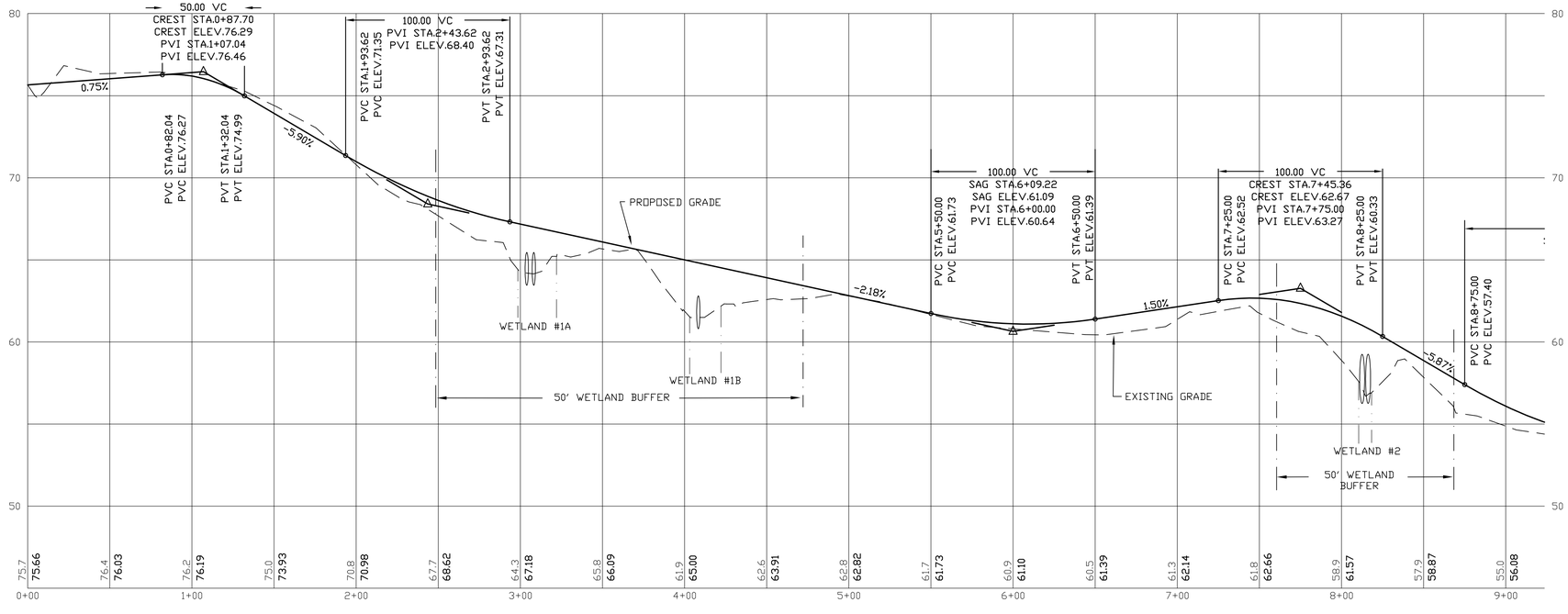
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=120'
PROJ. N0:	NH-1501	SHEET NO.	4

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603–583–4860,
FAX. 603–583–4863





PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

NOTES

1. ALL ELECTRICAL, TELEPHONE, CABLE TELEVISION AND ALARM LINES TO BE UNDERGROUND. LOW PROFILE UTILITY BOX STRUCTURES SHALL BE USED TO THE GREATEST EXTENT.
2. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR, ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY.
3. CONTRACTOR SHALL USE EXTREME CAUTION TO ENSURE ALL GRADING AND SOIL DISTURBANCE REMAINS ON THE PROPERTY.
4. ALL CONSTRUCTION METHODS AND MATERIALS WILL CONFORM TO THE TOWN STANDARD SPECIFICATIONS AND TO N.H.D.O.T. STANDARDS AND REGULATIONS.
5. ALL DRAINAGE STRUCTURES AND SWALES WILL BE BUILT AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
6. SEE DETAIL SHEETS FOR STANDARD CONSTRUCTION DETAILS.
7. ALL CROSS CULVERTS TO HAVE HEADWALLS OR F.E.S. MAY BE USED FOR DRIVEWAY CULVERTS WHERE APPROPRIATE. CULVERTS AND ROADWAY SHOULD BE MARKED WITH GREEN DELINEATORS FOR EASY LOCATION. TYPE & LOCATION TO BE APPROVED BY TOWN ROAD AGENT.
8. CONTRACTOR TO EMPLOY BEST MANAGEMENT PRACTICES AS SHOWN ON PLANS, AND AS FOUND IN THE NH STORMWATER MANUAL DATE DECEMBER, 2008.
9. NATURAL AREA BUFFERS ARE TO REMAIN WOODED.
10. CULVERTS SHOULD BE MAINTAINED BI-ANNUALLY.

STATE OF NEW HAMPSHIRE MICHAEL L. PARSONT No. 028 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

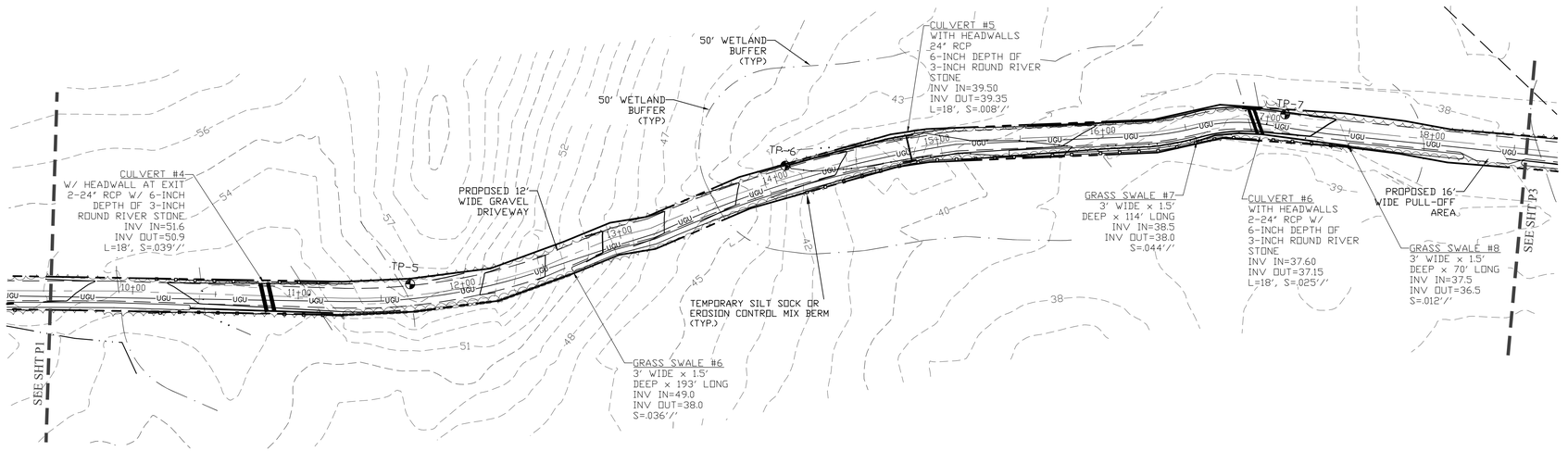
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

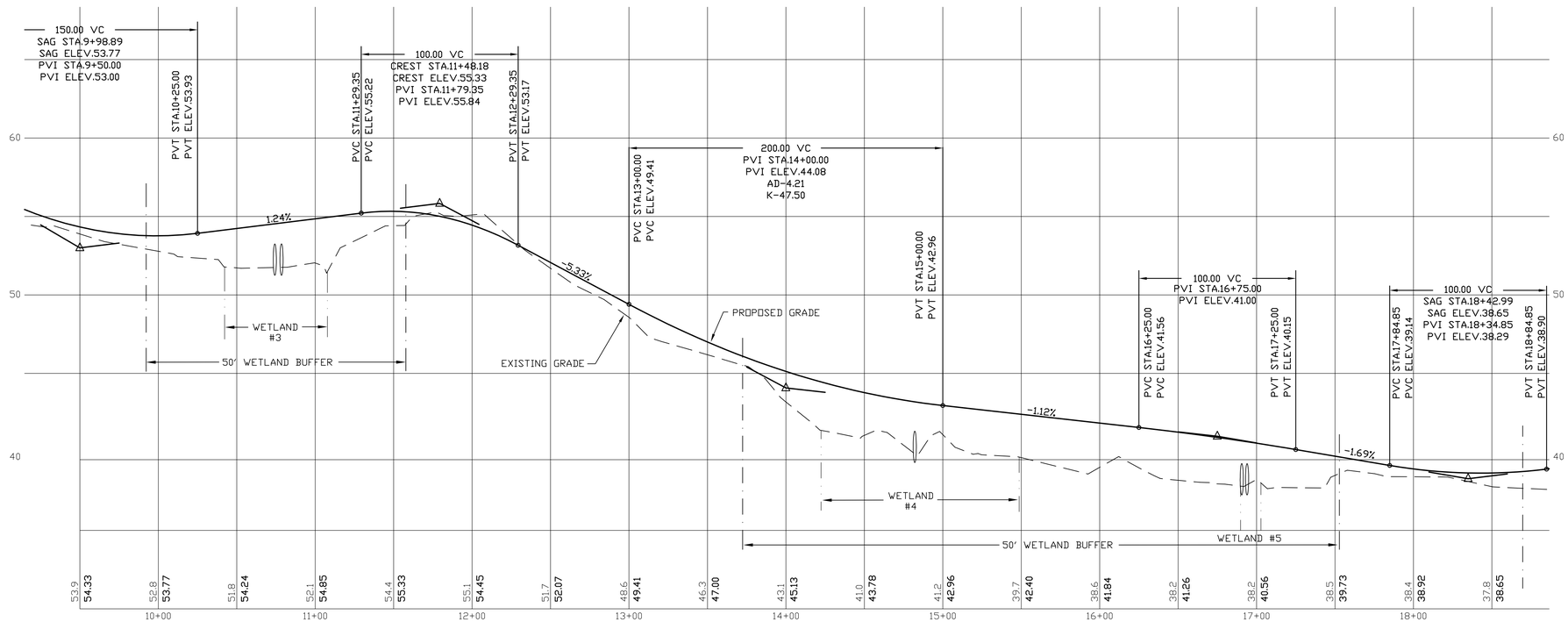
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PLAN & PROFILE - P1

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	5





PREPARED FOR:
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HEATH J. TODD, TRUSTEE
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KENNEBUNK, ME 04043

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PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

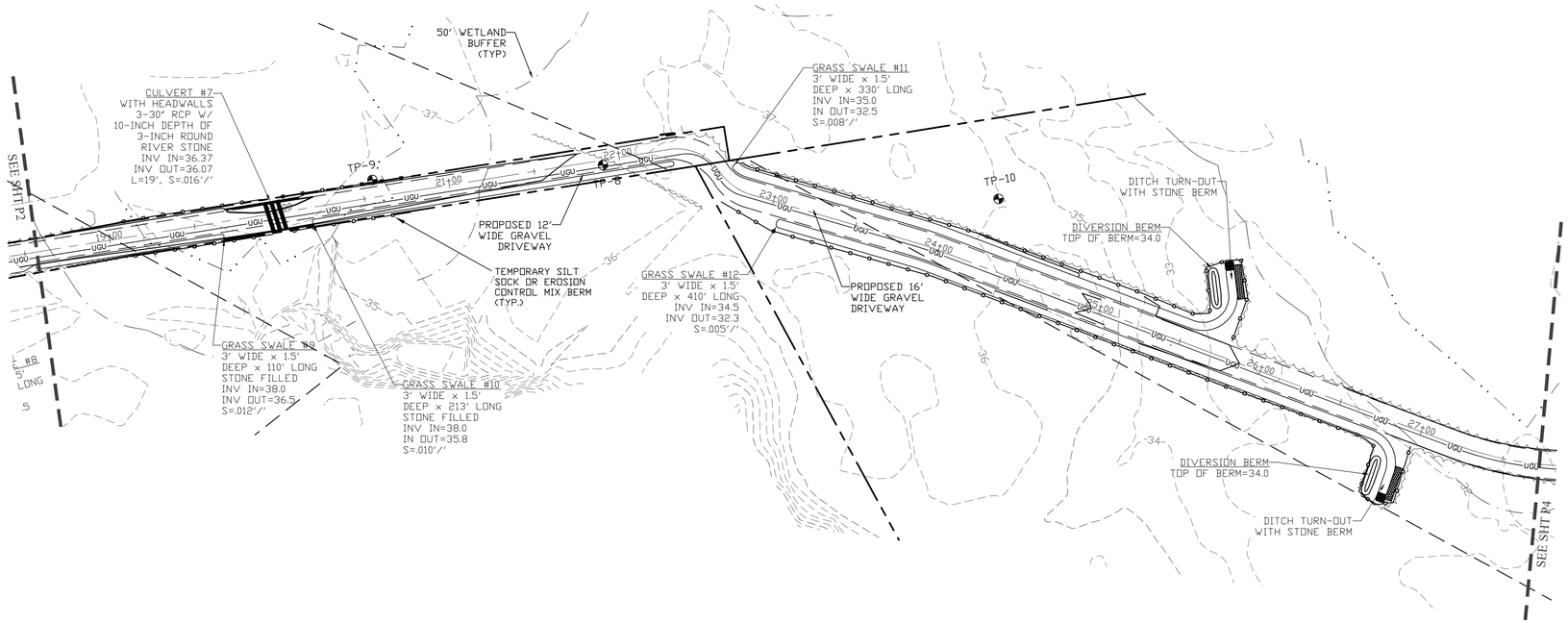
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

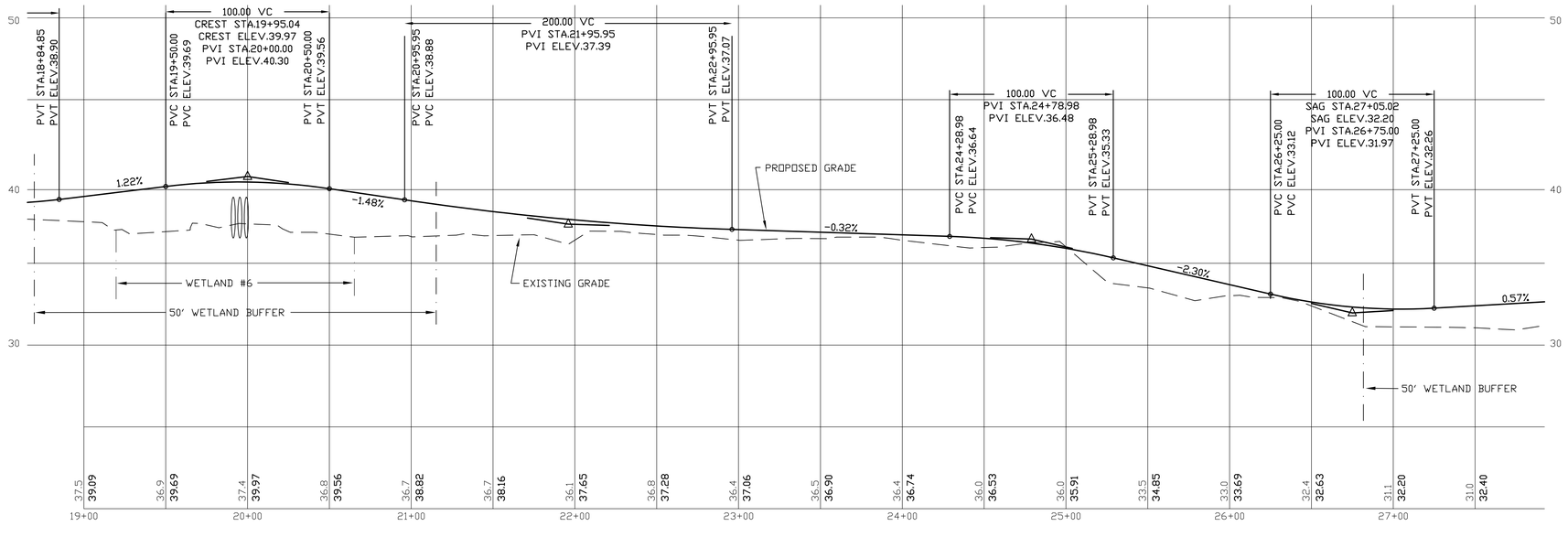
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PLAN & PROFILE - P2

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	6





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STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 028 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

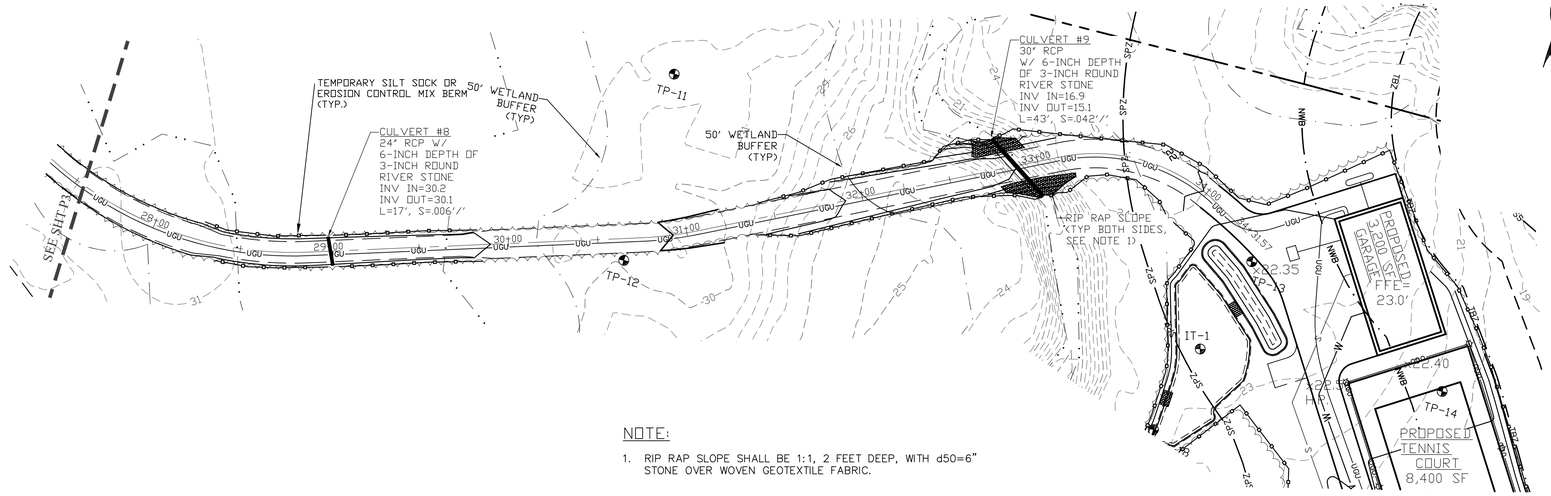
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

