RYE PLANNING BOARD

10 Central Road Rye, NH 03870 (603) 964-9800

Notice of Decision

Owner:	Malcolm E. Smith, III
Applicant:	Mike Garrepy and Jones and Beach
Property:	0 Lafayette Road, Tax Map 10, Lot 1 Property is in the Commercial, Multi-Family Overlay District and Aquifer & Wellhead District
Request:	Major Site Development Plan and Special Use Permit Application by Jones & Beach, Engineers, Inc. for Property owned by Malcolm E. Smith, III and located at 0 Lafayette Road, Tax Map 10, Lot 1 to construct 30 2-bedroom residential condominium tri-plex units. Property is in the Commercial, Multi-Family Overlay District and Aquifer & Wellhead District. Case #11-2021.
Date of Decision:	Tuesday July 13, 2021
Decision:	**The Board voted 6-0-0 that the application meets the requirements of Regional Impact and notification should be sent to North Hampton, Greenland, Portsmouth and the Regional Planning Commission.** **The Board voted 6-0-0 to not take jurisdiction over this application at this time and ton continue the application to the September 14, 2021, Planning Board meeting.**

July 14, 2021 *Kimberly M. Reed, for*

Date **Patricia Losik, Chairman, Rye Planning Board**

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

June 17, 2021

Rye Planning Board
Attn: Patricia Losik, Chairman
10 Central Road
Rye, NH 03870

Re: **Site Plan & Special Use Permit Application**
0 Lafayette Road, Rye, NH
Tax Map 10, Lot 1
JBE Project No. 18062.1

Dear Ms. Losik,

On behalf of our client Tuck Realty Corporation, Jones & Beach Engineers, Inc. respectfully submits a Site Plan & Special Use Permit Application. The intent of this application is to construct a 30 unit two-bedroom residential condominium development. All the buildings are 3-unit buildings that are 3 stories with a garage on the first floor, living on the second and bedrooms on the third. This site is located in the Multi-Family Overlay District within the Commercial Zone. Pursuant to Section 190-3.7.C, of the Rye Code (the "Code"), multifamily developments are permitted upon the issuance of a Special Use Permit ("SUP"). The access to the development will be via a proposed cul-de-sac private roadway across from Dow Lane, I accordance with the curb cut location requested by NHDOT with this application.

Use Intensity Statement:

We have recently received approval for a Lot Line Adjustment of this parcel which adjust this lot to 5.05 acres. The site is currently vacant and has been for many years, but was formerly the location of Hector's Restaurant. We are proposing 30 2-bedroom townhouses with a curb cut directly on Route 1. The roadway and utilities will be privately maintained with no cost to the Town of Rye. The units are only 2-bedroom and not expected to have a large amount of school age children. The density of 6 units per acre is allowed by zoning and we will be providing 6 workforce housing units as required by the zoning ordinance.

Special Use Permit Application Criteria:

Determinations required for special use permit approval. Prior to approving a special use permit, the Planning Board shall determine, by a vote on the record, that the multifamily dwelling or multifamily development meets each of the following standards:

1. All requirements of §190-4.2C have been met. (This may be a single vote on the record).
   RESPONSE: 1.) Location: the site is located in the Multifamily Dwelling Overlay District. 2.) Parcel Size: At 5.05 acres, the parcel size greatly exceeds the two-acre minimum requirement. 3.) Frontage: The parcel has +/- 290.10' of frontage on Lafayette Road, which more than meets the 150-foot requirement. Lafayette Road is a state-maintained highway, therefore, the requirements of subsections (a) – (d) do not apply. 4.) Number of Dwelling Units: The project will have 30 dwelling units, fewer than the 40 unit maximum. 5.) Density: The density of the development will be 6 units per acre. There are no wetlands present on the site, therefore, all acreage used for this calculation is upland acreage. 6.) Workforce Housing: The project will include 6 workforce housing units, which comprise 20% of the total number of dwelling units in the development. 7.) Density Bonus: Not applicable. 8.) Parking: Each dwelling will be provided with at least one parking space within the ground floor garage and one other parking space. At least eight spaces of visitor parking will also be provided.

2. The granting of a special use permit will not be detrimental to adjacent property or neighborhood.
   RESPONSE: The parcel currently undeveloped and is used in part for temporary vehicle storage and display. The property is located on Lafayette Road across from Dow Lane, in an area of mixed residential and commercial use. To the north is a to be built assisted living facility that will be part of the existing Evolve Facility. To the south is an existing multifamily residential building. The surrounding lots are residential in nature, the lots across the street are house lots with access from Dow Lane and therefore this development will not detrimental to adjacent property or neighborhood.

   The proposed multifamily development will, accordingly, be consistent with existing uses in this area and will create a beneficial transition area between the more heavily commercial lots farther to the north and south along Lafayette Road and the existing residential uses in the area. In light of these existing nearby uses, and the general intent to create multifamily housing in the area, the granting of a SUP for the project will not be detrimental to any adjacent property or the neighborhood. To the contrary, the development of this long vacant site will, if anything, improve property values in the surrounding area.

3. The granting of the special use permit will not be detrimental to the public safety, health or welfare.
   RESPONSE: Granting a SUP for the project will not be detrimental to the public safety, health or welfare. The parcel is vacant in currently vacant with portions of old foundations, an empty sign and cracked pavement. The project will clean up this long vacant site and add needed multifamily housing to the area. All of the proposed dwellings will be new construction and will meet building codes. Additionally, the project will receive a full review for traffic and other safety related matters as part of the Board's site plan review. The proposed new cul-de-sac will meet all Town road construction requirements. Ingress and egress to the parcel is also being reviewed by NHDOT as part of the driveway permit process. The project provides an opportunity to create new multifamily housing in Rye with up to date and code buildings. Accordingly, granting the requested SUP will not be detrimental to the public safety, health or welfare.