PLAN & PROFILE - P3

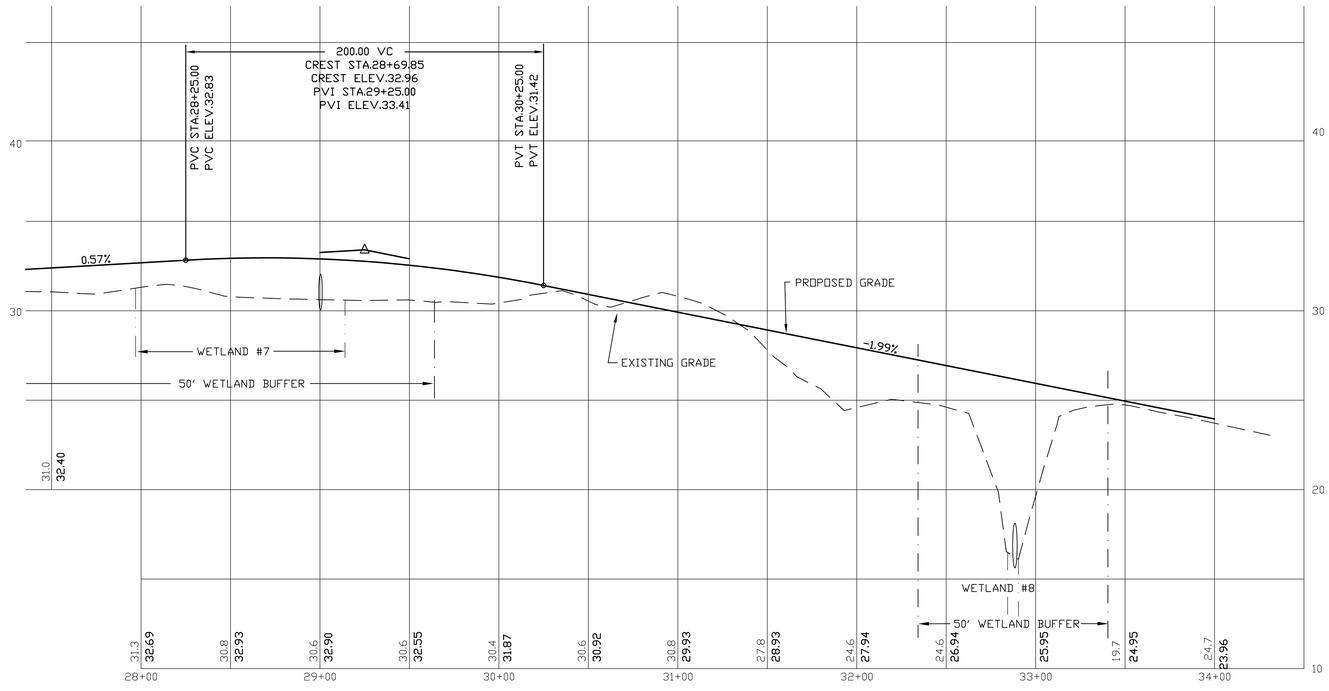
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	7



NOTE:

1. RIP RAP SLOPE SHALL BE 1:1, 2 FEET DEEP, WITH d50=6" STONE OVER WOVEN GEOTEXTILE FABRIC.



PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE MICHAEL L. PARSONS No. 029 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 PROFESSIONAL ENGINEER

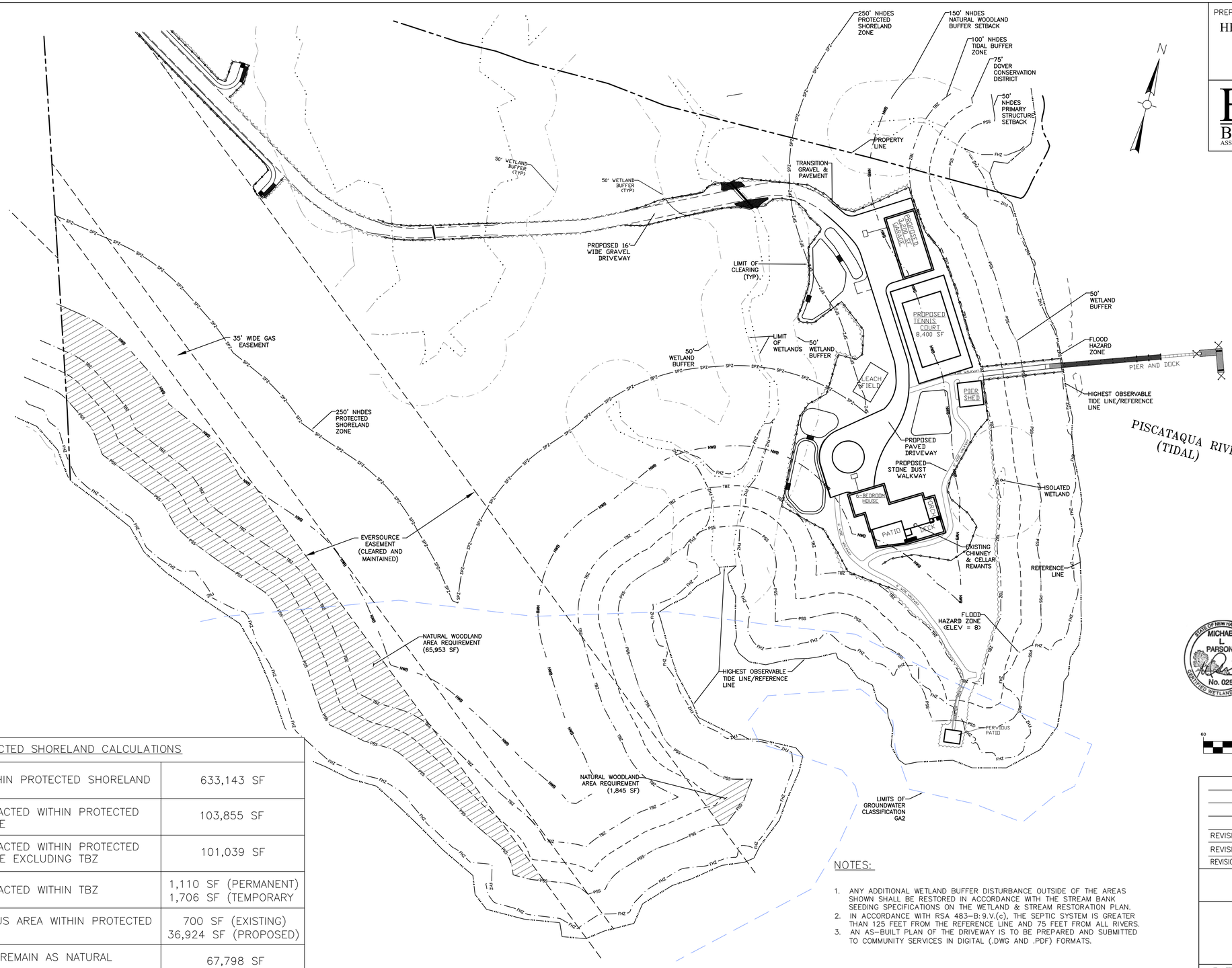
PROFILE SCALES:
HORIZONTAL: 1"=40' VERTICAL: 1"=4'

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PLAN & PROFILE - P4

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=40'
PROJ. N0:	NH-1501	SHEET NO.	8



PROTECTED SHORELAND CALCULATIONS	
TOTAL AREA WITHIN PROTECTED SHORELAND	633,143 SF
TOTAL AREA IMPACTED WITHIN PROTECTED SHORELAND ZONE	103,855 SF
TOTAL AREA IMPACTED WITHIN PROTECTED SHORELAND ZONE EXCLUDING TBZ	101,039 SF
TOTAL AREA IMPACTED WITHIN TBZ	1,110 SF (PERMANENT) 1,706 SF (TEMPORARY
TOTAL IMPERVIOUS AREA WITHIN PROTECTED SHORELAND	700 SF (EXISTING) 36,924 SF (PROPOSED)
TOTAL AREA TO REMAIN AS NATURAL WOODLAND	67,798 SF

NOTES:

1. ANY ADDITIONAL WETLAND BUFFER DISTURBANCE OUTSIDE OF THE AREAS SHOWN SHALL BE RESTORED IN ACCORDANCE WITH THE STREAM BANK SEEDING SPECIFICATIONS ON THE WETLAND & STREAM RESTORATION PLAN.
2. IN ACCORDANCE WITH RSA 483-B:9.V.(c), THE SEPTIC SYSTEM IS GREATER THAN 125 FEET FROM THE REFERENCE LINE AND 75 FEET FROM ALL RIVERS.
3. AN AS-BUILT PLAN OF THE DRIVEWAY IS TO BE PREPARED AND SUBMITTED TO COMMUNITY SERVICES IN DIGITAL (.DWG AND .PDF) FORMATS.

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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

GRAPHIC SCALE

60 0 30 60 120 240

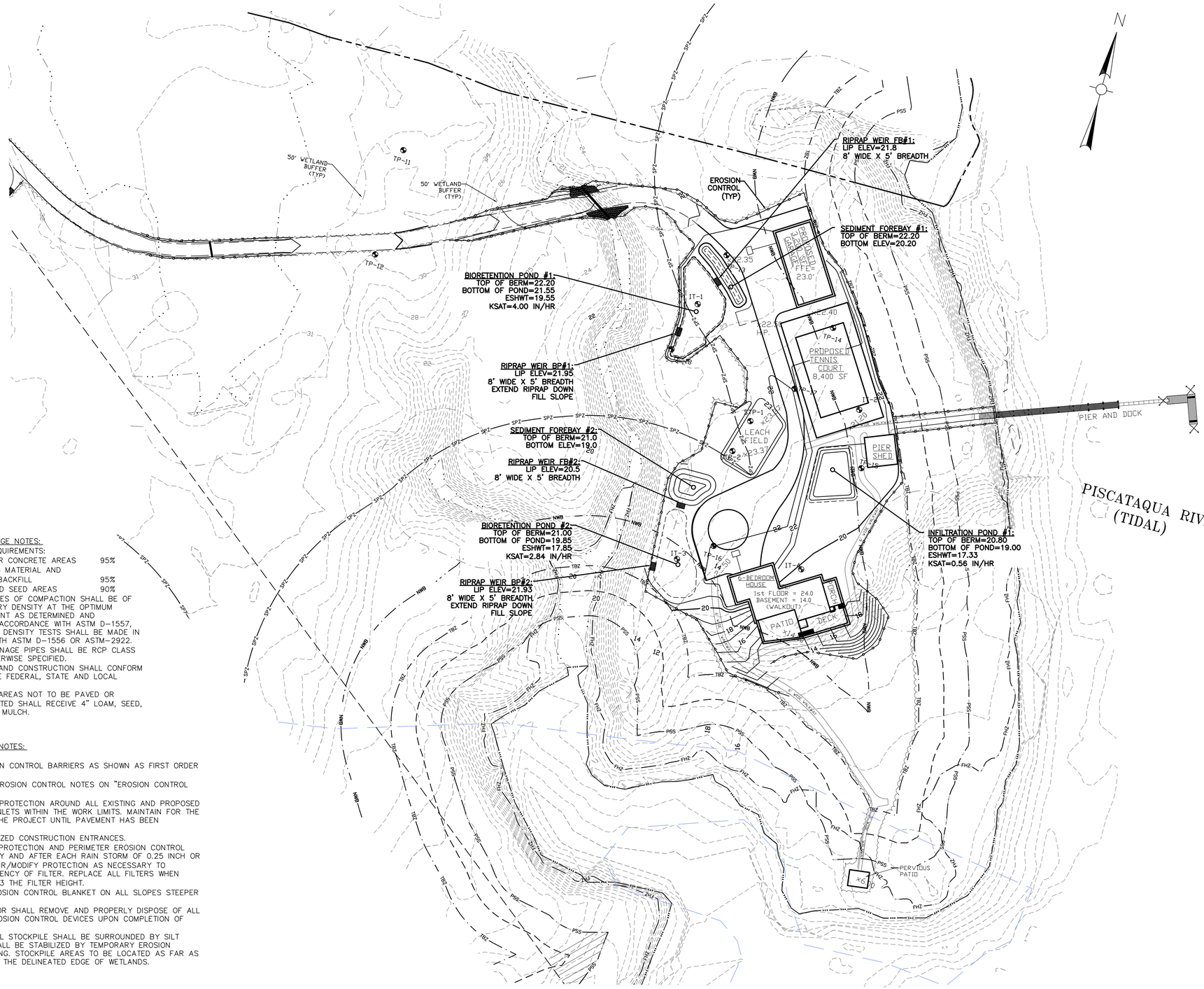
(IN FEET)
1 inch = 60 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

SHORELAND IMPACT PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	9



GRADING & DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:
   - BELOW PAVED OR CONCRETE AREAS 95%
   - TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL 95%
   - BELOW LOAM AND SEED AREAS 90%

   * ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.
2. ALL STORM DRAINAGE PIPES SHALL BE RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
4. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 4" LOAM, SEED, FERTILIZER, AND MULCH.

EROSION CONTROL NOTES:

1. INSTALL EROSION CONTROL BARRIERS AS SHOWN AS FIRST ORDER OF WORK.
2. SEE GENERAL EROSION CONTROL NOTES ON "EROSION CONTROL NOTES" SHEET.
3. PROVIDE INLET PROTECTION AROUND ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
5. INSPECT INLET PROTECTION AND PERIMETER EROSION CONTROL MEASURES DAILY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
6. CONSTRUCT EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 3:1.
7. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
8. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED BY SILT FENCE AND SHALL BE STABILIZED BY TEMPORARY EROSION CONTROL SEEDING. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLANDS.

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70 PORTSMOUTH AVE,
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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- UGU — UNDERGROUND UTILITY

STATE OF NEW HAMPSHIRE
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CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

GRAPHIC SCALE

50 0 25 50 100 200

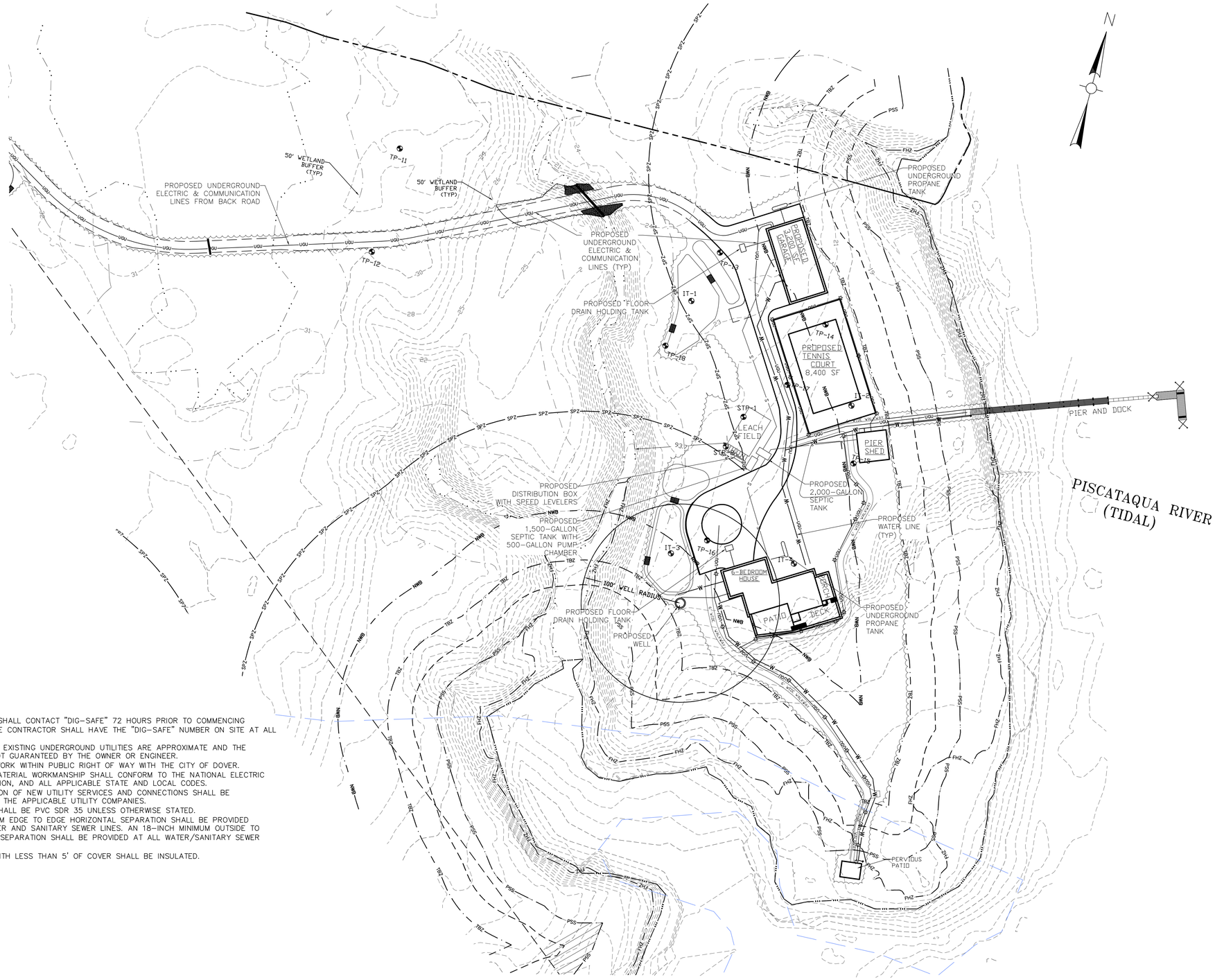
(IN FEET)
1 inch = 50 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	10.12.24

GRADING, DRAINAGE, & EROSION CONTROL PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	10



UTILITY NOTES:

1. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER.
2. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF DOVER.
3. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
4. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE APPLICABLE UTILITY COMPANIES.
5. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
6. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
7. ALL SEWER PIPE WITH LESS THAN 5' OF COVER SHALL BE INSULATED.

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70 PORTSMOUTH AVE,
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LEGEND

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- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- W — PROPOSED WATER LINE
- UGU — PROPOSED UNDERGROUND ELECTRIC & COMMUNICATION LINES
- S — PROPOSED SEPTIC LINE

STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 029 QUALIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

UTILITY PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	11

N

LEGEND

AREAS TO BE RESTORED

R3 PHOTO LOCATION (RESTORATION AREA)

AFTER THE FACT (ATF) RESTORATION

ATF#	TO BE RESTORED	TYPE
1	350 SF	WETLAND
2	105 SF	WETLAND
3	160 SF	WETLAND
4	80 SF	WETLAND
5	385 SF	WETLAND
6	120 SF	WETLAND
7A	88 SF/9 LF	STREAM BANK
7B	109 SF/11 LF	WETLAND/STREAM
7C	91 SF/9 LF	STREAM BANK

WETLAND/STREAM TOTAL = 1,309 SF (11 LF)

STREAM BANK TOTAL = 179 SF (18 LF)

TOTAL TO BE RESTORED = 1,488 SF (29 LF)

NOTES:

1. EXISTING RUTS WITHIN AREAS TO BE RESTORED SHALL BE HAND RAKED, OR A SIMILAR NON-INTRUSIVE APPROACH, PRIOR TO RESTORATION SEEDING.
2. SEE SEEDING SPECIFICATION NOTES BELOW FOR WETLAND AND STREAM BANK RESTORATION AREAS.
3. SEED MIXES SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATIONS.
4. SEED MIXES ARE AVAILABLE THROUGH:
   NEW ENGLAND WETLAND PLANTS, INC.
   820 WEST ST. AMHERST, MA
   413-548-8000
   INFO@NEWP.COM

COWARDIN WETLAND CLASSIFICATION LEGEND

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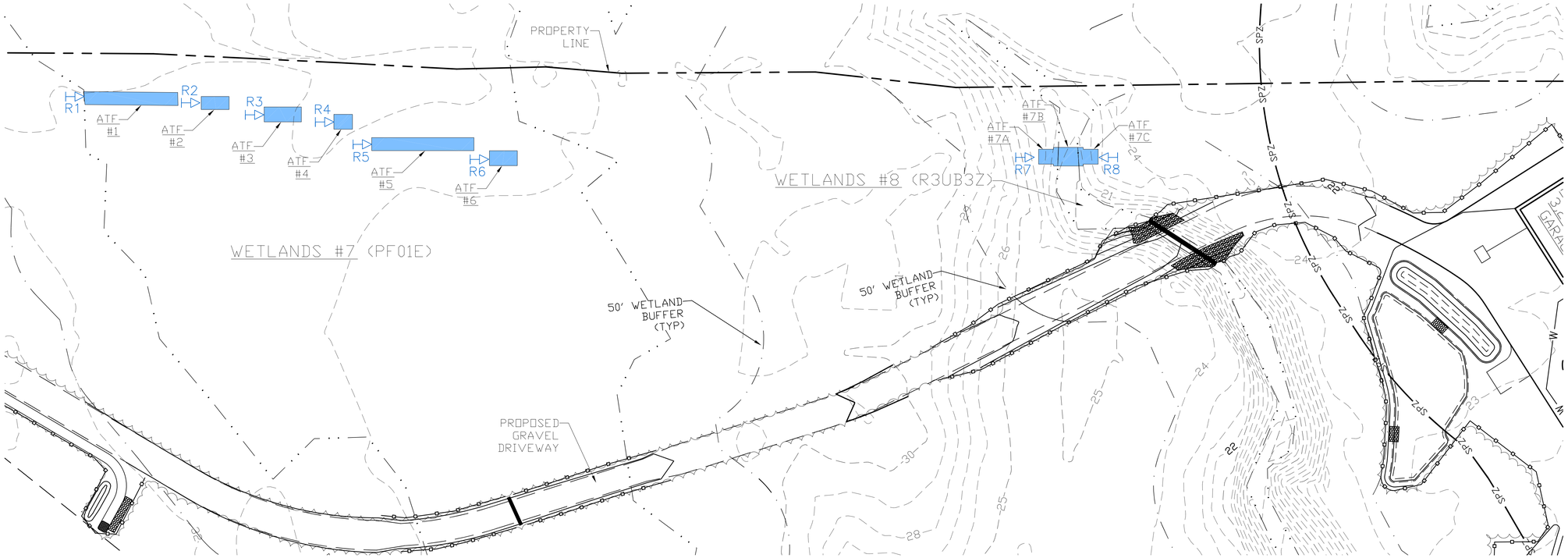


STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

SEEDING SPECIFICATIONS FOR WETLAND RESTORATION AREAS:

AREAS OF WETLAND RESTORATION ARE TO BE SEEDED WITH A WETLAND SEED MIX SUCH AS NEW ENGLAND WETMIX OR AN EQUIVALENT SUBSTITUTE. APPLY SEED AT A RATE OF 1 POUND PER 2,500 SF.

NEW ENGLAND WETMIX OR AN EQUIVALENT SUBSTITUTE TYPICALLY INCLUDES:

COMMON NAME	BOTANICAL NAME
FOX SEDGE	CAREX VULPINOIDEA
BLUNT BROOM SEDGE	CAREX SCOPARIA
LURID SEDGE	CAREX LURIDA
HOP SEDGE	CAREX LUPULINA
FOWL BLUEGRASS	POA PALUSTRIS
BEGGAR TICKS	BIDENS FRONDOSA
GREEN BULRUSH	SCIRPUS ATROVIRENS
SWAMP MILKWEED	ASCLEPIAS INCARNATA
FRINGED SEDGE	CAREX CRINITA
SOFT RUSH	JUNCUS EFFUSUS
STARVED/CALICO ASTER	ASTER LATERIFLORUS
BLUE FLAG	IRIS VERSICOLOR
AMERICAN MANNAGRASS	GLYCERIA GRANDIS
SQUARE STEMMED MONKEY FLOWER	MIMULUS RINGENS
SPOTTED JOE PYE WEED	EUPATORIUM MACULATUM

SEEDING SPECIFICATIONS FOR STREAM BANK RESTORATION AREAS:

AREAS OF STREAM BANK RESTORATION ARE TO BE SEEDED WITH A SEED MIX SUCH AS NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX OR AN EQUIVALENT SUBSTITUTE. APPLY SEED AT A RATE OF 1 POUND PER 1,450 SF.

NEW ENGLAND SEMI-SHADE GRASS AND FORBS OR AN EQUIVALENT SUBSTITUTE TYPICALLY INCLUDES:

COMMON NAME	BOTANICAL NAME
VIRGINIA WILD RYE	ELYMUS VIRGINICUS
CANADA WILD RYE	ELYMUS CANADENSIS
SENSITIVE FERN	ONOCLEA SENSIBILIS
BONESET	EUPATORIUM PERFOLIATUM
PATH RUSH	JUNCUS TENUIS

* FOR FURTHER INFORMATION REGARDING RECOMMENDED SEED MIXES, THE CONTRACTOR IS ENCOURAGED TO REACH OUT TO MADDIE SEVERANCE AT NHNHB AT (603) 271-2834.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

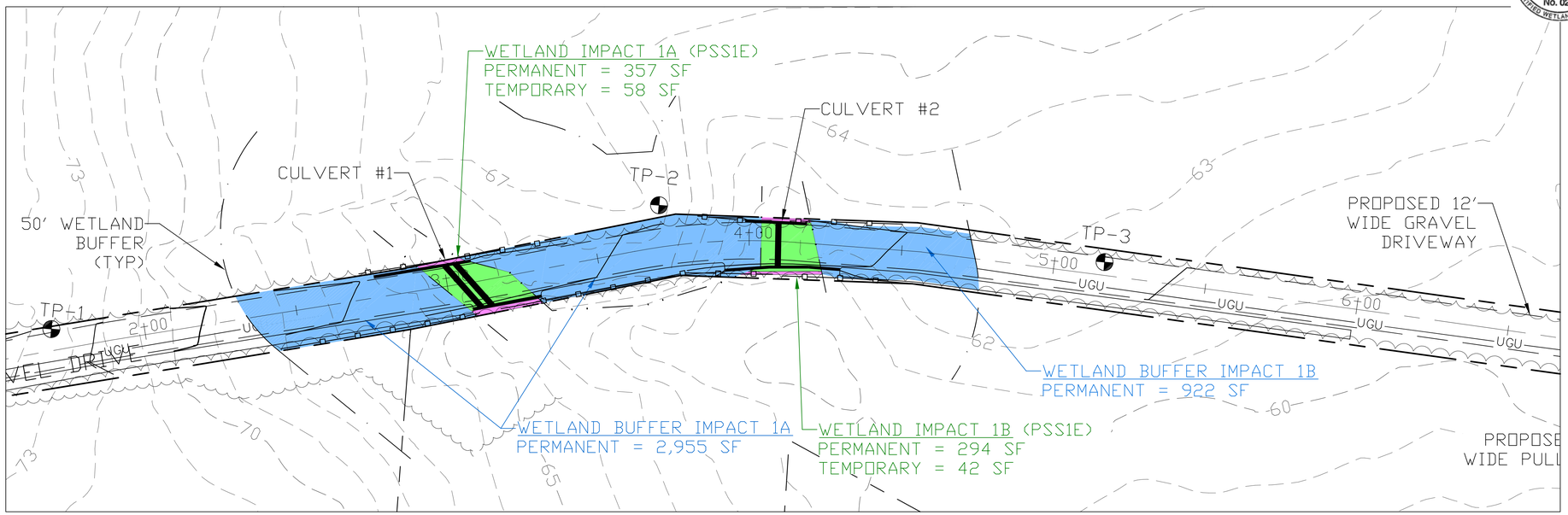
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24
REVISED PER REVIEW COMMENTS	11/12/24

WETLAND & STREAM BANK RESTORATION PLAN

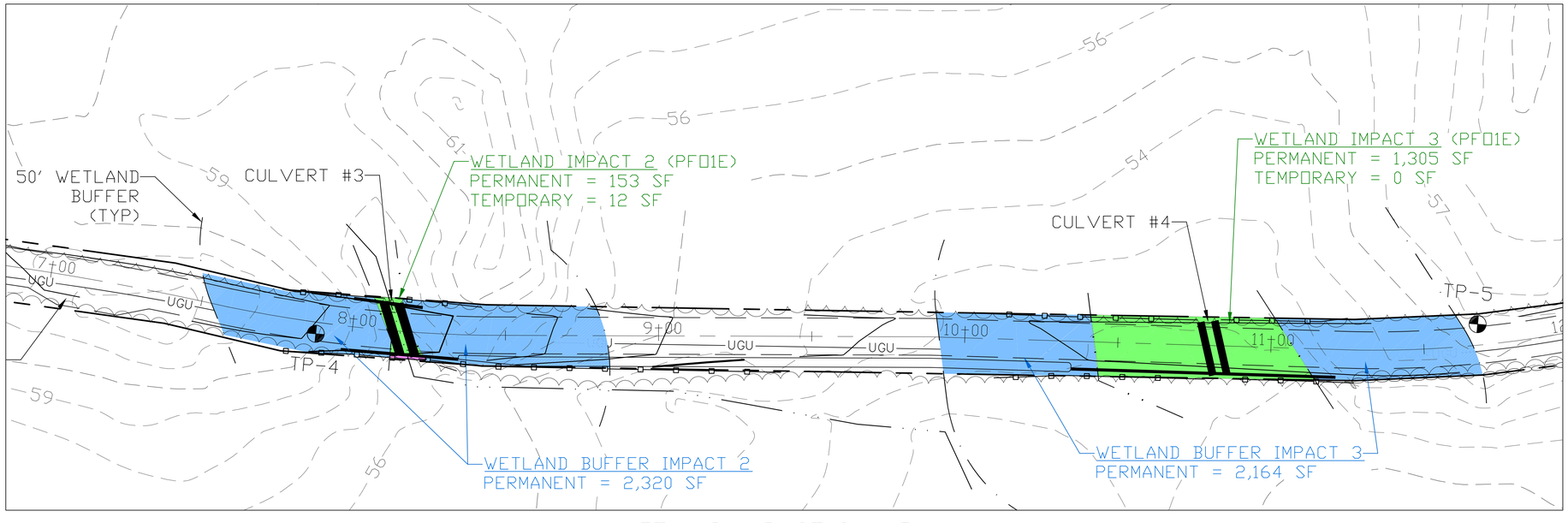
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=30'
PROJ. N0:	NH-1501	SHEET NO.	12

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *



WETLAND IMPACT 1A & 1B



WETLAND IMPACT 2 & 3

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
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BEALS ASSOCIATES, PLLC
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STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 029 CERTIFIED WETLAND SCIENTIST

COWARDIN WETLAND CLASSIFICATION LEGEND

P = PALUSTRINE
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Z = INTERMITTENTLY EXPOSED/PERMANENT

LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No.9900 PROFESSIONAL ENGINEER

IMPACT SUMMARY

WETLAND/ STREAM IMPACT	8,938 SF (PERMANENT) 166 SF (TEMPORARY)
TIDAL BUFFER ZONE (TBZ) IMPACT	1,110 SF (PERMANENT) 1,706 SF (TEMPORARY)
PERENNIAL STREAM BANK IMPACT	1,573 SF (PERMANENT)
PERENNIAL STREAM LINEAR IMPACT	130 LF (PERMANENT)
INTERMITTENT STREAM LINEAR IMPACT	22 LF (PERMANENT)
PISCATAQUA RIVER BANK IMPACT (INCLUDED IN TBZ IMPACT #)	131 SF (PERMANENT)
PISCATAQUA RIVER BANK LINEAR IMPACT	6 LF (PERMANENT)
CITY OF DOVER WETLAND BUFFER IMPACT (INCLUDES TBZ IMPACTS)	28,193 SF (PERMANENT) 1,706 SF (TEMPORARY)

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

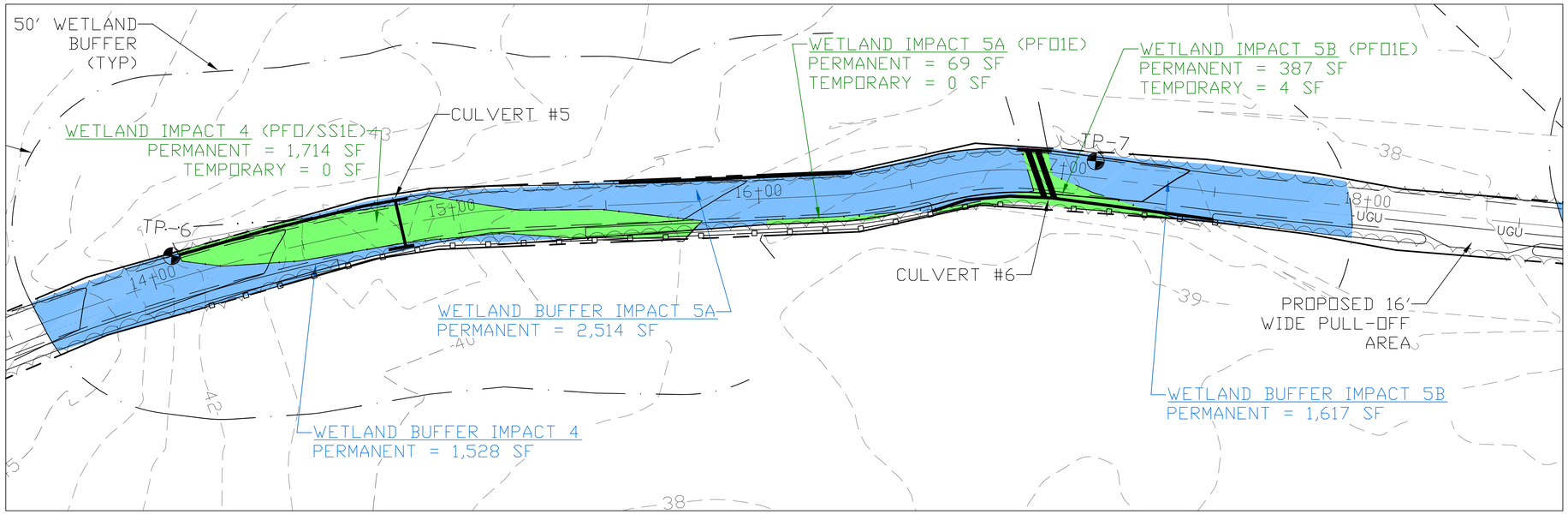
REVISED PER REVIEW COMMENTS	12/23/24
REVISIONS:	DATE:

WETLAND IMPACT PLAN 1

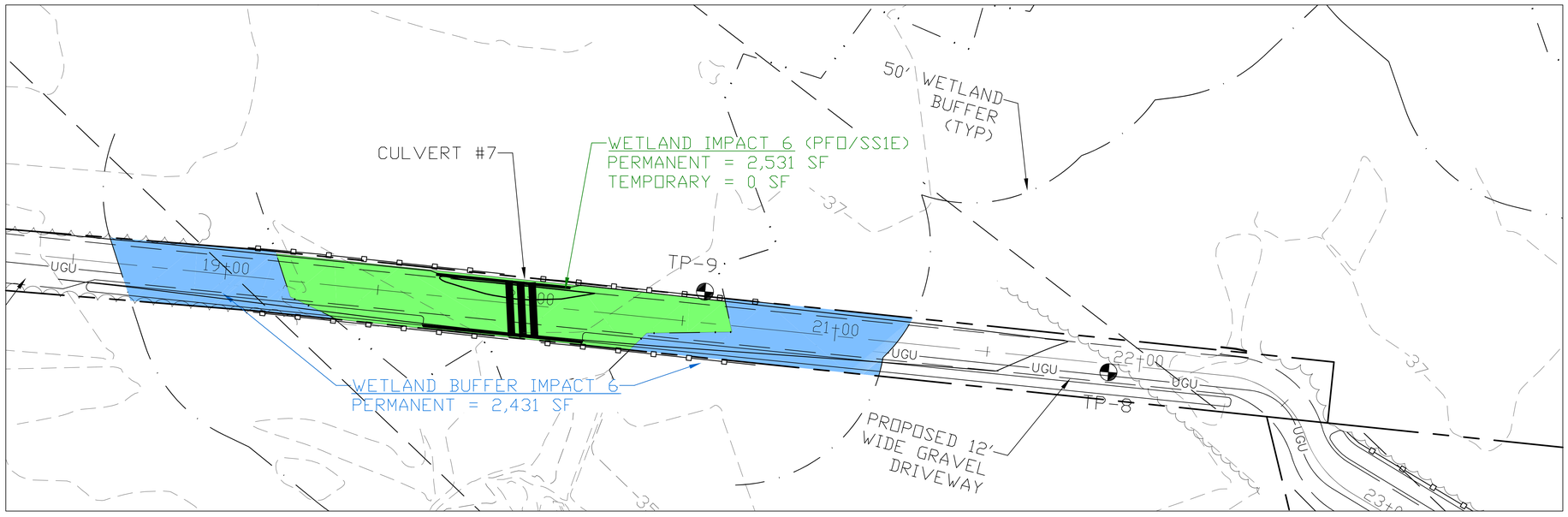
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	13

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *



WETLAND IMPACT 4, 5A, & 5B



WETLAND IMPACT 6

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
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PHONE: 603-583-4860,
FAX. 603-583-4863

LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

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FO = FORESTED
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STATE OF NEW HAMPSHIRE MICHAEL L PARSONT No. 028 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

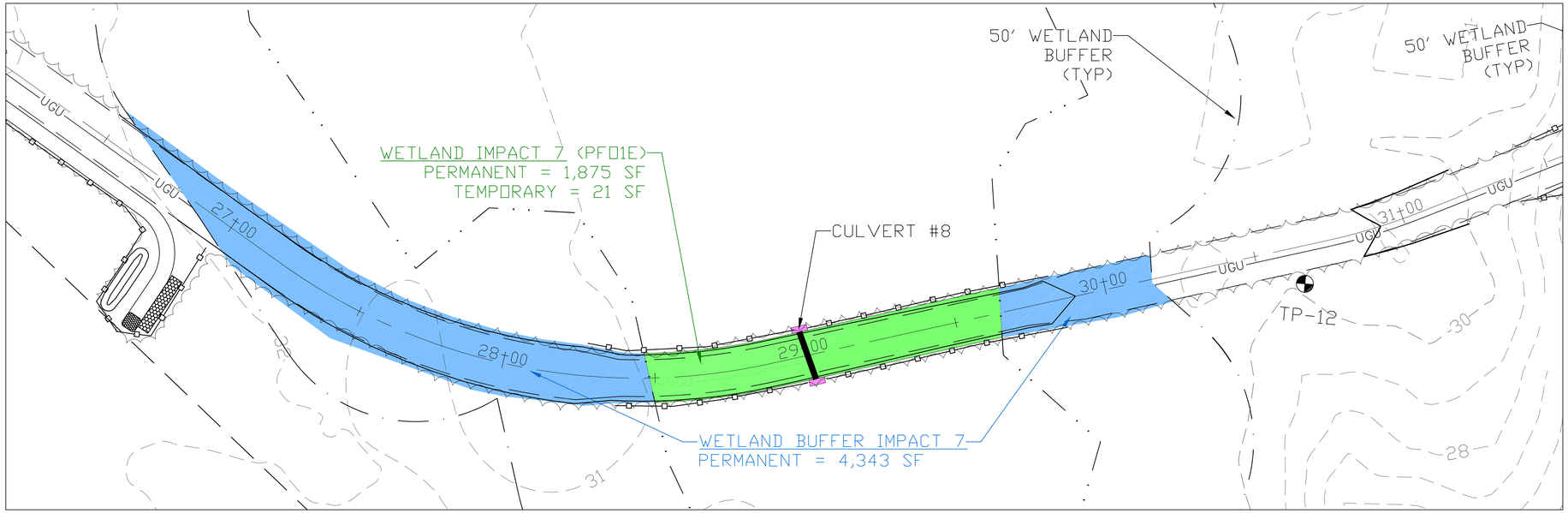
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

WETLAND IMPACT PLAN 2

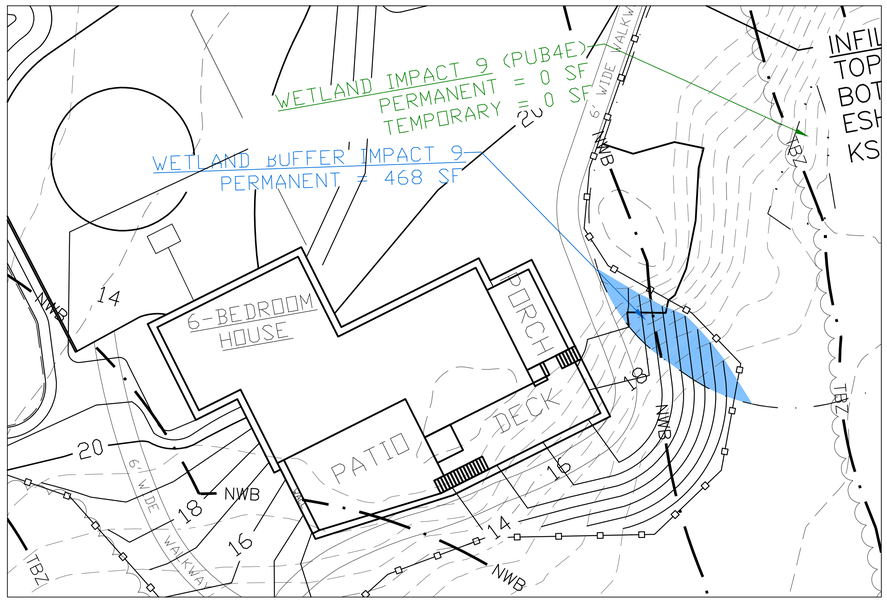
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	14