4. The granting of the special use permit will not be contrary to the public interest.
   RESPONSE: The purpose of the Multifamily Dwelling Overlay District is to provide for multifamily housing in appropriate locations in Rye in order to comply with the requirements of RSA 674:59. Code § 190-3.7.A. Tuck's proposed multifamily housing development is in furtherance of this purpose and the Town's overall goal to provide additional housing in Rye. Comparable to variances, about which the New Hampshire Supreme Court in Malachy Glen Associates, Inc. v. Town of Chichester, 155 N.H. 102 (2007), considered public interest, the Court directed the zoning board to consider whether the requested relief to a marked degree violates basic zoning objectives. Mere conflict is not enough. The same holds true for planning objectives. Here, there is no conflict with the ordinance but, in fact, a furtherance of its overall goals.

   Likewise, the Court held that it should be considered whether granting the relief alters the essential character of the locality or threatens public health, safety or welfare. Id. The project will not threaten public health, safety or welfare, as discussed in Section 3 above. Moreover, it helps to establish a transition area between other existing residential and similar uses (e.g. memory/nursing care) in the area. The project also creates newly constructed buildings on a long underutilized and relatively run-down lot. In light of these factors, granting the SUP to permit the project will not be contrary to the public interest and will in fact further the goals of the Town of Rye and intent of the Multifamily Dwelling Overlay District.

Please find enclosed 10 copies of the following items in support of this Application:

1. One (1) Original and Nine (9) Copies of Site Plan & Special Use Permit Application.
2. Fee Check.
3. Current Deed.
4. Letters of Authorization.
5. Test Pit.
6. NHDOT Letter
7. Traffic Memo.
8. Abutters List with Mailing Labels.
9. Tax Map.
10. Architectural Plans.
11. Three (3) Drainage Analysis.
12. Ten (10) Full-Size Plans.
13. Ten (10) Half-Size Plans.

Thank you very much for your consideration of this Application. If you should have any questions or need additional information, please call.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph A. Coronati
Vice President

cc: Michael Garrepy, Tuck Realty Corporation (application & plans via email)
Tim Phoenix, Hoefle, Phoenix & Gormley & Roberts (application & plans via email)
Mike Donovan, Town Attorney (application, drainage and plans via email & U.S. Mail)
Stephen D. Harding, P.E., Sebago Technics, INC. (application, drainage and plans via email & U.S. Mail)

Town of Rye
Planning Board Application

FOR BOARD USE ONLY
Case No: _____
Date Rec'd: _____
Received By: _____
Fees Paid: _____

Name of Proposal: Hector's Site

Part I: Type of Subdivision Application

_____Major Subdivision _____Minor Subdivision _____Lot Line Adjustment

_____Condo Conversion

Part I: Type of Site Plan Review Application

_____Major Non-Residential Site Development _____Minor Non-residential Site Development

__x__ Multifamily Residential Site Developments require a Conditional Use Permit Application

Part II: Applicant Information

_____Applicant
Name: Tuck Realty Corp., Michael Garrepy

Address: 149 Epping Road, Suite 2A
Exeter, NH 03833

Phone: 603-944-7530
E-Mail: mgarrepy@gmail.com

_____Owner
Name: Malcolm E. Smith, III

Address: PO Box 1020
Hampton, NH 03842

Phone_____
E-Mail:_____

__x__Engineer or Surveyor
Name: Jones & Beach Engineer, Joseph Coronati

Address: PO Box 219
Stratham, NH 03885

Phone: 603-772-4746
E-Mail: jcoronati@jonesandbeach.com

_____Other (Attorney or Agent)
Name: Hoefle, Phoenix & Gormley & Roberts
Attn. Tim Phoenix

Address: 127 Parrot Avenue
Portsmouth, NH 03801

Phone 603-427-5504
E-Mail: tphoenix@hpgrlaw.com

Note: Place a check in the box next to the person who should receive all communications from the Planning Board.

Part III: Site Information

A. Location of Site: 0 Lafayette Road
B. Tax Map No.: 10 Parcel No.: 1
C. Approx. Lot Size: 5.05 Acres
D. Present Zoning: Commercial
E. Present Use: Vacant Lot

F. General Description of Proposed Concept:
To construct a 30-unit two-bedroom residential condominium development. Project to be served by onsite septic & Aquarion water.

Part IV: Waiver Requests (Applicants are to use the required waiver request form)

Part V: Applicant's Certification

I hereby apply to the Rye Planning Board for final approval of my proposed land development. (In the case of a preliminary review of my land development, I understand that preliminary reviews are advisory only and such reviews are not binding on either the applicant or the Planning Board.)

Further, I hereby grant permission to the Planning Board, its members, employees, consultants and other agents to enter my property for the purpose of inspection it as reasonably necessary for the review of this application.

6/17/21
Date

Signature of Applicant

6/17/21
Date

Signature of Owner, if different than Applicant

Submittals:

All applications must include the documentation related to their application. A total of 10 copies of all submittals required and submitted electronically. (Packet includes, fees, abutter list, site plans and any other documents required)

Town of Rye's Land Development Regulations are available in the Rye Town Code Book, Section 202: https://ecode360.com/RY3900

Plan must meet all filing requirements of the Rockingham County Registry of Deeds.

Applicant's Checklist for Applications

All applications must include the documents required for their application below total of 10 copies off all supporting documentation including the completed application.