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *



WETLAND IMPACT 7



WETLAND IMPACT 9

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
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BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
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LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

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STATE OF NEW HAMPSHIRE MICHAEL L. PARSONT No. 029 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 LICENSED LAND SURVEYOR PROFESSIONAL ENGINEER

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

WETLAND IMPACT PLAN 3

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	15

PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
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KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
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FAX. 603-583-4863

* SEE PLAN & PROFILE SHEETS FOR CULVERT AND SWALE INFORMATION *

LEGEND

- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- PERMANENT WETLAND BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

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SS = SCRUB-SHRUB
FO = FORESTED
1 = BROAD-LEAVED DECIDUOUS
R3 = RIVERINE, UPPER PERENNIAL
UB3 = UNCONSOLIDATED BOTTOM/MUD
UB4 = UNCONSOLIDATED BOTTOM/ORGANIC
E = SEASONALLY FLOODED/SATURATED
Z = INTERMITTENTLY EXPOSED/PERMANENT

WETLAND IMPACT 8

STATE OF NEW HAMPSHIRE MICHAEL L. PARSONT No. 023 CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE CHRISTIAN O. SMITH No. 9900 PROFESSIONAL ENGINEER

GRAPHIC SCALE

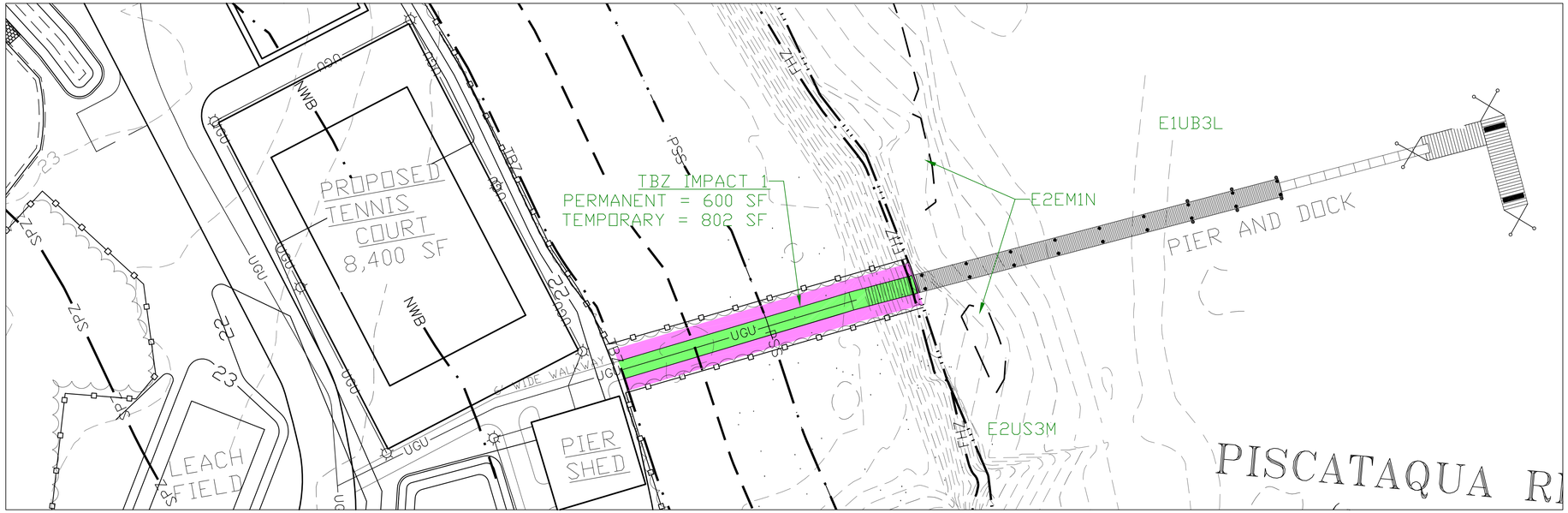
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12/23/24

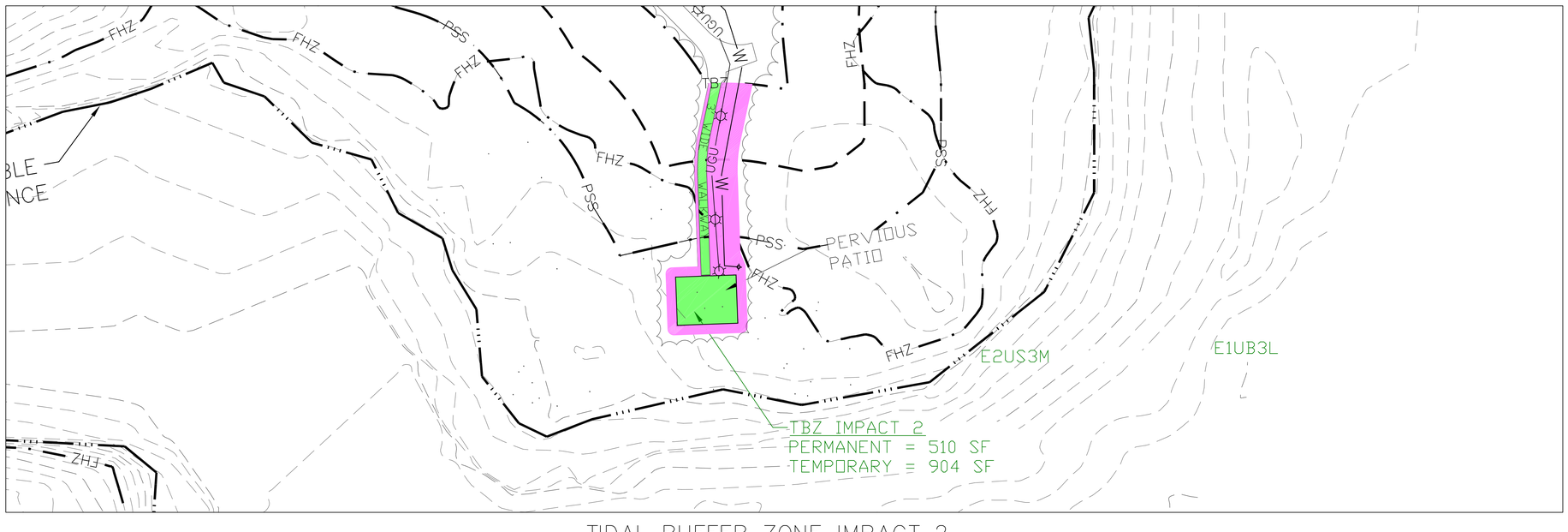
WETLAND IMPACT PLAN 4

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	16



TIDAL BUFFER ZONE IMPACT 1



TIDAL BUFFER ZONE IMPACT 2

NOTE
1. SHRUBS AND GROUND COVER IN THE TIDAL BUFFER ZONE WORK AREAS SHALL BE DOCUMENTED PRIOR TO DISTURBANCE THROUGH PHOTOS AND WRITTEN NOTES. ALL DISTURBED SHRUBS AND GROUND COVER SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS.

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

LEGEND

PERMANENT TIDAL BUFFER IMPACT

TEMPORARY TIDAL BUFFER IMPACT

COWARDIN WETLAND CLASSIFICATION LEGEND

E1 = ESTUARINE, SUBTIDAL
UB3 = UNCONSOLIDATED BOTTOM/MUD
E2 = ESTUARINE, INTERTIDAL
US3 = UNCONSOLIDATED SHORE/MUD
EM1 = EMERGENT/PERSISTENT
L = SUBTIDAL
M = IRREGULARLY EXPOSED
N = REGULARLY EXPOSED

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
LICENSED PROFESSIONAL ENGINEER

GRAPHIC SCALE

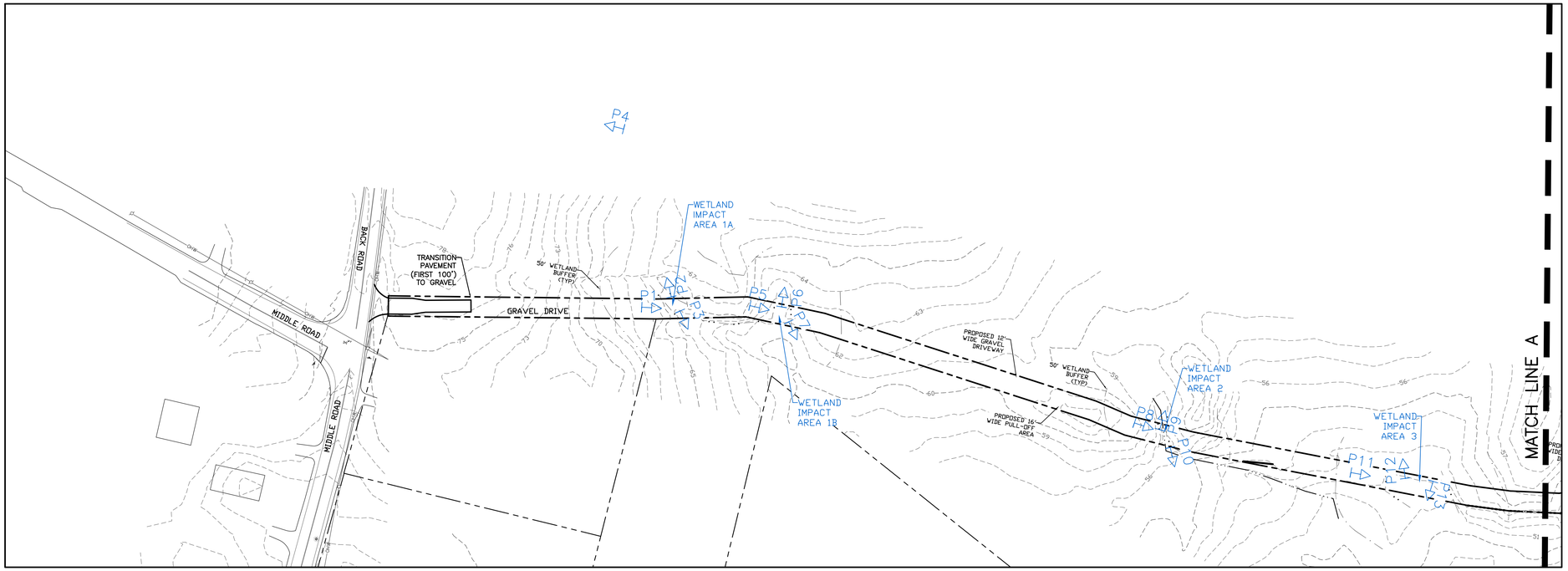
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

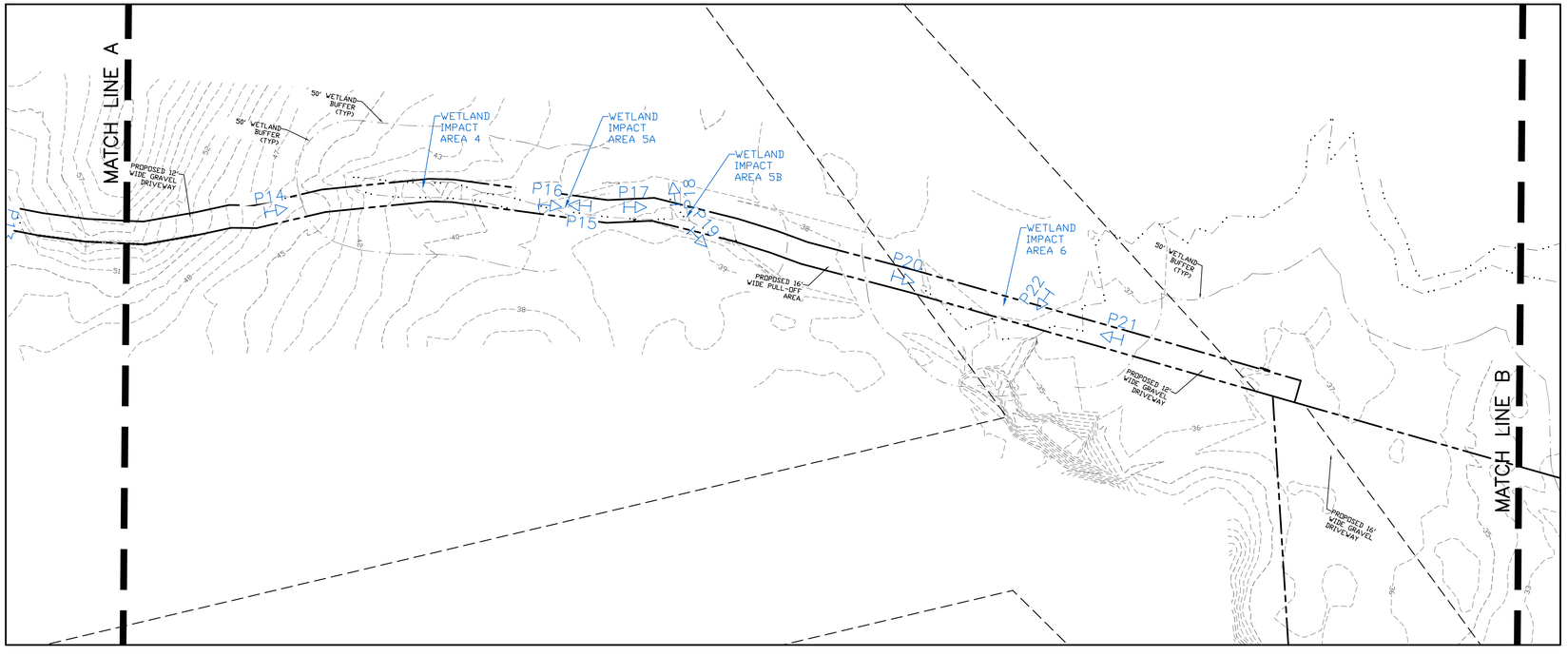
REVISED PER REVIEW COMMENTS	12/23/24
REVISIONS:	DATE:

TIDAL BUFFER IMPACT PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	17





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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT
- P1 — PHOTO LOCATION (WETLAND CROSSINGS)

N

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

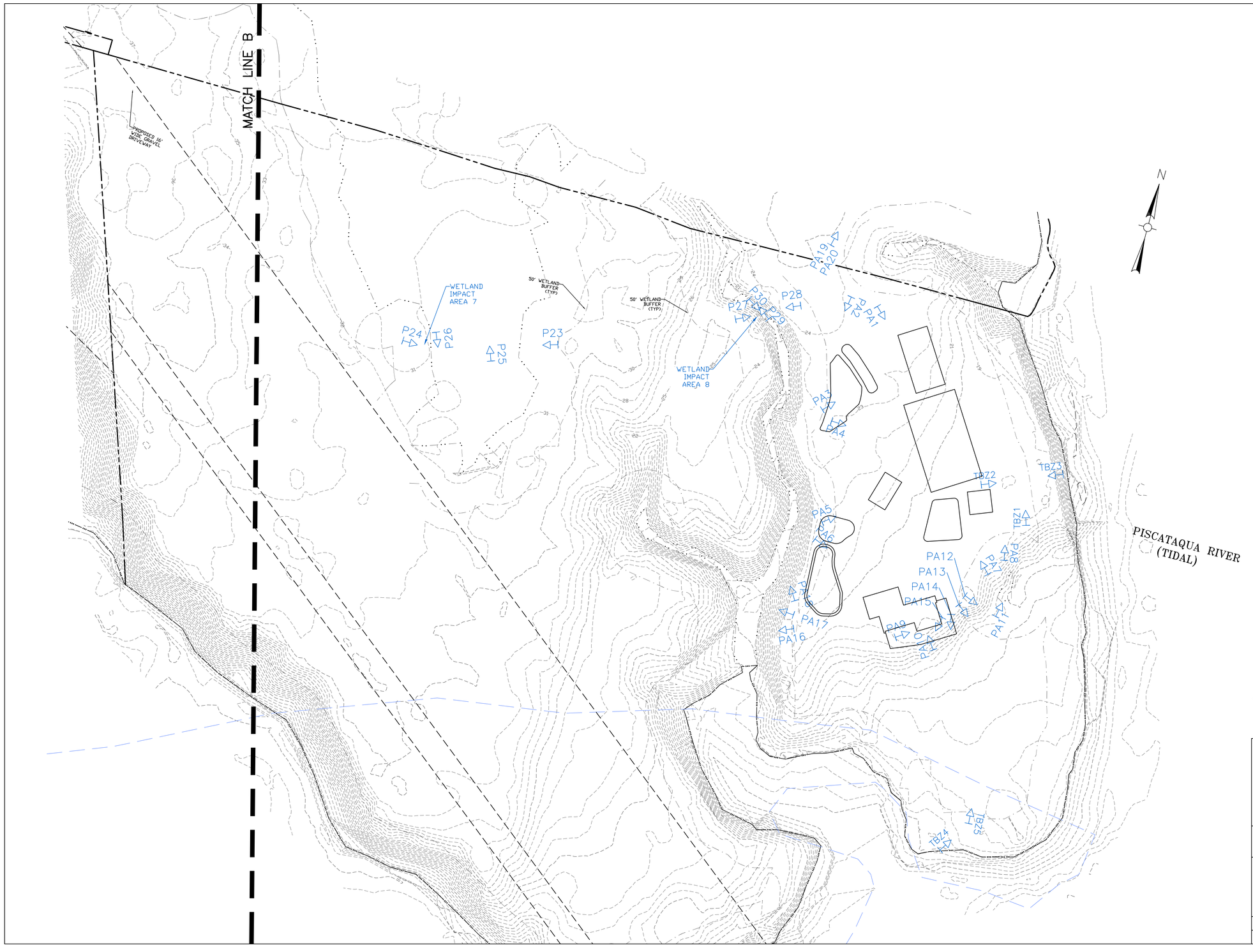
CHRISTIAN O. SMITH No.9900 STATE OF NEW HAMPSHIRE PROFESSIONAL ENGINEER

REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PHOTO LOG PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	JUNE 28, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	18



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LEGEND

- FRESHWATER WETLAND BOUNDARY
- FRESHWATER WETLAND/ STREAM BUFFER
- PROPERTY LINE
- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
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- NWB — 150' NHDES NATURAL WOODLAND BUFFER SETBACK
- SPZ — SPZ — 250' NHDES PROTECTED SHORELAND ZONE
- NATURAL WOODLAND AREA REQUIREMENT

P1 — PHOTO LOCATION (WETLAND CROSSINGS)

PA2 — PHOTO LOCATION (PROJECT AREAS)

TBZ3 — PHOTO LOCATION (TBZ AREAS)

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

GRAPHIC SCALE

60 0 30 60 120 240

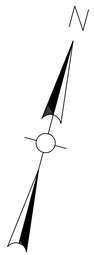
(IN FEET)
1 inch = 60 ft.