Subdivisions: §202-3.1 and 202-3.4

A. Lot Line Adjustment Subdivisions

_____ Application (10 copies per LDR)

____ Application Fees

_____1Abutters List plus 3 typed sets on labels)

____Plans per §202-3.3

B. Minor Subdivision
All above items, plus:

____Final Topo/Soils Plan
§404.4A, §403.1E

____NHWSPCD Approval
§404.4B

____Water & Sewer Extension
Plans, if applicable
§404.4C

C. Major Subdivision
All requirements 202-3.1 and 202-3.5, plus:

____Final Street & Utility Plan
§202-3-4.E(1)

____Stormwater §202-3-4.E(2)
Management Plan

____Erosion Control Plan, §202-3-4.E(3)

____Site Impact Analysis, §202-3-4.E(4)

____Engineer's Estimate, §202-3-4.E(5)

____Easements, Deeds, Covenants
(if applicable), §202-3-4.E(7)

____Use Intensity Statement, §202-3.5

Site Developments: §202-3.1 and 202-3.4

A. All Site Developments

__x__Application (10 copies per LDR)

__x__Application Fees

__x__1Abutters List plus 3 typed on labels

__x__ Plans per §202-3.3

B. Minor Site Developments
All above items, plus:
_____ Other information

C. Major Site Developments and Condominium Conversions

All requirements 202-3.1 and 202-3.5, plus:

__x__Final Topo/Soils Plan,

__x__Final Stormwater Management

__x__Erosion Control Plan,

__x__On-Site Disposal Plan,

__x__Final Elevation Drawings,

__x__Use Intensity Statement,

__N/A__ Easements, Deeds, Covenants

__x__Condo Documents, if applicable

RYE PLANNING BOARD
Fee Schedule

NOTIFICATION FEES:

Notification fees ($90.00) for legal advertisements are required with all preliminary and final applications, except Conceptual Consultation applications.

Abutter fees to $8.00 **per** each abutter and include all abutters, applicants/owners, any engineer, architect, land surveyor, soil scientist whose professional seal appears on any plat submitted; and all holders of conservation, preservation or agricultural preservation restrictions as defined in RSA 477:45.

APPLICATION FEES:

A.	Conceptual Consultation:	$100.00	
B.	Major Subdivision Application: One half of total fee is due at time of Preliminary application and balance at filing of final application.	$500.00 **per lot** ($90 Notice + $8.00 each abutter)	
C.	Lot Line Adjustment Application	$250.00 ($90 Notice + $8.00 each abutter)	
D.	Minor Site Plan Application:	$200.00 ($90 Notice + $8.00 each abutter)	
E.	Minor Subdivision	$250.00 (**plus $50.00 per Lot** + ($90 Notice + $8.00 each abutter) **(Plus $50per unit)**	
F.	Special/Conditional Use Permit	$250.00 ($90 Notice + $8.00 each abutter)	$250.00
G.	Major-Site Plan Application: One half of total fee is due at time of filing prelim. site plan & balance with final site plan application.	$500.00 ($90 Notice + $8.00 each abutter)	$670.00
			TOTAL = $920.00
H.	Driveway or Tree Cutting on Scenic Road Application for Site Review	$100.00 ($90 Notice + $8.00 each abutter)	

In addition, Planning Board may require special investigation fees (per S. 202-7.3) or engineering review, traffic study, etc.

RECORDING FEES:

For approved applications requiring recording, applicant shall pay the cost of recording by check payable to Rockingham County Registry of Deeds **and** a handling/delivery fee **of $50 payable to The Town of Rye.**

INSPECTION FEES:

Per S. 202-7.3, applicants will be required to pay the costs of construction inspection by the Planning Board Engineer after plans have been approved. A separate escrow agreement will be drawn to cover the construction inspection fees. Generally, this only involves major site developments and subdivisions.

LAND DEVELOPMENT REGULATIONS
2020 ATTACHEMENT 2

APPENDIX B

APPLICATION FOR WAIVER OF SUBDIVISION/SITE PLAN REVIEW REQUIREMENT

(Complete one form for each waiver request)

To the Chairman and Members of the Rye Planning Board:

On _____, 20__, I submit a plan for (subdivision/site plan review) approval to the Board, entitled _____ prepared by _____ and hereby request a waiver from Article _____ Section _____ of the Rye Land Development Regulations.

A. The Planning Board may waive requirements of these regulations in accordance with RSA 674:36, II(n) ***(1)***, and RSA 674:44, III(e) ***(1)***.

B. RSA 674:36, II(n), for subdivision applications and RSA 674:44, III(e), for site plan review applications require that the basis for any waiver granted by the Planning Board shall be recorded in the minutes of the Board. The Planning Board may only grant a waiver if the Board finds, by majority vote, that strict conformity would pose an unnecessary hardship to the applicant and waiver would not be contrary to the spirit and intent of these regulations. Requests for waivers shall be submitted in writing at least 10 days before the meeting at which the Board considers the waiver request. A written waiver request shall describe how compliance with the regulations for which a waiver is requested would pose an unnecessary hardship to the applicant and why the waiver would not be contrary to the spirit and intent of the regulations.

Explanation for Wavier Request: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____

Signature of Applicant (or designee) Date

Town of Rye Planning Board

APPLICATION FOR CONDITIONAL USE PERMIT

Or SPECIAL USE PERMIT

(*(Part III: Type of Application (check one) SEE BELOW)***

FOR BOARD USE ONLY

App/File No: _____

Received By: _____

Date Rec'd: _____

Name of Proposal: Hector's Site

Part I: Applicant and Representatives

_____ Applicant
Name: Tuck Realty Corp., Michael Garrepy

Address: 149 Epping Road, Suite 2A

Exeter, NH 03833

603-944-7530

Email & Phone: mgarrepy@gmail.com

_____ Owner
Name: Malcolm E. Smith, III

Address: PO Box 1020

Hampton, NH 03842

Email & Phone _____

X Engineer or Surveyor
Name: Jones & Beach Engineers, Joseph Coronati

Address: PO Box 219

Stratham, NH 03885

603-772-4746

Email & Phone jcoronati@jonesandbeach.com

_____ Other (Attorney or Agent)
Name: Hoefle, Phoenix & Gormley & Roberts
Attn. Tim Phoenix

Address: 127 Parrot Avenue

Portsmouth, NH 03801

603-427-5504

Email & Phone tphoenix@hpgrlaw.com

Note: Place a check in the box next to the person who should receive all communications.

Part II: Site Information

A. Location of Site: 0 Lafayette Road
B. Tax Map No.: 10 Parcel No.: 1
C. Approx. Lot Size: 5.05 Acres
D. Present Zoning: Commercial
E. Present Use: Vacant Lot

General Description of Proposed Concept:
To construct a 30-unit tow-bedroom residential condominium development. To be served by onsite septic & Aquarion water.

Part III: Type of Application (check one)

_____ Special Use Permit for Retirement Community Development (RCD), per Section 190-4.1
_____ Special Use Permit for Wireless Telecommunications Facility, per Section 190-5.5
_____ Conditional Use Permit for Condominium Conversion, per Section 190-5.3 and 190-5.3.1
_____ Special Use Permit for Aquifer Protection zone, per Section 190-3.6
_____ Conditional Use Permit for Small Wind Energy Systems, per Section 190-5.8
X Special Use Permit for Multi-Family dwellings, per Section 190-3.7 and 190-4.2
_____ Special Use Permit for Conservation Land Developments (CLD's), per Section 190-4.3
_____ Conditional Use Permit for an Accessory Dwelling Unit, per Section 190-5.6
_____ Special Use Permit for Section Tourist Accommodations, per Section 190-5.4

CONDITIONAL USE PERMIT: In the Rye Zoning Ordinance, the term "conditional use permit" is synonymous with the term "special use permit," as used in the New Hampshire RSA's. (Adopted 2007).

Part IV: Other Required Permits/Approvals

Please attach a list of all required town, state and federal permits or approvals.

Part V: Waiver Requests – Use Waiver application Form - attached

List requests for any waivers that may be allowed by zoning ordinance. (RCD's and Wireless Facilities Only). Please provide a separate written request for each waiver which explains the justification for the waiver and how the waiver meets the requirements for waivers set forth in the zoning ordinance.

Part VI: Application for Conditional Use Permit/Special Use Permit

The Undersigned hereby requests a Special Use Permit or Conditional Use Permit for the project or proposal described herein.

6/16/21

Date

Signature

Rye Zoning Ordinance Section, 190-2.2(O) Expiration of Special Use/Conditional Use Permits: An approved but unused special use permit or conditional use permit shall lapse two (2) years from the date of approval unless substantial construction relative to the permit has begun on the site or unless the planning board has approved an extension for good cause. Applications for an extension shall be subject to the hearing and notice requirements applicable to the original permit. (Adopted 3/11/14)

All applications must include the documents checked as "required" below. Please include one (1) original and nine (9) copies of each documents. For a total of 10 of EACH.

Applicant's Checklist for Applications
Each Conditional Use and/or Special Use Permit has it's own checklist of what will be required for the Planning Board Application.

All applications must include the documents required for their application below. Total 10 packets. (Packet include: application, fees, abutter list, site plans and any other documents required for the completion of your application see below)

Every Application must include the following (check the Land Development Regulations to see which apply to your type of application):

☒	**Completed** application signed by applicant and property owner (if different from applicant) and information with the application listed below, total 10 copies
☒	Enlarged Tax map clearly showing the position of the property with street names for easy Identification (Town Website GIS at http://www.axisgis.com/RyeNH/Default.aspx?Splash=True)
☒	A list of all required state permits such as wetlands, septic, alteration of terrain, etc.;
☒	Depending upon relief requested, follow the checklist for that conditional use/special use permit and provide proof of all requirements met per that section or the Ordinance (10 copies of each)
☒	Final Subdivision Plat (in color, if possible)
☒	One Abutter list which includes addresses with map and lot numbers of adjoining parcels including the land across the street or waterway of the subject property;
☒	Three (3) sets of mailing labels pursuant to RSA 676:7. Please submit on Avery 5160 labels;
☒	Application fees (check made to Town of Rye see fee schedule).

Please provide 10 copies of ALL materials in the application, including 11"x17" copies of all large-scale plans, large scale elevations, etc., please. Please also submit it all in PDF format and Color.

The application will not be accepted without the 10 copies.

RYE PLANNING BOARD
Fee Schedule

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(Complete one form for each waiver request)

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A. The Planning Board may waive requirements of these regulations in accordance with RSA 674:36, II(n) ***(1)***, and RSA 674:44, III(e) ***(1)***.

B. RSA 674:36, II(n), for subdivision applications and RSA 674:44, III(e), for site plan review applications require that the basis for any waiver granted by the Planning Board shall be recorded in the minutes of the Board. The Planning Board may only grant a waiver if the Board finds, by majority vote, that strict conformity would pose an unnecessary hardship to the applicant and waiver would not be contrary to the spirit and intent of these regulations. Requests for waivers shall be submitted in writing at least 10 days before the meeting at which the Board considers the waiver request. A written waiver request shall describe how compliance with the regulations for which a waiver is requested would pose an unnecessary hardship to the applicant and why the waiver would not be contrary to the spirit and intent of the regulations.

_____ _____

Signature of Applicant (or designee) Date

AUTHORIZATION

The undersigned, Malcolm E. Smith III, owner of the property located on Lafayette Road, Rye, New Hampshire and further identified as Rye Tax Map 10, Lot 1 (the "Property"), hereby authorizes BSL Rye Investors, LLC d/b/a Benchmark Senior Living, Tuck Realty Corp., Jones & Beach Engineers, Inc. and/or Hoefle, Phoenix, Gormley and Roberts, PLLC, to file documents and appear before the Rye Zoning Board of Adjustment, Planning Board and/or Conservation Commission on their behalf in all matters relating to the application for use of the Property for an assisted living facility and to adjust the lot lines between the Property and 295 Lafayette Road, Tax Map 10, Lot 3.