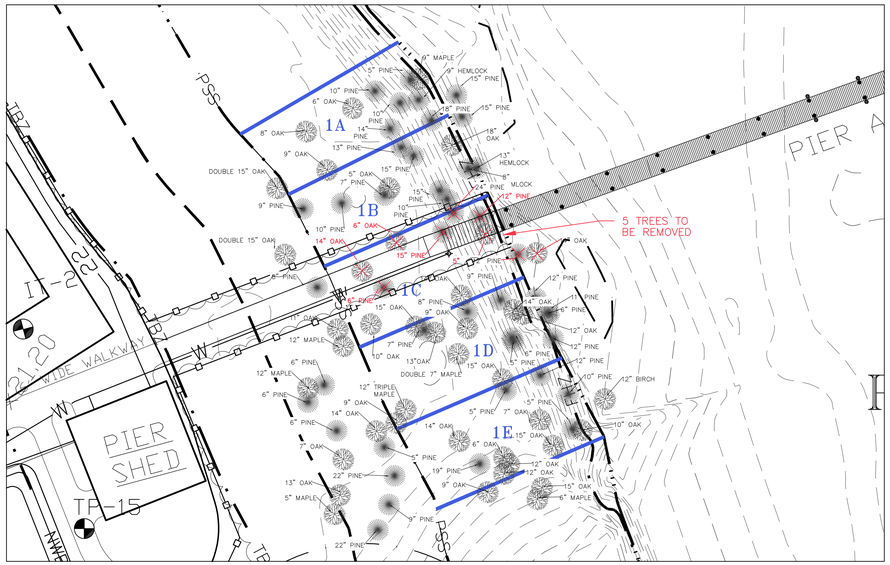
REVISIONS:	DATE:
REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24

PHOTO LOG PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=60'
PROJ. N0:	NH-1501	SHEET NO.	19

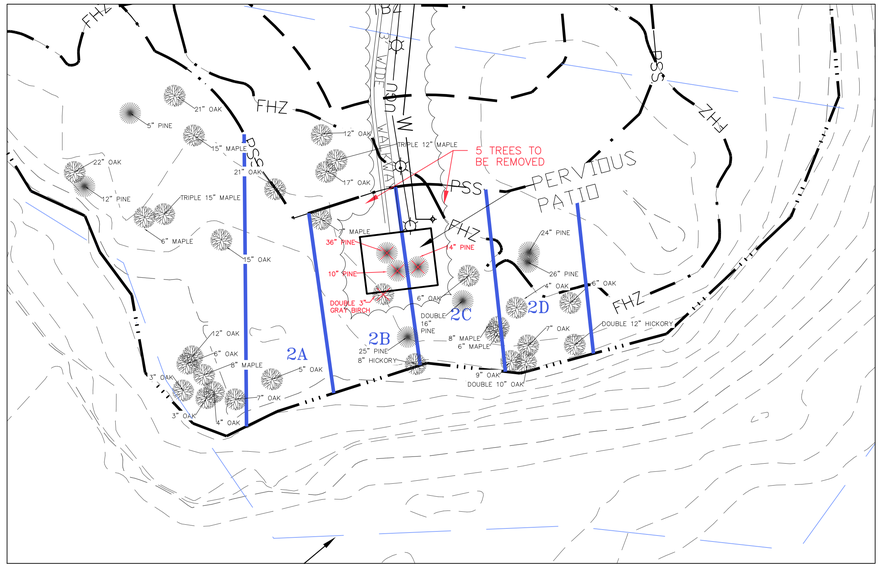




TREE REMOVAL AREA #1

GRID AREA	TREES TO REMAIN
1A	*NO TREES REMOVED*
1B	*NO TREES REMOVED*
1C	10" OAK = 10 POINTS 14" OAK = 15 POINTS TOTAL = 25 POINTS
1D	*NO TREES REMOVED*
1E	*NO TREES REMOVED*

GRID AREA	TREES TO BE REMOVED
1C	5" OAK 6" OAK 6" PINE 12" PINE 14" OAK 15" PINE 24" PINE



TREE REMOVAL AREA #2

GRID AREA	TREES TO REMAIN
2A	*NO TREES REMOVED*
2B	7" MAPLE = 10 POINTS 8" HICKORY = 10 POINTS 25" PINE = 15 POINTS TOTAL = 35 POINTS
2C	6" OAK = 5 POINTS 6" MAPLE = 5 POINTS 8" MAPLE = 10 POINTS DOUBLE 16" PINE = 30 POINTS TOTAL = 50 POINTS
2D	*NO TREES REMOVED*

GRID AREA	TREES TO BE REMOVED
2B	3" BIRCH (DOUBLE) 10" PINE 35" PINE
2C	14" PINE

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LEGEND

- HOTL / REFERENCE LINE
- FHZ — FLOOD HAZARD ZONE
- PSS — 50' NHDES PRIMARY STRUCTURE SETBACK
- TBZ — 100' NHDES TIDAL BUFFER ZONE
- 1A — GRID BOUNDARY/NUMBER
- TREE TO REMAIN
- TREE TO BE REMOVED WITHIN 50-FOOT REFERENCE LINE

STATE OF NEW HAMPSHIRE
MICHAEL L PARSONT
No. 028
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
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GRAPHIC SCALE

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VEGETATION MANAGEMENT PLAN

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	1"=20'
PROJ. N0:	NH-1501	SHEET NO.	20

PLAN INTENT:

THE INTENT OF THIS PLAN IS TO PROVIDE AN APPROVED LEACH FIELD TO HANDLE THE LOADING FOR A 6 BEDROOM SINGLE-FAMILY RESIDENCE. THE HOUSE, GARAGE, AND PIER SHED WILL UTILIZE GRAVITY FLOW TO TWO SEPTIC TANKS WITH THE SECOND TANK TO PUMP INTO THE D-BOX.

INFILTRATOR NOTE

INFILTRATOR WATER TECHNOLOGIES TREATMENT SYSTEMS ARE APPROVED BY NHDES IN ACCORDANCE WITH PART ENV-WS 1024. THIS SYSTEM IS DESIGNED IN ACCORDANCE WITH THE NH DESIGN AND INSTALLATION MANUAL FOR QUICK4 CHAMBERS IN NEW HAMPSHIRE.

SITE NOTES

1. GRADING SHOWN IS SUGGESTED AND PRIMARILY FOR THE SEPTIC SYSTEM. ADDITIONAL GRADING IS AT THE DISCRETION OF THE CONTRACTOR AND/OR OWNER. MINIMUM FILL EXTENSIONS AND SLOPE REQUIREMENTS MUST BE MAINTAINED.
2. NH-DES REQUIRES A PERIMETER DRAIN IF THE SLAB IS LESS THAN 18" TO THE SHWT. CERTAIN TOWNS REQUIRE A PERIMETER DRAIN AT ALL TIMES - CHECK LOCAL REGULATIONS. BEALS ASSOCIATES, PLLC. RECOMMENDS A PERIMETER DRAIN BE INSTALLED REGARDLESS.
3. BEST MANAGEMENT PRACTICES ARE TO BE FOLLOWED DURING ALL CONSTRUCTION TO PREVENT SITE ALTERATION THAT MAY CAUSE EROSION AND/OR DRAINAGE ISSUES.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONSTRUCT THE FOUNDATION IN SUCH A MANNER AS TO PREVENT WATER INFILTRATION IN THE BASEMENT.
5. PER ENV-WQ 1003.13 (A)(3) THERE ARE NO KNOWN CEMETERIES LOCATED WITHIN 100' OF ANY PART OF THE EFFLUENT DISPOSAL SYSTEM.

THIS PLAN IS NOT A SURVEY

THE BUILDER/SITE CONTRACTOR IS RESPONSIBLE TO CONFIRM THE ZONING DIMENSIONAL REQUIREMENTS AND SETBACK LINE REQUIREMENTS PRIOR TO INITIATING CONSTRUCTION OF THE PROPOSED HOUSE AND SEPTIC SYSTEM. THE ZONING ORDINANCE OF THE MUNICIPALITY IS TO BE COMPLIED WITH. THE BUILDER/SITE CONTRACTOR IS ALSO RESPONSIBLE TO CONTACT THE MUNICIPALITY REGARDING INSPECTIONS PRIOR TO AND DURING CONSTRUCTION, I.E. LOCATION AND BED-BOTTOM INSPECTIONS. THIS PLAN IS NOT INTENDED TO BE USED AS A SITE PLAN.

GENERAL NOTES

1. THIS PLAN DOES NOT REPRESENT A PROPERTY BOUNDARY SURVEY OR ENGINEERED SITE PLAN.
   EVERY ATTEMPT HAS BEEN MADE TO ACCURATELY IDENTIFY THE RELEVANT PROPERTY LINES DEPICTED ON THIS PLAN. HOWEVER, SEPTIC SYSTEM PLANS ARE NOT INTENDED FOR BUILDING LAYOUT. A LICENSED LAND SURVEYOR SHOULD BE RETAINED TO LAY OUT ALL BUILDINGS ON THE SITE AND VERIFY THAT THEY WILL BE IN COMPLIANCE WITH ALL APPLICABLE LOCAL ZONING REQUIREMENTS PRIOR TO CONSTRUCTION.
2. ANY DISCREPANCY BETWEEN THESE PLANS AND THE APPARENT FIELD CONDITIONS TO BE REPORTED TO THE DESIGNER PRIOR TO CONSTRUCTION.
3. BOUNDARY INFORMATION FROM ELECTRONIC SURVEY PLAN BY BERRY SURVEY & ENGINEERING.
4. CHAMBERS TO BE QUICK4 STANARD CHAMBERS IN A CLUSTER DISTRIBUTED BY INFILTRATOR SYSTEMS, INC. OF OLD SAYBROOK, CT OR EQUAL, TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
5. ALL CONCRETE PRODUCTS ARE TO BE MANUFACTURED BY A-I FOSS INC OF FARMINGTON, N.H. OR EQUAL.
6. ALL SEPTIC TANKS MUST HAVE BAFFLES AT INLETS, OUTLETS, AND BETWEEN COMPARTMENTS.
7. CONCRETE STRUCTURES TO BE WATER TIGHT. ALL JOINTS, INLETS, OUTLETS, ETC. TO BE SEALED WITH NON-SHRINK GROUT - "WATER PLUG", "BLOCK BOND", OR EQUAL PER ENV-WQ 1008.04(C). CONCRETE STRUCTURES INSIDE WELL RADIUS MUST BE SEALED TO PREVENT INFILTRATION AND/OR EXFILTRATION.
8. SEPTIC TANK MUST BE A MINIMUM OF 5 FEET FROM FOUNDATION DRAIN. CHAMBERS TO BE A MINIMUM OF 15 FEET FROM FOUNDATION DRAIN. DISCHARGE OF FOUNDATION DRAIN OUTFALL TO BE A MINIMUM OF 25 FEET FROM SEPTIC TANK AND CHAMBERS.
9. 4 INCH GRAVITY SEWER TO BE SDR 35 OR SCHEDULE 40 PVC. WHERE WELL IS <75' FROM SEPTIC TANK, 4" GRAVITY SEWER TO BE SDR 26. FORCE MAINS TO BE SDR 26, SCHEDULE 40 PVC, OR POLYETHYLENE PIPE ("POLY PIPE"), 100-150 PSI RATING.
10. MINIMUM PIPE SLOPES: BUILDING TO TANK = 2%. TANK TO D-BOX = 1%
11. DISTRIBUTION BOX SHALL HAVE FLOW EQUALIZER OUTLET FITTINGS.
12. PROVIDE A MINIMUM OF A 2" DROP BETWEEN DISTRIBUTION BOX OUTLET AND CHAMBER INLET.
13. INLET/OUTLET INTERCONNECTIONS SHALL EXTEND NO MORE THAN 4" INTO CHAMBER BUT NO LESS THAN 2" INTO CHAMBER.
14. SYSTEM MUST BE INSPECTED AND APPROVED BY NH-DES PRIOR TO BACKFILLING.
15. EFFLUENT DISPOSAL AREA MAY BE REBUILT IN PLACE, SHOULD FAILURE OCCUR, PROVIDED THAT THE REQUIREMENTS OF ADMINISTRATIVE RULE ENV-WS 1004.18 ARE MET.
16. CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUFACTURER'S INSTALLATION MANUAL.

SITE PREPARATION AND FILL

1. CHECK DESIGN INTENT AND VERIFY THE ELEVATION OF EXISTING GROUND (UPSLOPE SIDE) BEFORE DISTURBING SITE. THE "DESIGN INTENT" MUST BE MAINTAINED.
2. REMOVE ALL TREES, BRUSH, BOULDERS, AND DEBRIS FROM THE AREA TO BE FILLED. STUMPS NOT TO BE BURIED WITHIN 75' OF EFFLUENT DISPOSAL AREA, UNLESS UPSLOPE (35' MIN.)
3. REMOVE TOPSOIL. LEAVE SUBSOIL IN PLACE. DO NOT COMPACT SUBSOIL WITH MACHINERY. SCARIFY WITH TEETH OF EXCAVATOR BEFORE PLACING FILL. SCARIFY PARALLEL WITH CONTOURS, WORKING FROM THE CENTER OUTWARD. SOIL MUST BE DRY PRIOR TO PREPARATION.
4. MATERIAL SPECIFICATIONS:
   TOPSOIL: 6" OF CLEAN LOAM TO BE PLACED AS BLANKET ON TOP AND SIDE SLOPES.
   CLEAN FILL: PERMEABLE SOIL FREE OF ROOTS, DEBRIS, ORGANICS, AND STONES GREATER THAN 3".
   SEPTIC SAND: FILL TO RAISE THE SYSTEM AND FOR THE SIDE SLOPES AS SHOWN ON THE SCHEMATIC "FILL SECTION A-A" TO MEET THE FOLLOWING SPECIFICATION: MEDIUM TO COARSE TEXTURED SAND, NO GREATER THAN 5% PASSING THE NUMBER 200 SIEVE, AND NO PARTICLES LARGER THAN 3".
   BEDDING SAND: USE CLEAN COARSE SAND MEETING ASTM STANDARD C-33 (CONCRETE SAND). BEDDING SAND USED BETWEEN, 6" MINIMUM AROUND, ABOVE & BELOW CHAMBERS.
5. SAND FILL TO BE PUSHED ONTO PREPARED SURFACE FROM THE SIDE. DO NOT ALLOW EQUIPMENT ON THE SCARIFIED SOIL SURFACE. FILL BETWEEN CHAMBERS TO BE CAREFULLY PLACED WITH EXCAVATOR.
6. PLACE FILL IN 12" LOOSE LAYERS USING A TRACK TYPE TRACTOR WITH BLADE. ALWAYS KEEP A MINIMUM OF 9" OF FILL MATERIAL BENEATH TRACKS OF TRACTOR TO MINIMIZE COMPACTION OF NATURAL SOIL. EACH LAYER SHALL BE SPREAD IN UNIFORM THICKNESS PRIOR TO PLACING NEXT LAYER. CONTINUOUS GRADING AND SHAPING SHALL BE CARRIED OUT TO ASSURE UNIFORM DENSITY THROUGHOUT EACH LAYER.
7. ENTIRE FILLED AREA SHOULD BE COVERED WITH TOPSOIL, SEEDED, AND MULCHED IMMEDIATELY AFTER BACKFILLING TO PREVENT EROSION.
8. BACKFILL DEPTH OVER SYSTEM TO BE 12"-24". CROWN 2% MIN. TO PROVIDE RUNOFF. SYSTEM BACKFILLED WITH MORE THAN 18" MUST BE VENTED.

OPERATION AND MAINTENANCE

1. IT IS THE OWNER'S RESPONSIBILITY TO MAINTAIN THIS SYSTEM IN ACCORDANCE WITH THESE "OPERATION AND MAINTENANCE" INSTRUCTIONS.
2. EVERY SYSTEM'S DESIGN CAPACITY IS LIMITED. CAREFUL AND REASONABLE WATER USE IS REQUIRED TO MAXIMIZE THE SYSTEM'S LIFE.
3. THIS SYSTEM MUST BE OPERATED WITHIN ITS DESIGN CAPACITY. THE AVERAGE DAILY FLOW TO THE EFFLUENT DISPOSAL AREA SHOULD BE NO MORE THAN 1/2 ITS APPROVED DESIGN CAPACITY.
4. SYSTEM IS NOT DESIGNED TO HANDLE WASTE FROM A SEWAGE EJECTOR PUMP.
5. SYSTEM IS NOT DESIGNED FOR A GARBAGE DISPOSAL.
6. DO NOT DISPOSE OF GREASE, CHEMICALS, SOLVENTS ETC. VIA THIS SYSTEM.
7. IT IS NOT RECOMMENDED THAT THE BACKWASH FROM WATER SOFTENERS BE DISCHARGED INTO THE SEPTIC SYSTEM. CURRENT NH-DES RULES ALLOW THAT WATER SOFTENER BACKWASH BE DISCHARGED TO A SEPARATE DRYWELL. NO DESIGN OR APPROVAL IS REQUIRED FOR THIS.
8. SEPTIC TANK MUST BE PUMPED BY A LICENSED HAULER AT LEAST EVERY TWO YEARS. KEEP PUMPING RECEIPTS AS PROOF OF MAINTENANCE. CHECK TANK YEARLY. IF SLUDGE AND SURFACE SCUM EXCEED 1/3 OF LIQUID DEPTH, HAVE TANK PUMPED.
9. DO NOT REMOVE SNOW; ALLOW VEHICULAR, NOR LIVESTOCK TRAVEL OVER COMPONENTS OF SYSTEM NOT DESIGNED TO WITHSTAND AN H-20 WHEEL LOAD. COMPONENTS LOCATED UNDER PAVEMENT WILL BE PROVIDED ACCESS USING RISERS AND MANHOLE COVERS CAPABLE OF WITHSTANDING TRAFFIC.
10. THE OWNER SHOULD KEEP A COPY OF THIS PLAN WITH HIS/HER IMPORTANT DOCUMENTS FOR FUTURE REFERENCE. THIS PLAN SHOULD BE PROVIDED TO FUTURE OWNER. COPIES ARE AVAILABLE FROM THIS OFFICE.
11. IF THIS DESIGN UTILIZES A ZABEL TYPE FILTER, FILTER SHOULD BE CLEANED REGULARLY. REFER TO FILTER'S OWNER MANUAL FOR RECOMMENDED FREQUENCY OF CLEANING.

NITRATE SETBACKS:

PROPOSED DESIGN FLOW = 900 GPD

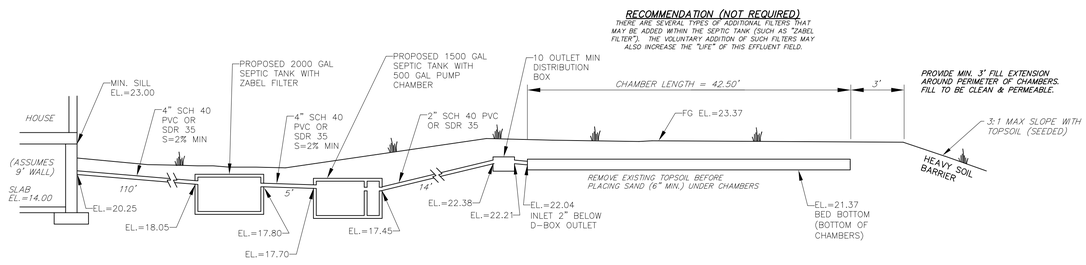
PER NH-DES ENV-WQ 1008.05, FOR DESIGN FLOWS LESS THAN 1,000 GPD, MINIMUM SETBACK DISTANCES FROM PROPERTY LINES:
- 50' HYDRAULICALLY DOWN-GRADIENT
- 25' HYDRAULICALLY SIDE-GRADIENT
- 12' HYDRAULICALLY UP-GRADIENT

ESHWT ELEVATION CALCS.

ORIGINAL GRADE @ HIGHEST POINT = 21.54',
ESHWT = 32" OR 2.67'
ESHWT ELEVATION = 18.87'
MIN. BED BOTTOM = 21.37'

CHAMBER LAYOUT:

SYSTEM TO INCLUDE 9 ROWS OF 10 CHAMBERS WITH EACH ROW TO CONTAIN AN END CAP ON BOTH ENDS IN A CLUSTER CONFIGURATION.