Dated: March 2, 2021

Malcolm E. Smith III

Letter of Authorization

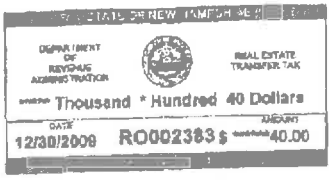
I, W. Turner Porter, Tuck Realty Corp., 149 Epping Street, Suite 2A, Exeter, NH 03833, developer of property located in Rye, NH, known as Tax Map 10, Lot 1, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 297 Lafayette Road in Rye, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

Witness

W. Turner Porter
Tuck Realty Corp.

6/2/20
Date



C/H
L-CHIP
ROA060877

2009 DEC 30 AM 11:37

063507

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

QUITCLAIM DEED

KNOW ALL MEN BY THESE PRESENTS, that **1st & Ten Property Management Corporation** of 221 Woodland Road, Town of Hampton, County of Rockingham, State of New Hampshire 03842, and **Malcolm E. Smith III**, individually, of 221 Woodland Road, Town of Hampton, County of Rockingham, State of New Hampshire 03842,

for consideration paid,

GRANT to **Malcolm E. Smith, III** of 221 Woodland Road, Hampton, County of Rockingham and State of New Hampshire 03842,

with quitclaim covenants, the following described premises:

A certain tract or parcel of land with any buildings thereon, situate in the Town of Rye, County of Rockingham, State of New Hampshire, on the northwesterly side of Lafayette Road, bounded and described as follows:

Beginning at a gate post at land now or formerly of Benjamin Corbett; thence running southwesterly by said Lafayette Road six hundred sixty-six (666) feet to a corner in a stone wall at a point thirty-four (34) feet distant northeasterly from a concrete post on the town line between said Rye and the town of North Hampton; thence turning and running northwesterly by the stone wall marking the boundary line between the said granted premises and the land now or formerly of Edgar J. Rand, seven hundred fifty-eight (758) feet to a concrete post marking the said town line; thence turning and running northeasterly by the stone wall marking the division line between said granted premises and the land of one Moulton, six hundred ninety (690) feet to a stake and stones at the land of said Corbett; thence turning and running southeasterly by the said land of said Corbett, six hundred fifty-two (652) feet, more or less, to said gate post and the point of beginning.

Containing 10.4 acres, more or less.

This is not homestead property.

Meaning and intending to convey the same premises conveyed to Malen Property Management, LLC by Warranty Deed of Arthur R. Bonin, Executor under the Will of Robert J. Bonin, and Arthur R. Bonin, Trustee of the Bonin 1987 Trust u/d/t, dated September 29, 1994 and recorded in the Rockingham County Registry of Deeds at Book 3073, Page 0411. See also deed of Malen Property Management, LLC to the Grantor recorded in said Rockingham Registry of Deeds. Malcolm E. Smith III joins in this conveyance individually, for whatever interest he may have, and as sole stockholder, President and Principal of the Grantor, 1st & Ten Property Management Corporation.

For further reference, see also Estate of Robert J. Bonin, Rockingham County Probate No. 61026.

IN WITNESS WHEREOF, the Grantor hereby signs this 10th day of November, 2009.

1st & Ten Property Management Corporation

Witness

By: _____

its duly authorized agent
Malcolm E. Smith III

Witness

By: _____
Malcolm E. Smith III,
individually

STATE OF NEW HAMPSHIRE
COUNTY OF Rockingham

On this the 10th day of November, 2009, before me personally appeared Malcolm E. Smith, III, individually and as a duly authorized agent of the 1st & Ten Property Management Corporation, known to me to be the person whose name is subscribed to the within instrument, individually and as agent for said Grantor, and acknowledged that he executed the same for the purposes herein contained.

_____
Steven Slovenski
~~Notary Public~~ Justice of Peace
My Commission Expires: 8/13/2013

TEST PITS
FOR
0 LAFAYETTE RD
RYE, NEW HAMPSHIRE
March 5, 2020
JBE Project No. 18062.1

Performed by: Chris Albert, Jones & Beach Engineers, Inc., SSD #1085
Witnessed by: Dennis Plante

Test Pit #1

		grass mat
0"- 44"	10YR 5/6	yellowish brown fine sandy loam few stones
44"-96"	10YR 4/4	dark yellowish brown loamy sand gravelly small stones

SHWT = none-96"
Roots to 44"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #2

0"- 24"	10YR 4/6	dark yellowish brown fine sandy loam few roots
24"-96"	10YR 5/3	brown fine sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #3

0"- 6"	10YR 3/3	dark brown fine sandy loam few roots
6"-32"	10YR 5/6	yellowish brown fine sandy loam few roots
32"-96"	10YR 4/4	dark yellowish brown medium to fine gravelly sand small stones

SHWT = none-96"
Roots to 32"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #4

0"- 6"	10YR 3/3	dark brown fine sandy loam few roots
6"-32"	10YR 5/6	yellowish brown fine sandy loam few roots
32"-96"	10YR 4/4	dark yellowish brown medium to fine gravelly sand small stones with construction rubble

SHWT = none-96"
Roots to 32"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #5

0"- 2"	10YR 3/3	dark brown fine sandy loam Thin "A"
2"-24"	10YR 5/4	yellowish brown fine sandy loam few roots
24"-96"	10YR 4/6	dark yellowish brown medium sand few stones

SHWT = none-96"
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #6

0"- 2"	10YR 3/3	dark brown fine sandy loam few roots thin "A"
2"-24"	10YR 5/6	yellowish brown fine sandy loam few roots graded material
24"-96"	10YR 4/4	dark yellowish brown loamy sand to fine sand shaky rock with construction rubble

SHWT =none-96"
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #7

		forest mat
0"- 8"	10YR 3/3	dark brown fine sandy loam many roots
8"-24"	10YR 5/6	yellowish brown fine sandy loam few roots
24"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
★ ★ ★
Christopher S Albert
No. 1085
Department of Environmental Services

Test Pit #8

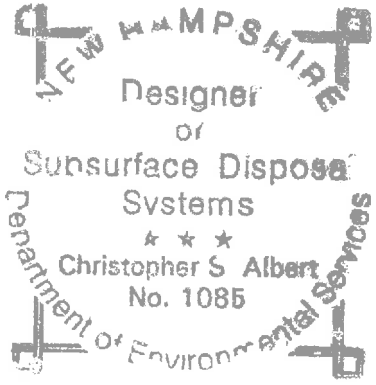
		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #9

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch



Test Pit #10

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #11

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
★ ★ ★
Christopher S Albert
No. 1085
Department of Environmental Services

Test Pit #12

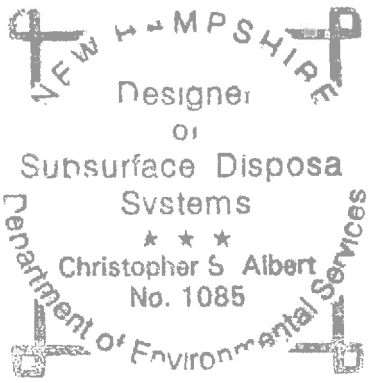
		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #13

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch



Test Pit #14

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #15

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

TEST PITS
FOR
0 LAFAYETTE RD
RYE, NEW HAMPSHIRE
March 6, 2020
JBE Project No. 18062.1

Performed by: Chris Albert, Jones & Beach Engineers, Inc., SSD #1085
Witnessed by: Dennis Plante

Test Pit #16

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #17

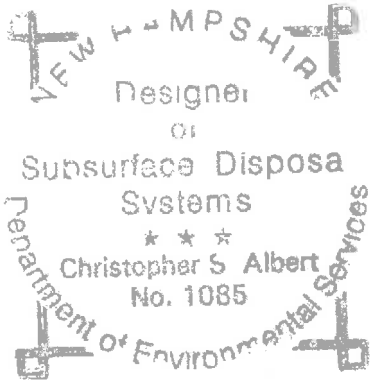
		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-24"	10YR 4/4	dark yellowish brown fine sandy loam few roots
24"-120"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #18

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-24"	10YR 4/4	dark yellowish brown fine sandy loam few roots
24"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch



Test Pit #19

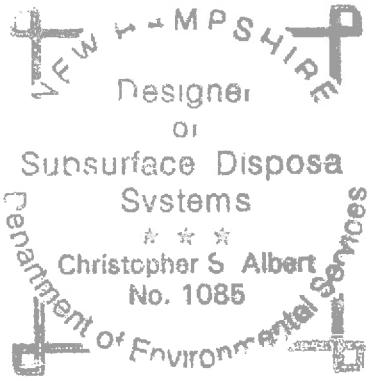
		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-24"	10YR 4/4	dark yellowish brown fine sandy loam few roots
24"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #20

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch



New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

April 20, 2021

Mr. Joseph Coronati, P.E.
Jones & Beach engineers, Inc.
85 Portsmouth Ave., P.O. Box 219
Stratham, NH 03885

RE: Rye, US 1, 0 & 295 Lafayette Road, 30 Unit Condo Project and Evolve Expansion

Dear Mr. Coronati:

On March 26, 2021, NHDOT received driveway permit applications and concept plans for the subject properties that abut each other. At your request, we have conceptually reviewed the proposed access configuration for both properties. This letter is to inform you that one driveway will be allowed for access to 0 Lafayette Road, located opposite Dow Lane, and the expansion of the Evolve facility will be allowed through its existing access. Approval of both driveways, and any potential mitigation, is subject to satisfying the conditions of the NHDOT Driveway Policy. Traffic study reports will need to be prepared for both projects that determine standard peak hour trip generation traffic volumes and present NCHRP turn treatment warrant analyses.

These driveway permit applications will be reviewed as major drive entrances. Please refer to page 9 of 31 of NHDOT's *"Policy for the Permitting of Driveways and Other Accesses to the State Highway System"* dated March 10, 2000 for the required information necessary to complete the application. Please contact James Hewitt at james.hewitt@dot.nh.gov if you have any questions.

Sincerely,

Roger L. Appleton P.E.
Assistant District Engineer

cc: Town of Rye

Stephen G. Pernaw & Company, Inc.

P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com

Transportation: Engineering • Planning • Design

MEMORANDUM

Ref: 2066A

To: Michael Garrepy
Tuck Realty

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Development
Rye, New Hampshire

Date: January 28, 2021 (Amended 5/18/21)

On January 28, 2021 our office prepared a *"Trip Generation"* memorandum for the proposed residential development located on the west side of US1 in Rye, New Hampshire. At the request of the NHDOT, this memorandum has been expanded to include an auxiliary turn lane warrants analysis for the proposed site access road on US1. The purpose of this amended memorandum is to summarize the results of our recent traffic counts, the trip generation analysis, the long-range traffic projections and the technical analyses, as well as our research of available traffic count data and sight distance evaluation. To summarize:

Proposed Development – According to the plan entitled *"Grading and Drainage Plan"* prepared by Jones & Beach Engineers, Inc. (see Attachment 1), the proposed development involves the construction of ten buildings with three dwelling units in each building. The site is located on the west side of US Route 1 (US1) in Rye, New Hampshire. Access to the thirty dwelling units will be provided via a two-way site access road that will intersect the west side of US1 directly across from Dow Lane, and it will terminate at a cul-de-sac.

Existing Traffic Volumes – Research at the NHDOT revealed that there is a permanent recorder station located approximately one-mile south of the subject site on US1 (North of North Road). According to the NHDOT reports, this section of US1 carried an Annual Average Daily Traffic (AADT) volume of approximately 16,139 vehicles per day (vpd) in 2019, down slightly from 16,254 vpd in 2018 (see Attachment 2). Interesting to note, the more recent traffic count data collected in January 2021 clearly shows the impact of the Covid-19 pandemic.

This data demonstrates that weekday traffic volumes in the area typically reach peak levels from 8:00 to 9:00 AM and from 3:00 to 4:00 PM, 4:00 to 5:00 PM or 5:00 to 6:00 PM thus corresponding to the typical commuter periods. The diagrams on Page 3 summarize the daily and hourly variations in traffic demand along the US1 corridor. (see Attachments 3 & 4.)