*CONTRACTOR MAY VARY TANK ELEVATIONS TO ACCOMMODATE EXISTING CONDITIONS. MINIMUM SLOPE REQUIREMENTS MUST BE MAINTAINED.

SYSTEM PROFILE
N.T.S.

LOCUS MAP
1"=1500'

NOTES:

1. JURISDICTIONAL FRESHWATER WETLANDS AND WATERCOURSES WERE DELINEATED BY JOHN P. HAYES III, CWS (#18), CSS (#87) ON SEPTEMBER 22 & 23, 2021 IN ACCORDANCE WITH ENV-WT 406 AS REQUIRED BY THE NHDES WETLANDS BUREAU.

DESIGN NOTES:

PERC RATE:
10 MIN/IN

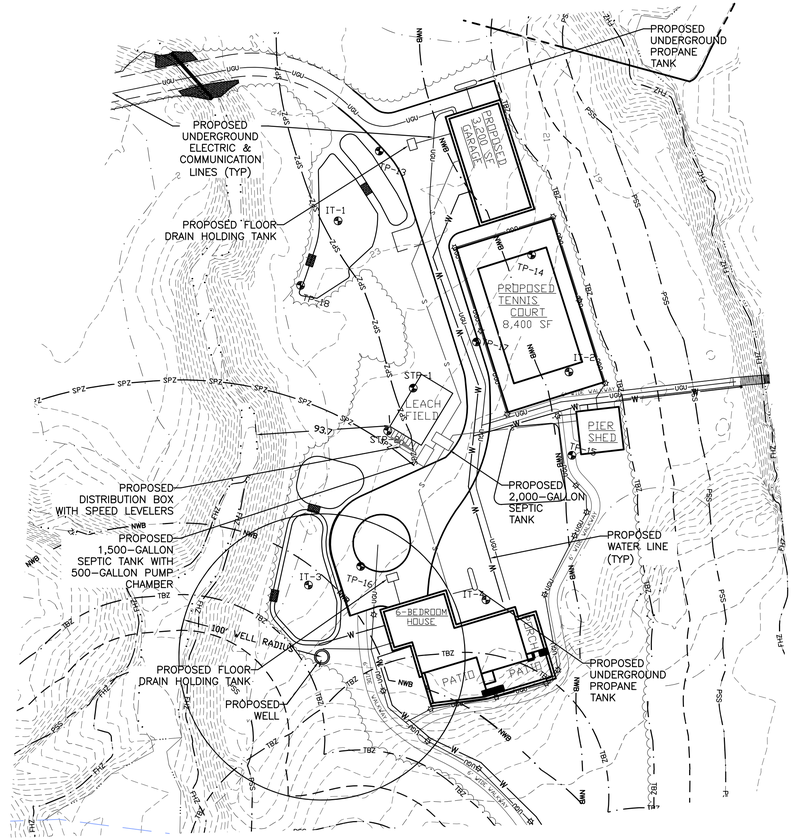
HYDRAULIC LOADING (PER ENV-WQ 1000, TABLE 1008-1):
6 BEDROOM DWELLING X 150 GPD = 900 GPD

EFFLUENT DISPOSAL AREA:
6 BEDROOMS: 1,100 SF + 278 SF x 2 = 1,656 SF
ALLOWED 40% AREA REDUCTION: 1,656 SF x (0.60) = 994 SF

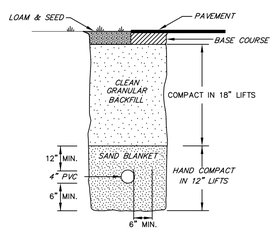
PROVIDED: EDA = 9 ROWS OF 10 CHAMBERS = 90 CHAMBERS
= 90 CHAMBERS x 11.32 SF/CHAMBER = 1,018 SF

SETBACKS TO NEAREST:

ABUTTING WELL:	100'+
SURFACE WATER:	75'+
POORLY DRAINED WETLAND:	50'+
VERY POORLY DRAINED WETLAND:	75'+
OPEN DRAINAGE:	75'+
TOP OF STEEP SLOPE:	20'+
STORMWATER POND NOT INTERCEPTING SHWT:	35'+



GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.



NOTES:
1. MINIMUM COVER SHALL BE 6'+ FOR PLOWED AREAS, 4'+ FOR CROSS COUNTRY
2. MULTIPLE PIPES IN THE SAME TRENCH SHALL BE SEPARATED BY 12"+

STANDARD TRENCH DETAIL
FOR EFFLUENT SEWER OR FORCEMAIN
N.T.S.

TEST PIT LOGS

TEST PITS PERFORMED BY: JAMES GOVE, CSS #004, ON 10/30/24

Test Pit No.	STP-1		
Horizon	Color (Munsell)	Texture	Structure - Consistence - Redox
A 0-10"	10YR3/2	Loamy sand	Granular - Friable - None
B 10-32"	10YR5/4	Sand	Single grain - Loose - None
C 32-65"	2.5Y5/3	Sand	Single grain - Loose - 20% 10YR2/1 & 7.5YR5/6
ESHWT:	32"		
Termination:	65"		
Refusal:	No		
Obs. Water:	None		
Perc Rate:	10 Minutes/Inch @ 32"		

Test Pit No.	STP-2		
Horizon	Color (Munsell)	Texture	Structure - Consistence - Redox
A 0-10"	10YR3/2	Loamy sand	Granular - Friable - None
B 10-36"	10YR5/4	Sand	Single grain - Loose - None
C 36-55"	2.5Y5/3	Sand	Single grain - Loose - 20% 10YR2/1 & 7.5YR5/6
C2 55-65"	2.5Y5/3	Silty Clay Loam	Massive - Firm - 20% 10YR2/1 & 5YR5/6
ESHWT:	36"		
Termination:	65"		
Refusal:	No		
Obs. Water:	None		
Perc Rate:	10 Minutes/Inch @ 36"		

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

OWNER OF RECORD

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043
BOOK 5159, PAGE 995 &
BOOK 4978, PAGE 1003

REVISIONS:	DATE:

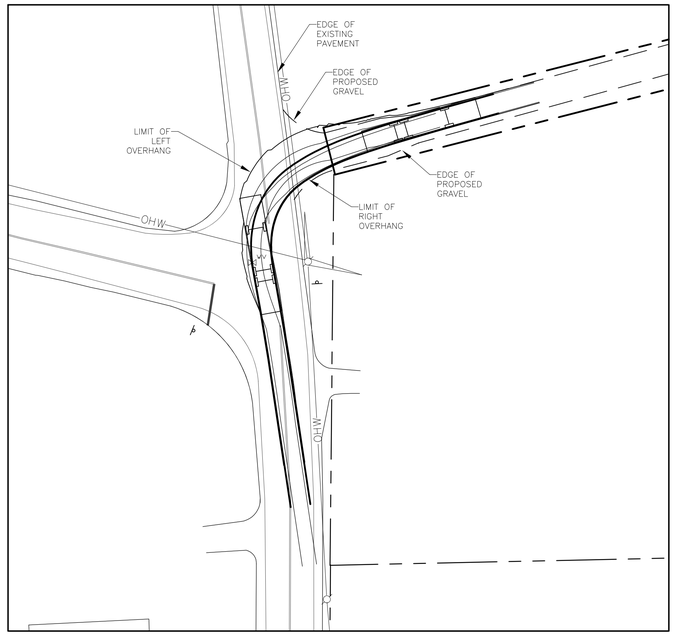
DESIGNER STAMP

NEW HAMPSHIRE Designer of Subsurface Disposal Systems
Christian O. Smith No. 1543
Department of Environmental Services

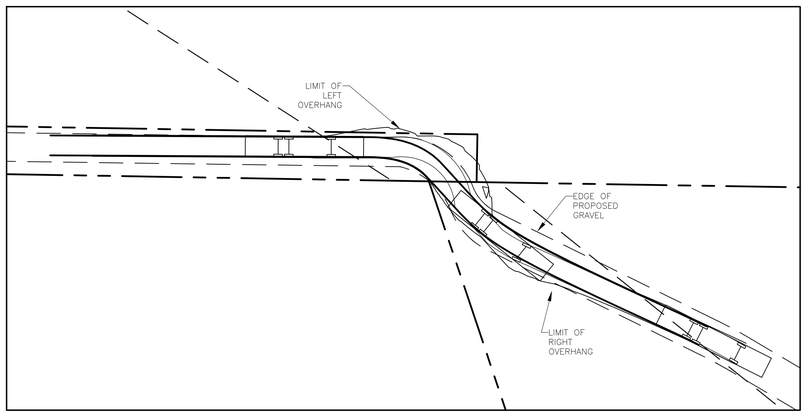
EFFLUENT DISPOSAL PLAN

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

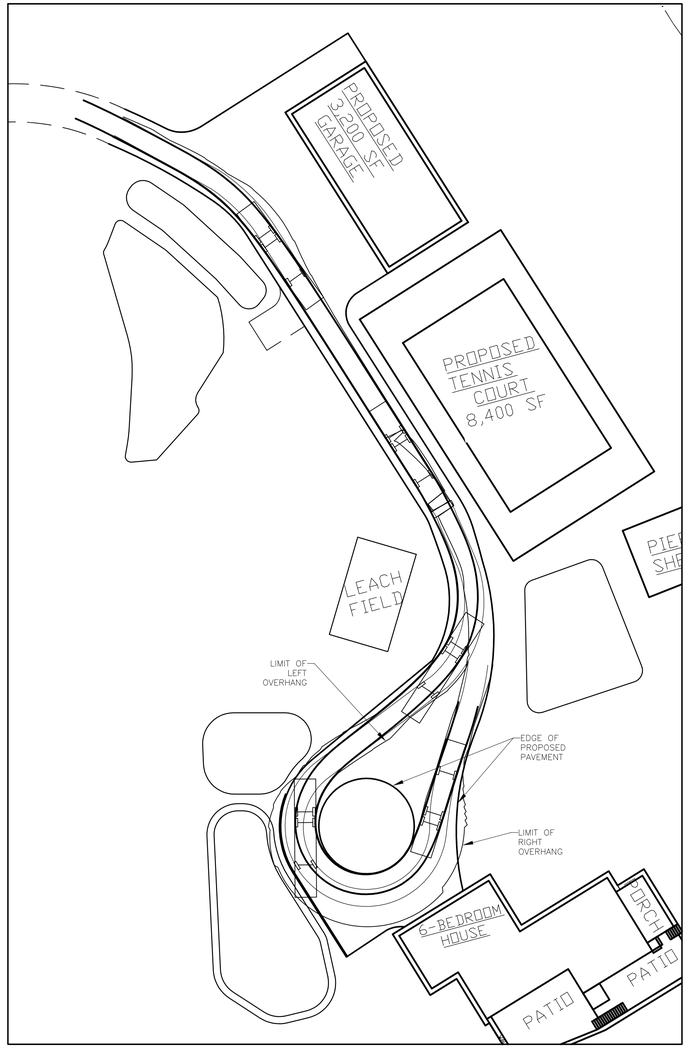
DATE: NOV 12, 2024	SCALE: 1" = 150'
PROJ. N0: NH-1501	SHEET NO. 21



BACK ROAD / GRAVEL DRIVEWAY ENTRANCE



GRAVEL DRIVEWAY PINCH POINT

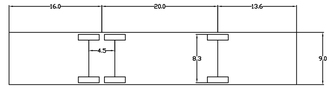


DRIVEWAY & TURN AROUND

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

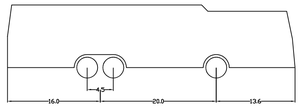
Dover Fire Ladder Truck



FEET

Tire Diameter:	3.6

Dover Fire Ladder Truck



FEET

Vehicle Width:	9
Wheel Width:	8.33
Tire Diameter:	3.6

GRAPHIC SCALE

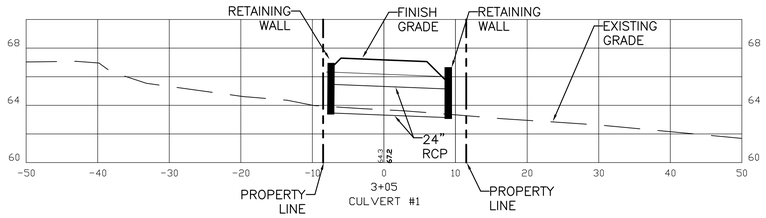
(IN FEET)
1 inch = 30 ft.

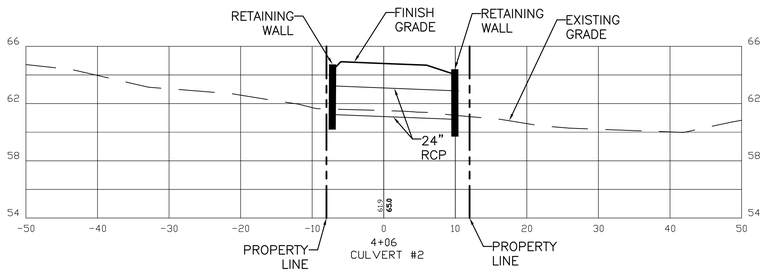
REVISIONS:	DATE:

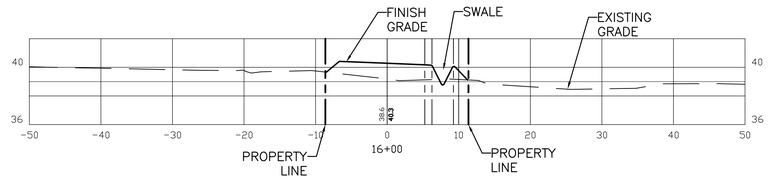
LADDER TRUCK MANEUVERING PLAN

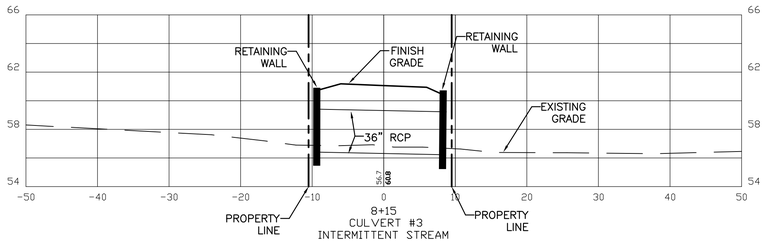
PLAN FOR:
BACK ROAD
DOVER, NH

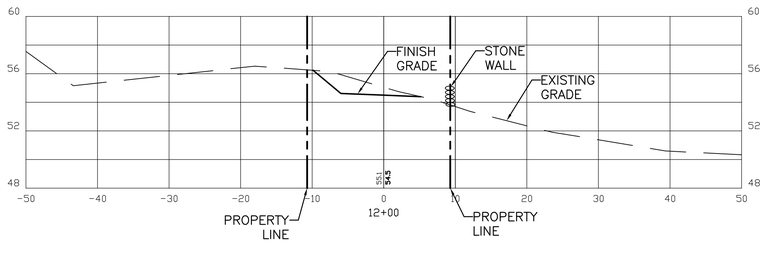
DATE:	NOV 12, 2024	SCALE:	1"=30'
PROJ. N0:	NH-1501	SHEET NO.	22

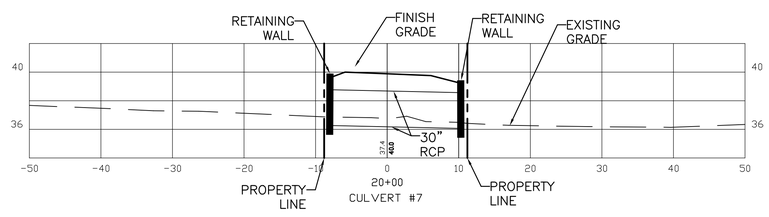


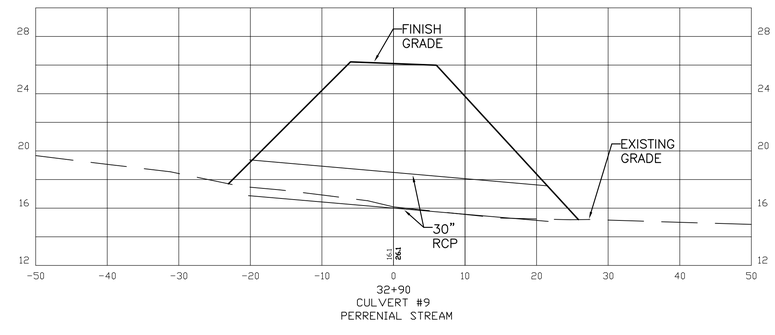












PREPARED FOR:

HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
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STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No.9900
PROFESSIONAL ENGINEER

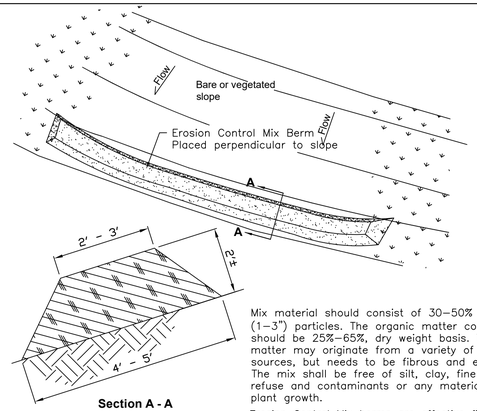
PROFILE SCALES:
HORIZONTAL: 1"=10' VERTICAL: 1"=2'

REVISED PER REVIEW COMMENTS	12.23.24
REVISIONS:	DATE:

DRIVEWAY SECTIONS

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	NOV 12, 2024	SCALE:	1"=10'
PROJ. N0:	NH-1501	SHEET NO.	23



Section A - A

Mix material should consist of 30–50% large (1–3") particles. The organic matter content should be 25%–65%, dry weight basis. The organic matter may originate from a variety of vegetative sources, but needs to be fibrous and elongated. The mix shall be free of silt, clay, fine sand, refuse and contaminants or any material toxic to plant growth.

Erosion Control Mix berms are effective filters for overland flow conditions and should not be used to filter concentrated flow such as that found in drainage ditchs, streams, etc.

Erosion Control Mix Berm

** WITHIN 50 FEET DISTURBANCE TO ANY WETLAND, A DOUBLE ROW OF EROSION BARRIER (SILT FENCE, SILT SOCK, OR MULCH BERM) SHALL BE INSTALLED.

TEMPORARY EROSION CONTROL MEASURES

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT NO MORE THAN 5 ACRES OF LAND SHALL BE EXPOSED BEFORE DISTURBED AREAS ARE STABILIZED*.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED OR DIRECTED BY THE ENGINEER ALL DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADES AND ELEVATIONS.
3. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 4" OF LOAM AND SEEDED WITH NOT LESS THAN 1.10 POUNDS OF SEED PER 1000 SQUARE FEET OF AREA. (48 POUNDS PER ACRE) SEE SEED SPECIFICATIONS THIS SHEET.
4. SILT FENCES AND OTHER EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY RAIN EVENT GREATER THAN 0.25" DURING THE LIFE OF THE PROJECT. ALL DAMAGED AREAS SHALL BE REPAIRED, SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE–VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED WITHIN 3 DAYS OF FINAL GRADING, PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF SOIL.

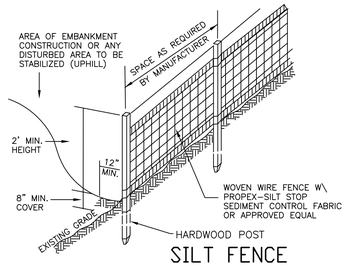
* AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED.
- A MINIMUM OF 3 INCHES OF NON–EROSIVE MATERIAL SUCH AS RIPRAP HAS BEEN INSTALLED.
- EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

CONSTRUCTION SPECIFICATIONS

1. STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
2. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION AND AIR AND WATER POLLUTION WILL BE MINIMIZED.
3. WHEN TIMBER STRUCTURES ARE USED, THE TIMBER SHALL EXTEND AT LEAST 18" INTO THE SOIL.
4. STRAW BALES SHALL BE ANCHORED INTO THE SOIL USING 2" X 2" STAKES DRIVEN THROUGH THE BALES AND AT LEAST 18 INCHES IN TO THE SOIL.
5. SEEDING, FERTILIZING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE APPROPRIATED VEGETATIVE BMP.
6. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.
7. THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL TAKE PRECAUTIONS AND INSTRUCTIONS FROM THE PLANNING DEPARTMENT IN ORDER TO PREVENT, ABATE AND CONTROL THE EMISSION OF FUGITIVE DUST INCLUDING BUT NOT LIMITED TO WETTING, COVERING, SHIELDING, OR VACUUMING.
8. THE NH COMMISSIONER OF AGRICULTURE PROHIBITS THE COLLECTION, POSSESSION, IMPORTATION, TRANSPORTATION, SALE, PROPAGATION, TRANSPLANTATION, OR CULTIVATION OF PLANTS BANNED BY NH LAW RSA 430:53 AND NH CODE ADMINISTRATIVE RULES AGR 3800. THE PROJECT SHALL MEET ALL REQUIREMENTS AND THE INTENT OF . RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES
9. THE CONSTRUCTION SITE OPERATOR AND OWNER SHALL SUBMIT A NOTICE OF INTENT (NOI) TO USEPA, WASHINGTON, DC, STORMWATER NOTICE PROCESSING CENTER AT LEAST FORTEEN DAYS PRIOR TO COMMENCEMENT OF WORK ON SITE. EPA WILL POST THE NOI AT http://cfpubl.epa.gov/npdes/stormwater/noi/noisearch.cfm. AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE STATUS".

CONSTRUCTION SEQUENCE

1. WETLAND BOUNDARIES SHALL BE MARKED IN THE FIELD PRIOR TO CONSTRUCTION/START OF CLEARING AS NECESSARY TO AVOID INADVERTENT IMPACTS.
2. INSTALL EROSION CONTROL MEASURES ALONG PROPOSED DRIVEWAY.
3. CUT AND REMOVE TREES AS DIRECTED OR REQUIRED FOR THE INSTALLATION OF THE PROPOSED DRIVEWAY INTO THE SITE.
4. CONSTRUCT GRAVEL DRIVEWAY AND ASSOCIATED WETLAND/STREAM CROSSINGS ALONG DRIVEWAY.
5. INSTALL EROSION CONTROL MEASURES ALONG PROPOSED WORK BEYOND DRIVEWAY.
6. CUT AND REMOVE TREES AS DIRECTED OR REQUIRED FOR THE DEVELOPMENT OF THE AREA BEYOND THE DRIVEWAY.
7. CONSTRUCT AND/OR INSTALL TEMPORARY AND PERMANENT SEDIMENT EROSION AND DETENTION CONTROL FACILITIES, AS REQUIRED. EROSION, SEDIMENT, AND FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO ANY EARTH MOVING OPERATION, AND PRIOR TO DIRECTING RUN–OFF TO THEM.
8. CLEAR, CUT, GRUB, AND DISPOSE OF DEBRIS IN APPROVED FACILITIES.
9. EXCAVATE AND STOCKPILE TOPSOIL / LOAM. ALL DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
10. CONSTRUCT ADDITIONAL DRIVEWAY AND ITS ASSOCIATED DRAINAGE STRUCTURES.
11. CONSTRUCT BUILDING FOUNDATIONS AND SITE AMENITIES.
12. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES AND DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS REQUIRED OR DIRECTED.
13. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, SEDIMENT TRAPS, ETC. TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS OR PROPERTY.
14. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
15. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE–VEGETATE ALL DISTURBED AREAS.
17. ALL SWALES AND DRAINAGE STRUCTURES WILL BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUNOFF BEING DIRECTED TO THEM.
18. FINISH GRAVELING/PAVING ALL ROADWAYS AND STABILIZE MATERIAL STORAGE AREAS.



SILT FENCE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES AND FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP MID AND BOTTOM SECTIONS AND BE EMBEDDED INTO GROUND A MINIMUM OF 8". 2. THE FENCE POSTS SHALL BE A MINIMUM 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY–PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND PROPERLY DISPOSED OF.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND RE–VEGETATED

MAINTENANCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

WINTER MAINTENANCE

1. ALL DISTURBED AREAS THAT DO NOT HAVE AT LEAST 85% VEGETATIVE COVERAGE PRIOR TO OCTOBER 15TH, SHALL BE STABILIZED BY APPLYING MULCH AT A RATE OF 3–4 TONS PER ACRE. ALL SIDE SLOPES, STEEPER THAN 4:1, THAT ARE NOT DIRECTED TO SWALES OR DETENTION BASINS, SHALL BE LINED WITH BIODEGRADABLE/PHOTODEGRADABLE "JUTE MATTING" (EXCELSIOR'S CURLEX II OR EQUAL). ALL OTHER SLOPES SHALL BE MULCHED AND TACKED AT A RATE OF 3–4 TONS PER ACRE. THE APPLICATION OF MULCH AND/OR JUTE MATTING SHALL NOT OCCUR OVER EXISTING SNOW COVER. IF THE SITE IS ACTIVE AFTER OCTOBER 15TH, ANY SNOW THAT ACCUMULATES ON DISTURBED AREAS SHALL BE REMOVED. PRIOR TO SPRING THAW ALL AREAS WILL BE STABILIZED, AS DIRECTED ABOVE.

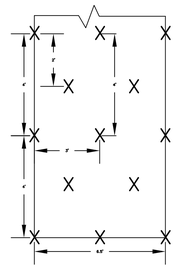
2. ALL SWALES THAT DO NOT HAVE FULLY ESTABLISHED VEGETATION SHALL BE EITHER LINED WITH TEMPORARY JUTE MATTING OR TEMPORARY STONE CHECK DAMS (APPROPRIATELY SPACED). STONE CHECK DAMS WILL BE MAINTAINED THROUGHOUT THE WINTER MONTHS. IF THE SWALES ARE TO BE MATTED WITH PERMANENT LINERS OR RIPRAP WITH ENGINEERING FABRIC, THIS SHALL BE COMPLETED PRIOR TO WINTER SHUTDOWN OR AS SOON AS THEY ARE PROPERLY GRADED AND SHAPED.

3. PRIOR TO OCT. 15TH ALL ROADWAY AND PARKING AREAS SHALL BE BROUGHT UP TO AND THROUGH THE BANK RUN GRAVEL APPLICATION. IF THESE AREAS' ELEVATIONS ARE PROPOSED TO REMAIN BELOW THE PROPOSED SUBGRADE ELEVATION, THE SUBGRADE MATERIAL SHALL BE ROUGHLY CROWNED AND A 3" LAYER OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED. THIS WILL ALLOW THE SUBGRADE TO SHED RUNOFF AND WILL REDUCE ROADWAY EROSION. THIS CRUSHED GRAVEL DOES NOT HAVE TO CONFORM TO NH DOT 304.3, BUT SHALL HAVE BETWEEN 15–25% PASSING THE #200 SIEVE AND THE LARGEST STONE SIZE SHALL BE 2". IF THE SITE IS ACTIVE AFTER NOVEMBER 15TH, ANY ACCUMULATED SNOW SHALL BE REMOVED FROM ALL ROADWAY AND PARKING AREAS.

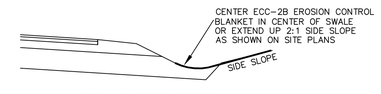
4. AFTER OCTOBER 15TH, THE END OF NEW HAMPSHIRE'S AVERAGE GROWING SEASON, NO ADDITIONAL LOAM SHALL BE SPREAD ON SIDE SLOPES AND SWALES. THE STOCKPILES THAT WILL BE LEFT UNDISTURBED UNTIL SPRING SHALL BE SEEDED BY THIS DATE. AFTER OCTOBER 15TH, ANY NEW OR DISTURBED PILES SHALL BE MULCHED AT A RATE OF 3–4 TONS PER ACRE. ALL STOCKPILES THAT WILL REMAIN THROUGHOUT THE WINTER SHALL BE SURROUNDED WITH SILT FENCING.

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1;3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL KINDS AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS PER 1,000 SQ. FT..
      NITROGEN(N), 50 LBS PER ACRE OR 1. 1 LBS PER 1,000 SQ.FT.
      PHOSPHATE(P2O5), 100 LBS PER ACRE OR 2. 2 LBS PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS PER ACRE OR 2. 2 LBS PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS PER ACRE OF 10–20–20 FERTILIZER OR 1,000 LBS PER ACRE OF 5–10–10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. A NEW ENGLAND NATIVE SEED MIXTURE SHALL BE USED. REFER TO MANUFACTURER'S SPECIFICATIONS FOR RATES OF SEEDING.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 10 TO SEPTEMBER 1.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 SQ. FT.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREA SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIAL STAKE 2 TO 3 YEARS TO BECOME ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, OCCASIONAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.



PHYSICAL SPECIFICATIONS
(ROLL)
WIDTH = 7.5'
LENGTH = 120.0'
WEIGHT = 37 LBS.
AREA = 100 SQUARE YARDS



ROADWAY CROSS–SECTION

East Coast Erosion Blanket ECC–2B
(Double Net Coconut)
INSTALLATION DETAIL

SEEDING GUIDE

USE	SEEDING MIXTURE*	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	FAIR	GOOD	EXCELLENT
	E	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
	D	FAIR	GOOD	GOOD	EXCELLENT
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	F	FAIR	EXCELLENT	EXCELLENT	**
	G	FAIR	EXCELLENT	EXCELLENT	**

RECOMMENDED

GRAVEL PIT, SEE NH–PM–24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

* REFER TO SEEDING MIXTURES AND RATES IN TABLE 7–36.
** POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAY AREAS OR ATHLETIC FIELDS.

NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCT. 15, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH OR FLAT PEA	15	0.35
	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603–583–4860,
FAX. 603–583–4863

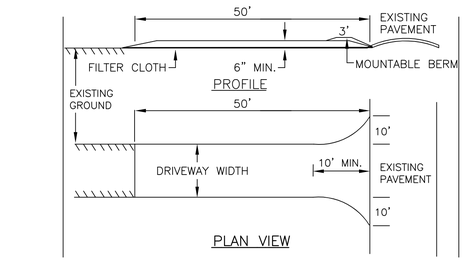
STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH No.9900
PROFESSIONAL ENGINEER

REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

EROSION CONTROL NOTES & DETAILS

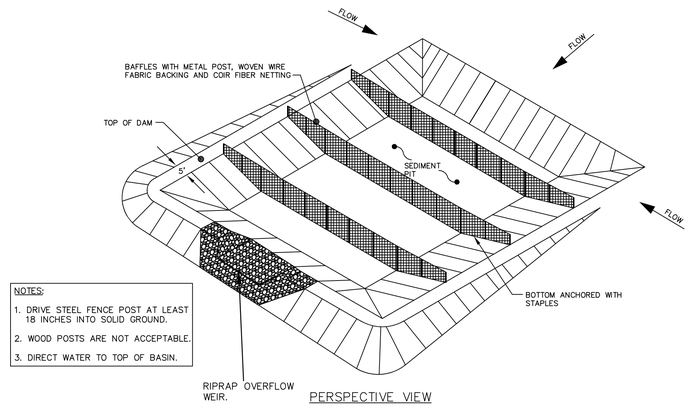
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	NTS
PROJ. NO:	NH-1501	SHEET NO.	24

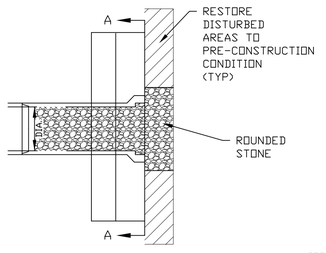


1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER. 5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

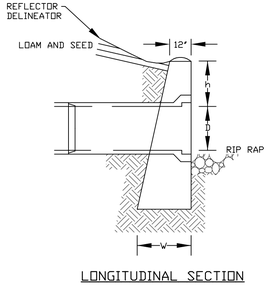


TEMPORARY SEDIMENT BASIN

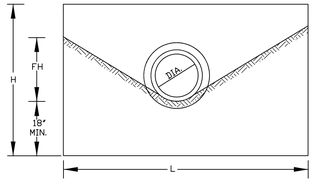


DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4-3	3-9	1-1	1-3	2-0
15"	6-0	4-3	1-7	1-6	2-1
18"	7-0	4-6	1-10	1-6	2-2
24"	9-0	5-0	2-4	1-6	2-3
30"	11-0	5-6	2-10	1-6	2-5
36"	13-0	6-0	3-4	1-6	2-6
42"	15-9	6-9	4-1	1-9	2-9
48"	17-9	7-3	4-7	1-9	2-10

NOTE:
1. ALL DIMENSIONS GIVEN IN FEET AND INCHES EXCEPT PIPE DIAMETER.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. RIP-RAP SHALL BE SIZED TO RESIST THE TRACTIVE VELOCITY FORCES.
4. WHERE MULTIPLE CULVERTS ARE LOCATED, CULVERT SEPARATION SHALL BE MINIMUM 1/2 DIAMETER OF CULVERTS.



LONGITUDINAL SECTION

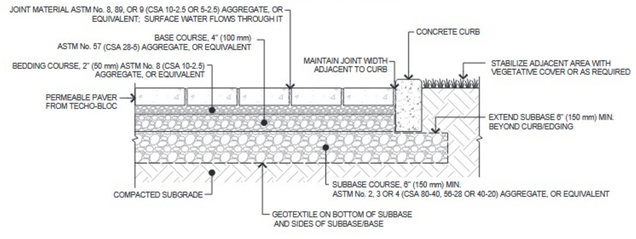


SECTION A-A

CONCRETE HEADWALL DETAIL
NOT TO SCALE

INSTALLATION GUIDE

PERMEABLE PAVER - FULL INFILTRATION TO SOIL SUBGRADE



NOTES:

1. SEE MANUFACTURER'S SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
2. PAVERS SHALL BE PERMEABLE PATIO SLABS BY TECHO-BLOC, OR EQUIVALENT.
3. OWNER TO SELECT FINAL FINISH AND COLOR.

MAINTENANCE NOTES:

1. INSPECT THE PERVIOUS PAVER SYSTEM SEASONALLY AND AFTER LARGE STORMS, LOOKING FOR SIGNS OF CLOGGING SUCH AS PONDING AT THE SURFACE OR ACCUMULATED SEDIMENT.
2. IF CLOGGING OCCURS, REMOVE AND WASH OR REPLACE MATERIAL BETWEEN PAVERS. REMOVE ANY VEGETATIVE GROWTH BETWEEN PAVERS.

PERVIOUS PAVERS
NOT TO SCALE

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

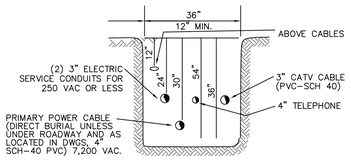
STATE OF NEW HAMPSHIRE
CHRISTIAN O. SMITH
No. 9900
PROFESSIONAL ENGINEER

REVISED PER REVIEW COMMENTS	12.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

CONSTRUCTION DETAILS

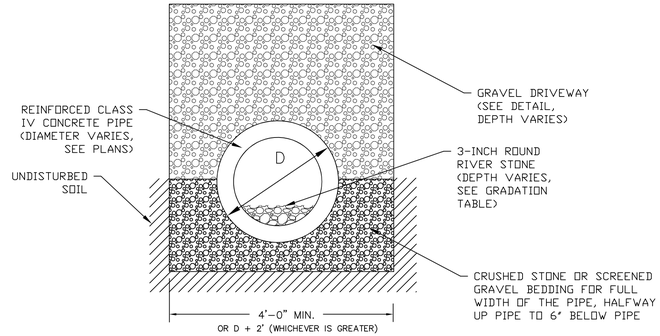
PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	NTS
PROJ. NO:	NH-1501	SHEET NO.	25



NOTES:
1. ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.
2. ELECTRIC SERVICE SHALL BE IN SCH 40 PVC EXCEPT UNDER THE UTILITY EASEMENT WHERE IT SHALL BE SCH 80 PVC. WHERE 90 DEGREE SWEEPS ARE REQUIRED THE MATERIAL SHALL BE GALVANIZED RIGID CONDUIT.
3. TELEPHONE, CATV, AND OTHER CABLES SHALL BE NO CLOSER THAN 12" TO ELECTRIC CONDUITS.

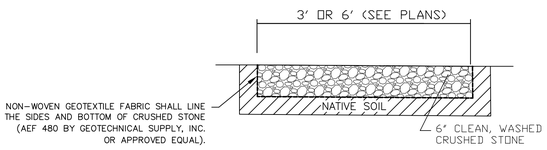
UTILITY TRENCH DETAIL



RECOMMENDED RIVER STONE GRADATION RANGES				
MIN. THICKNESS OF STONE BED = 0.50 FEET				
d50 SIZE=	0.25	FEET	3	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE		SIZE OF STONE (INCHES) FROM		TO
100%		4.5		6
85%		4		4.5
50%		2		4
15%		1		2

TYPICAL DRAINAGE TRENCH DETAIL AT DRIVEWAY WETLAND CROSSINGS

NOT TO SCALE

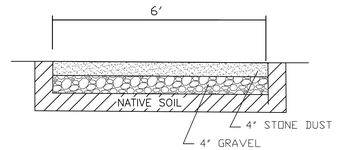


MAINTENANCE NOTES:

1. INSPECT THE CRUSHED STONE WALKWAYS SEASONALLY AND AFTER LARGE STORMS, LOOKING FOR SIGNS OF CLOGGING SUCH AS PONDING AT THE SURFACE OR ACCUMULATED SEDIMENT.
2. IF CLOGGING OCCURS, REMOVE AND WASH OR REPLACE MATERIAL. REMOVE ANY VEGETATIVE GROWTH BETWEEN STONES.

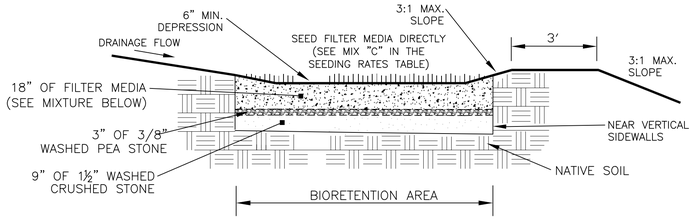
WALKWAY SECTION (CRUSHED STONE INSIDE TBZ)

NOT TO SCALE



WALKWAY SECTION (STONE DUST OUTSIDE TBZ)

NOT TO SCALE



FILTER MEDIA MIXTURE:

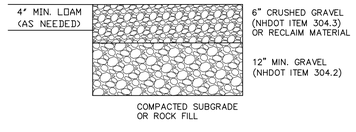
- 20% COMPOST/FINELY SHREDDED BARK OR WOOD MULCH W/ <5% PASSING THE #200 SIEVE
- 30% LOAMY TOPSOIL
- 50% SANDY SOIL (SAND PORTION SHALL BE ASTM C33 FINE AGGREGATE)

BIORETENTION POND NOTES:

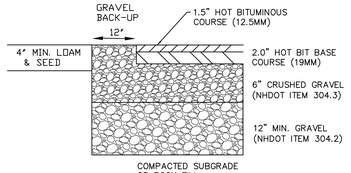
1. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATION WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
2. AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
3. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOF, WATER FROM EXCAVATIONS) TO THE BIO-RETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
4. DO NOT PLACE INFILTRATION SYSTEM INTO SERVICE UNTIL THE BIORETENTION POND HAS BEEN PLANTED AND CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. BIORETENTION POND'S FILTER MEDIA CAN BE SEEDED DIRECTLY WITHOUT ADDITIONAL LOAM.

BIORETENTION POND DETAIL

NOT TO SCALE



TYPICAL GRAVEL SECTION



NOTES: * IN AREAS OF BEDROCK, MINIMUM 24" SEPARATION FROM BANK RUN GRAVEL
* PAVEMENT TRENCH PATCH SHALL MATCH EXISTING PAVEMENT DEPTHS.