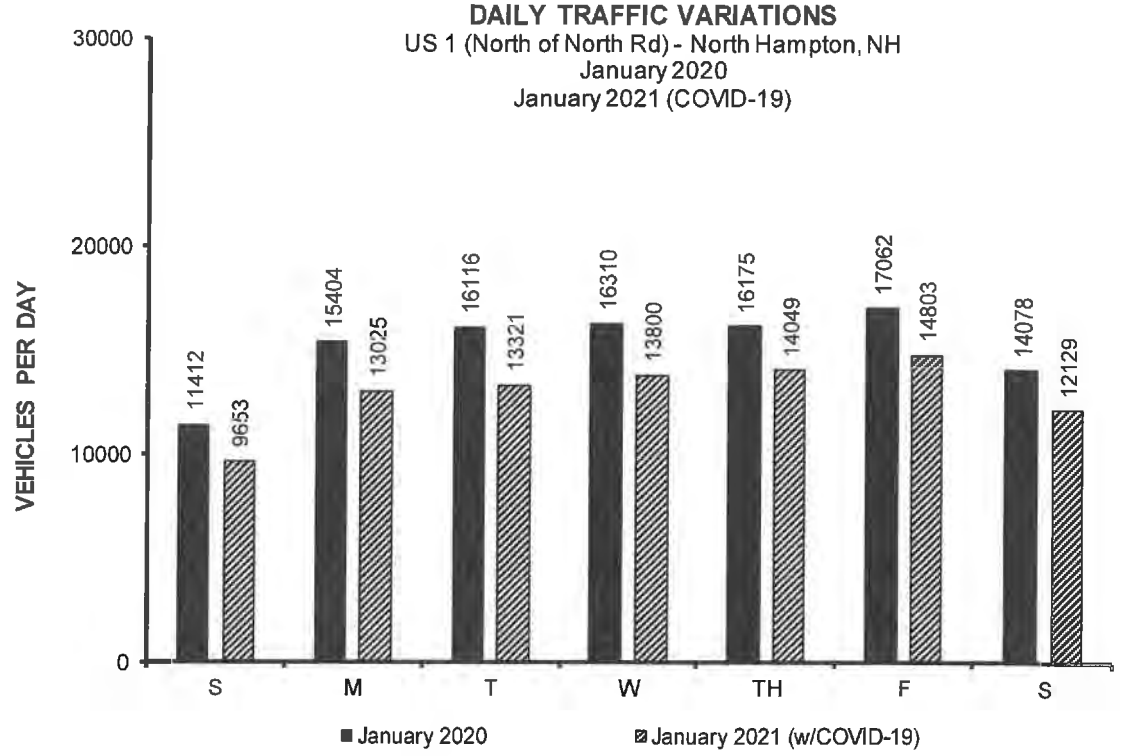
Figure 1 summarizes the results of the turning movement and vehicle classification count at the US1/Dow Lane intersection. This data shows that the two-way traffic on US1 (south of Dow Lane) totaled 945 (AM) and 1,196 (PM) vehicles during the peak hour periods. The majority

(54%) traveled in the northbound direction in the morning, and 56% traveled southbound in the evening. Dow Lane (combined with the NHDOT driveway) carried 111 (AM) and 113 (PM) vehicles during the peak hour periods. The predominant turning movements were northbound right-turns (from US1 to Dow Lane) and westbound left-turns (from Dow Lane to US1 south) (see Attachments 5 - 13).

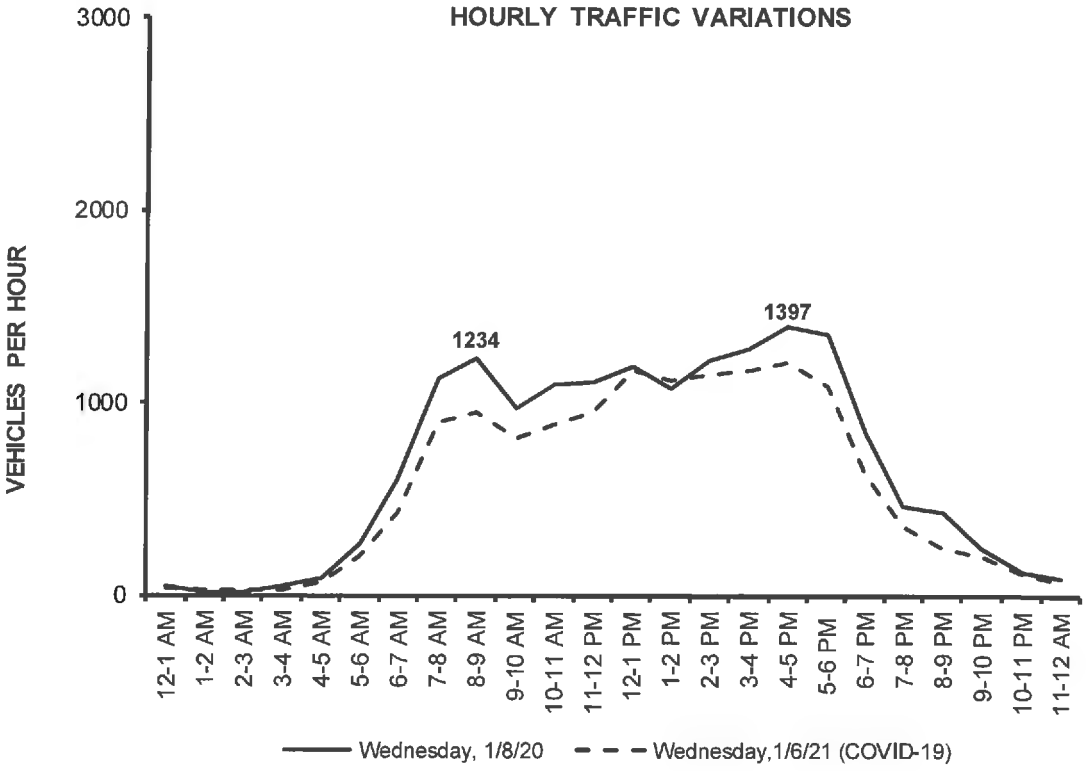
The NHDOT Patrol Section 610 site driveway accounted for 11 of the 111 vehicles that turned to/from US 1 at this intersection during the AM peak hour. The remaining 100 vehicles traveled via Dow Lane. The patrol shed did not generate any vehicle-trips during the 3:30-4:30 PM peak hour period, as all 113 vehicles utilized Dow Lane.