TYPICAL PAVEMENT SECTION

NEW ASPHALT

PREPARED FOR:
HEATH J. TODD REVOCABLE TRUST
HEATH J. TODD, TRUSTEE
402 WEBBER HILL ROAD
KENNEBUNK, ME 04043

BA BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

STATE OF NEW HAMPSHIRE — CHRISTIAN O. SMITH No.9900 — LICENSED PROFESSIONAL ENGINEER

REVISED PER REVIEW COMMENTS	11.23.24
REVISED PER REVIEW COMMENTS	11.12.24
REVISIONS:	DATE:

CONSTRUCTION DETAILS

PLAN FOR:
BACK ROAD
DOVER, NH

DATE:	AUGUST 2, 2024	SCALE:	NTS
PROJ. N0:	NH-1501	SHEET NO.	26

Crouser, Paul

From: Kevin McEneaney <kevin@surveynh.com>
Sent: Thursday, February 6, 2025 1:03 PM
To: Crouser, Paul
Cc: Benton, Donna
Subject: 31 Sixth Street Lot Line Adjustment

Follow Up Flag: Follow up
Flag Status: Flagged

Security Notice: External sender. Use caution with hyperlinks or attachments.

Paul
After discussions with our client, he has decided to withdraw the application for a lot line adjustment at this time.

Kevin McEneaney

McEneaney Survey Associates
Civilworks New England
P.O. Box 1166
Dover , NH 03821

603-742-0911
603-749-0443

§ 170-24. Accessory dwelling units. [Amended 6-22-2016 by Ord. No. 2016.06.08-010]

Where permitted, an accessory dwelling unit shall comply with the following:

A. A maximum of one accessory dwelling unit (ADU) per property is permitted. In residential districts other than the R-40, more than one ADU may be allowed provided the second unit meets HUD Fair Market Rent rates, for Dover, published annually by the New Hampshire Housing Finance Authority. An ADU shall not be permitted on property where more than one dwelling unit currently exists. **[Amended 10-13-2021 by Ord. No. 2021.09.08-006]**

B. Exterior alterations, enlargements, or extensions of the single-family dwelling or detached accessory structure are permitted in order to accommodate the accessory dwelling unit. However, no such change is permitted which would alter the appearance of the single-family dwelling to look like a duplex or any other multifamily structure (i.e., the house should not look like it was designed to occupy more than one family). The construction of any accessways into the house and/or detached garage which are required for access to the accessory dwelling unit shall be located to the side or rear of the building whenever possible.

C. An ADU shall have an area of no less than 300 square feet and no greater than 800 square feet. If located in a detached accessory structure, the accessory dwelling unit may be located on either floor of the structure. **[Amended 10-13-2021 by Ord. No. 2021.09.08-006]**

D. A minimum of one dedicated off-street parking space shall be provided for the ADU.

E. The single-family dwelling (and detached accessory structure, when applicable) and lot shall not be converted to a condominium or any other form of legal ownership distinct from the ownership of the single-family dwelling. In order to ensure compliance with this requirement, the property owners at the time the ADU is established shall be required to execute a restrictive covenant running in favor of the City, which shall be recorded in the Strafford County Registry of Deeds, and a copy of which shall be provided to the Planning and Community Development Department and the City Assessor prior to the issuance of a certificate of occupancy.

F. The property owner must occupy one of the two dwelling units. Electric, water and sewer utilities shall be metered on a single bill.

G. Where municipal sewer service is not provided, the septic system shall meet New Hampshire Department of Environmental Services, Water Division, requirements for the combined system demand for total occupancy of the premises. **[Amended 7-22-2020 by Ord. No. 2020.07.08-006]**

H. A certificate of use issued by the Zoning Administrator is required to verify conformance with the preceding standards. Said certificate shall be renewed annually. Applications to renew the certificate of use shall be due by January 1 following the date of approval of the certificate of use and then by every January 1 thereafter for so long as the accessory dwelling unit continues. Fees shall be levied as set forth in the City of Dover Fee Schedule, as amended annually, for accessory dwelling unit certificates of use and renewals.

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TITLE LXIV
PLANNING AND ZONING

CHAPTER 674
LOCAL LAND USE PLANNING AND REGULATORY POWERS

Accessory Dwelling Units

Section 674:71

674:71 Definition. – As used in this subdivision, "accessory dwelling unit" means a residential living unit that is within or attached to a single-family dwelling, and that provides independent living facilities for one or more persons, including provisions for sleeping, eating, cooking, and sanitation on the same parcel of land as the principal dwelling unit it accompanies.
Source. 2016, 6:2, eff. June 1, 2017.

****

TITLE LXIV
PLANNING AND ZONING

CHAPTER 674
LOCAL LAND USE PLANNING AND REGULATORY POWERS

Accessory Dwelling Units

Section 674:72

674:72 Accessory Dwelling Units. –
I. A municipality that adopts a zoning ordinance pursuant to the authority granted in this chapter shall allow accessory dwelling units as a matter of right or by either conditional use permit pursuant to RSA 674:21 or by special exception, in all zoning districts that permit single-family dwellings. One accessory dwelling unit shall be allowed without additional requirements for lot size, frontage, space limitations, or other controls beyond what would be required for a single-family dwelling without an accessory dwelling unit. The municipality is not required to allow more than one accessory dwelling unit for any single-family dwelling. The municipality may prohibit accessory dwelling units associated with multiple single-family dwellings attached to each other such as townhouses, and with manufactured housing as defined in RSA 674:31. Subsequent condominium conveyance of any accessory dwelling unit separate from that of the principal dwelling unit shall be prohibited,

notwithstanding the provisions of RSA 356-B:5, unless allowed by the municipality.

II. If a zoning ordinance contains no provisions pertaining to accessory dwelling units, then one accessory dwelling unit shall be deemed a permitted accessory use, as a matter of right, to any single-family dwelling in the municipality, and no municipal permits or conditions shall be required other than a building permit, if necessary.

III. An interior door shall be provided between the principal dwelling unit and the accessory dwelling unit, but a municipality shall not require that it remain unlocked.

IV. Any municipal regulation applicable to single-family dwellings shall also apply to the combination of a principal dwelling unit and an accessory dwelling unit including, but not limited to lot coverage standards and standards for maximum occupancy per bedroom consistent with policy adopted by the United States Department of Housing and Urban Development. A municipality may require adequate parking to accommodate an accessory dwelling unit.

V. The applicant for a permit to construct an accessory dwelling unit shall make adequate provisions for water supply and sewage disposal for the accessory dwelling unit in accordance with RSA 485-A:38, but separate systems shall not be required for the principal and accessory dwelling units. In order to comply with this paragraph and prior to constructing an accessory dwelling unit, an application for approval for a sewage disposal system shall be submitted in accordance with RSA 485-A as applicable. The approved sewage disposal system shall be installed if the existing system has not received construction approval and approval to operate under current rules or predecessor rules, or the system fails or otherwise needs to be repaired or replaced.

VI. A municipality may require owner occupancy of one of the dwelling units, but it shall not specify which unit the owner must occupy. A municipality may require that the owner demonstrate that one of the units is his or her principal place of residence, and the municipality may establish reasonable regulations to enforce such a requirement.

VII. A municipality may establish standards for accessory dwelling units for the purpose of maintaining the aesthetic continuity with the principal dwelling unit as a single-family dwelling. A municipality may also establish minimum and maximum sizes for an accessory dwelling unit, provided that size may not be restricted to less than 750 square feet.

VIII. A municipality may not require a familial relationship between the occupants of an accessory dwelling unit and the occupants of a principal dwelling unit.

IX. A municipality may not limit an accessory dwelling unit to only one bedroom.

X. An accessory dwelling unit may be deemed a unit of workforce housing for purposes of satisfying the municipality's obligation under RSA 674:59 if the unit meets the criteria in RSA 674:58, IV for rental units.

Source. 2016, 6:2, eff. June 1, 2017. 2017, 89:1, eff. June 5, 2017; 238:4, eff. Sept. 16, 2017.

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TITLE LXIV
PLANNING AND ZONING

CHAPTER 674
LOCAL LAND USE PLANNING AND REGULATORY POWERS

Accessory Dwelling Units

Section 674:73

674:73 Detached Accessory Dwelling Units. – A municipality is not required to but may permit detached accessory dwelling units. Detached accessory dwelling units shall comply with the requirements of, and any municipal ordinances or regulations adopted pursuant to, RSA 674:72, IV through IX. If a municipality allows detached accessory dwelling units, it may require an increased lot size.

Source. 2016, 6:2, eff. June 1, 2017.

****

§ 170-29. Transfer of development rights.

A. Authority. By the authority granted under RSA 674:21, this section creates overlay district(s) for the purpose of transferring development rights (TDR) within said districts.

B. Purpose and intent. Within the City of Dover, there are certain lands that possess significant conservation features, including but not limited to unsuitable development areas, groundwater recharge zones, forested areas, wildlife habitat, farmland, scenic view sheds, historic landmarks, and linkages to other such areas. Because of their unique assemblages of flora and fauna and their significant contribution to the ecological system and/or the cultural identity of our community, these lands are worthy of special protection. The City of Dover, furthermore, has a limited supply of land suitable for development. The purpose of this overriding district is to promote intensive development on the developable land possessing the least conservation value and to permanently protect lands possessing significant conservation features that provide unique values in their undisturbed condition. Additionally, it is recognized that the City of Dover has an Open Lands Committee and Conservation Commission which is active in protecting and preserving open space. **[Amended 10-13-2021 by Ord. No. 2021.09.08-006]**

C. Applicability. Upon request by an applicant for development approval and at the discretion of the Planning Board, the provisions of this section may apply to the district(s) defined in Subsection D below.

D. Districts defined. **[Amended 8-22-2018 by Ord. No. 2018.08.08-009; 9-11-2019 by Ord. No. 2019.08.28-012]**

(1) The Industrial TDR District is hereby determined to be any IT or CM Zoning District as shown on the Zoning Map for the City of Dover, New Hampshire, adopted September 11, 2019. The "sending area" is defined to be open space and related setbacks as defined by the City of Dover Wetland Protection District, § 170-28, which are located in any IT or CM Zoning District. The "receiving area" is defined to be all remaining land in be any IT or CM Zoning District. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

(2) The Residential TDR District is hereby determined to be residential districts noted or displayed on the Zoning Map for the City of Dover, New Hampshire, adopted September 11, 2019. The "sending area" is defined to be any land preserved by the City of Dover through conservation programs in the R-40 or R-20 residential zoning districts. The "receiving area" is defined to be all non-R-40 or -R-20 zoning districts east of the Spaulding Turnpike which allow residential development.

(a) If the units created are purchased, the receiving area may be any zoning district that allows residential development.

E. Procedural requirements.

(1) At the discretion of the Planning Board, an applicant for development approval within the receiving area of the defined Industrial TDR district may apply the performance standards specified in Subsection F below in return for the acquisition of land or development rights from the sending area within the same TDR district. The performance standards for the Residential TDR district are outlined in Subsection G

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below.

(2) A certified boundary survey of the associated land in the sending area shall be submitted as a supplement to the site plan or subdivision plan for development within the receiving area. **[Amended 8-22-2018 by Ord. No. 2018.08.08-009]**

(3) The owner of the subject open space within the sending area of the TDR district shall sign all application materials as a co-applicant of the development application. For residential application, proof of an agreement to sell development rights must be provided by the Conservation Commission.

(4) A sketch plan estimating layout of the development site and identifying the open space associated with the plan may be submitted to the Planning Board for review at a regularly scheduled meeting. The Planning Board, within 30 days of its review of the sketch plan, shall determine if waivers will be granted as allowed in Subsections F and G below. Waivers shall be reviewed using the same criteria as are used for site plan waivers. Following this decision, a final application is prepared. The final application for development approval shall be reviewed in accordance with the standard plan review process and subjected to all applicable development regulations, except as provided in this section. **[Amended 8-22-2018 by Ord. No. 2018.08.08-009; 7-22-2020 by Ord. No. 2020.07.08-007; 8-9-2023 by Ord. No. 2023.07.12-008]**

(a) The determination of whether a proposed TDR project requires a sketch plan review shall be made by the Director of Planning and Community Development based on initial discussions with the applicant. The determination, made in writing, shall be made prior to the submittal of any plans and shall specify the Director's reasoning, including a review of known conditions, including: traffic, existing layout/topography, environmental. This determination shall be included in the staff report to the Board. If the applicant does not agree with the Director's determination, they may appeal the decision to the Board at its next meeting.

(b) If the sketch plan requires an environmental conditional use permit to develop homes, the applicant must appear before the Conservation Commission for review and endorsement prior to the Planning Board's review.

(5) A perpetual easement or restrictive covenant shall be recorded at the Strafford County Registry of Deeds that preserves the designated open space within the sending area. Said easement or covenant may allow for the continuance of existing residential and agricultural activities, and may allow for utility and access crossings in accordance with Subsection H below. The designation of the land protection agency to hold the easement shall be approved by the Planning Board.

F. Industrial performance standards.

(1) Land within a sending area, when surveyed, approved by the Planning Board and preserved by easement or covenant as specified in Subsection E, above, may be counted for the open space requirement for a development site in a receiving area. The amount of land preserved in a sending area shall equal or exceed the open space requirement for the development site, but in no case be less than one acre. Notwithstanding,

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development sites within the IT and CM Zoning Districts shall maintain open space or landscaped area on at least 10% of the site. The design of the development site shall locate the open space or landscaped area to maximize the aesthetic value of the site. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

(2) The minimum lot size requirement may be waived by the Planning Board for land subjected to the transfer of development rights.

(3) The minimum frontage requirement may be waived by the Planning Board for land subjected to the transfer of development rights, provided that paved access to all developed areas suitable for emergency vehicles is approved by the Planning Board.

(4) Setbacks for parking, paved areas, and buildings may be waived by the Planning Board and be consistent with the intent to promote intensive development of suitable development sites. Notwithstanding, buildings shall be at least 150 feet from residential structures that exist on the date of enactment of the IT and CM Zoning Districts, and 75 feet from the lot line of a disagreeing residential abutter. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

(5) The developer shall record covenants that address architectural considerations for structures, signage and lighting that are designed to promote the highest possible aesthetic quality of the development site.

(6) A landscaping plan shall be submitted with a development application that depicts landscaping or open space around the perimeter of the site, near the proposed buildings, and within the parking lot that promotes the highest possible aesthetic quality of the development.

G. Residential performance standards. **[Amended 8-22-2018 by Ord. No. 2018.08.08-009]**

(1) Annually, the City shall update a document identifying the cumulative cost per acre spent to preserve open space within the City of Dover. This list shall be kept on file in the Department of Planning and Community Development and coordinated with the Conservation Commission. This cost shall become the value at which development rights may be purchased.

(2) Proceeds from the purchase of development rights shall be placed into the Conservation Fund to be used to purchase future property or easements, or monitor easements, and not into the general fund.

(3) A residential transfer of development rights applicant may pursue one of the following methods for transferring development rights.

(a) Single-family detached method.

[1] An applicant shall develop a baseline yield for the lot to be developed through the following formula: **[Amended 10-13-2021 by Ord. No. 2021.09.08-006]**

[a] The square footage of the parent lot minus unsuitable areas is the base lot size.

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[b] The base lot size is then reduced by 15% to account for roadway; this creates the net area.

[c] The net area is then multiplied by a factor determined by the amount of unsuitable development area over the parent lot. This is the developable area.

Percentage of Parcel That Is Unsuitable Development Area	Factor
0% to < 10%	0.85
10% to < 20%	0.8
20% to < 30%	0.75
30%	0.7

[d] The developable area is then divided by the minimum lot size, and the whole number value is the base number, with no rounding.

[i] This base number is not required to be restricted by the requirements in Subsection G(3)(a)[3], unless the formula defined in Subsection G[2][a] is utilized. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

[e] The development plan shall be laid out in a design that meets the requirements for block length and cul-de-sac length. **[Added 7-22-2020 by Ord. No. 2020.07.08-007]**

[2] The transfer shall equate to one of the following calculations: **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

[a] For construction of units no larger than 600 square feet of total living area, including the base calculated units, there shall be no density limit. The monthly cost of said units shall conform to the HUD Fair Market Rent rates, for Dover, published annually by the New Hampshire Housing Finance Authority, and there shall be no TDR fee collected for said unit(s).

[b] For construction of units no larger than 1,000 square feet of total living area, two units per development right purchased shall be allowed.

[c] For construction of units no larger than 1,400 square feet of total living area, one unit per development right purchased shall be allowed. The unit count shall be the whole number value and not rounded up.

[i] Total living area shall mean the size of the home (in square feet) based upon the exterior dimensions, excluding unconditioned spaces.

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[3] The units created through the transfer must be: **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

[a] Limited to the square footage originally constructed.

[4] A note shall be placed on the approved plan, and any building permit shall note the adherence to this section of the Code.

[5] A note shall be placed in the property/unit deed citing the restrictions listed above.

[6] The plan shall be considered a subdivision application. Prior to submission, a determination by the Director of Planning and Community Development shall be made whether to follow the minor or major subdivision regulations. **[Added 7-22-2020 by Ord. No. 2020.07.08-007]**

(b) Single-family, two-family, three-family, and four or more method. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

[1] The transfer may be through the purchase of development rights, as described in Subsection G(1), or through the protection of land via a permanent conservation easement as per Subsection E(5).

[a] In mixed-use or multifamily zones, the base density shall be derived from the underlying zoning, and not through a formula.

[b] If the additional unit(s) resulting from TDR is restricted so that the rent of said unit(s) conforms to the HUD Fair Market Rent rates, for Dover, published annually by the New Hampshire Housing Finance Authority, there shall be no fee collected for said unit(s).

[2] The transfer shall equate to one unit per acre preserved or purchased. If the end result is a village-themed residential/nonresidential project, whereby 35% of the square footage being created is nonresidential, the transfer shall equate to one unit per 2,500 square feet preserved or purchased.

[3] Any development approved by the Planning Board after July 1, 2020, which will create a manufacturing or assembly facility over 40,000 square feet may create and transfer one unit per 2,000 square feet of building approved, above the 40,000 square foot base. The transfer shall not be completed prior to the issuance of the certificate of occupancy for the additional space. **[Amended 10-13-2021 by Ord. No. 2021.09.08-006]**

[a] If the units are to be placed upon the same lot, the layout must be shown on the site plan for the development.

[4] The plan shall be treated as a site plan application, unless otherwise determined by the Director of Planning and Community Development, prior to final submission.

(4) Regardless of the method utilized, the minimum lot size requirement may be waived by

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the Planning Board for land subjected to the transfer of development rights.

(5) Regardless of the method utilized, the setbacks shall be: **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

Minimum Building Setbacks for Subdivision Lots		
Abutting a Street	Abutting a Side Lot Line	Abutting a Rear Lot Line
20 feet	10 feet	30 feet

(6) Regardless of the method utilized, the minimum frontage requirement may be waived by the Planning Board, to no less than 40 feet. Paved access to all developed areas shall be suitable for emergency vehicles. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

(7) A continuous visual buffer shall be created along the perimeter of the parent parcel, which shall include a thirty-foot no cut, no disturb buffer. **[Amended 7-22-2020 by Ord. No. 2020.07.08-007]**

(8) Regardless of the method utilized, any other provision in this chapter to the contrary, the density or intensity of development of a receiving parcel may be increased by the transfer of development rights so long as the increase in density or intensity meets the following criteria and a narrative is submitted indicating how those criteria are met: **[Amended 7-22-2020 by Ord. No. 2020.07.08-007; 8-9-2023 by Ord. No. 2023.07.12-008]**

(a) Is consistent with the Master Plan.

(b) Is compatible with the land uses on neighboring lots (e.g., a multifamily building fits in within a single-family neighborhood). The applicant shall provide in their narrative an explanation of their neighborhood analysis.

(c) Is created on property served by public water and sanitary sewer.

(d) Any relief sought should not be caused by the additional density.[1]

1. **Editor's Note: Original § 170-27.2H of the 2013 Code, Conditional uses, which immediately followed this subsection, was repealed 8-22-2018 by Ord. No. 2018.08.08-009.**

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