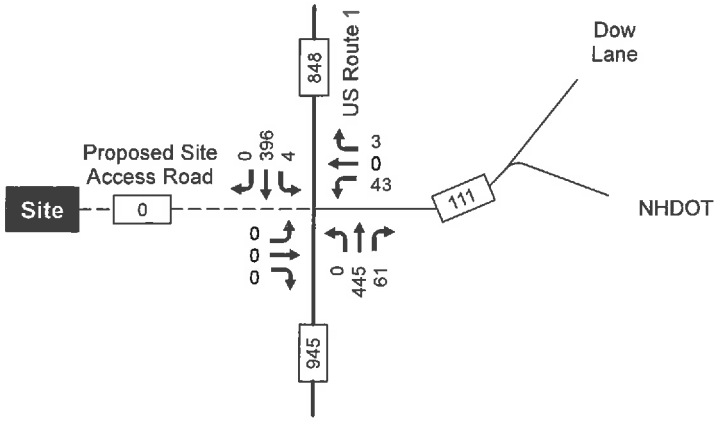
DAILY TRAFFIC VARIATIONS

US 1 (North of North Rd) - North Hampton, NH
January 2020
January 2021 (COVID-19)

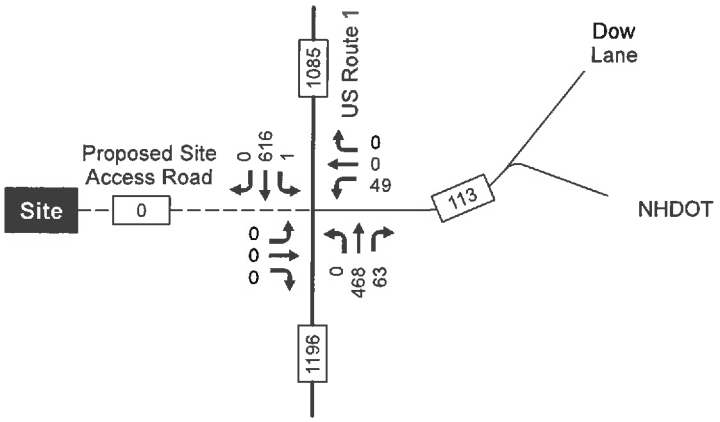


HOURLY TRAFFIC VARIATIONS





AM Peak Hour
Wednesday, January 20, 2021
8:00 - 9:00 AM



PM Peak Hour
Wednesday, January 20, 2021
3:30 - 4:30 PM

2066A

NORTH

Figure 1

2021 Existing Traffic Volumes

Traffic Impact Asessment, Proposed Residential Development, Rye, New Hampshire

Trip Generation - To estimate the quantity of vehicle-trips that will be generated by the proposed residential development, Pernaw & Company, Inc. considered the standard trip generation rates and equations published by the Institute of Transportation Engineers (ITE)[1]. Land Use Code 220 (Multifamily Housing (Low-Rise)) is the most applicable category, and the number of dwelling units was used as the independent variable.

The trip generation analysis is summarized on Table 1 and shows that the proposed residential development will generate approximately 15 vehicle-trips (3 arrival, 12 departures) during the AM peak hour period, and approximately 20 vehicle-trips (13 arrivals, 7 departures) during the PM peak hour period on an average weekday basis, when in fully occupied (see Attachment 14).

Table 1 — Trip Generation Summary - 30 Townhomes

	ITE Trip Rate Method [1]	ITE Trip Equation Method [1]
Weekday Total (24 hours)		
Entering	110 veh	93 veh
Exiting	110 veh	93 veh
Total	220 trips	186 trips
Weekday AM Peak Hour		
Entering	3 veh	3 veh
Exiting	11 veh	12 veh
Total	14 trips	15 trips
Weekday PM Peak Hour		
Entering	11 veh	13 veh
Exiting	6 veh	7 veh
Total	17 trips	20 trips

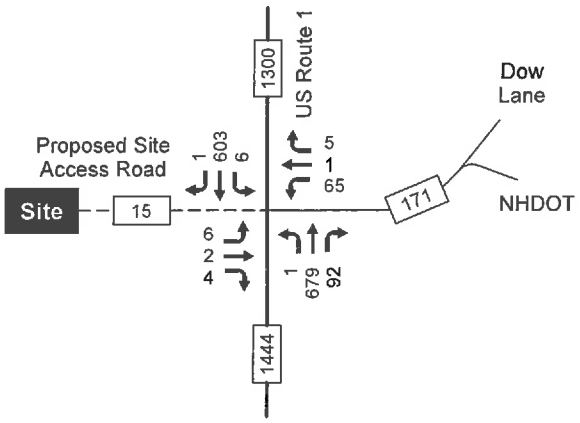
[1]ITE Land Use Code 220 - Multifamily Housing (Low-Rise) 30 Dwelling Units

Future Traffic Projections – In order to identify the net impact that site traffic will have in the study area, future traffic projections with and without the proposed residential development are necessary. The future traffic projections with the proposed development are referred to as the "Build" traffic projections and these are summarized on Figure 2 for the 2022 opening year case and the 2032 horizon year case. The trip distribution analysis indicates that the majority (46%) of the vehicles will travel to/from points north on US1, while 33% will travel to/from points south on US1 and the remaining 21% will travel to/from points east on Dow Lane (see Attachments 15 & 16).

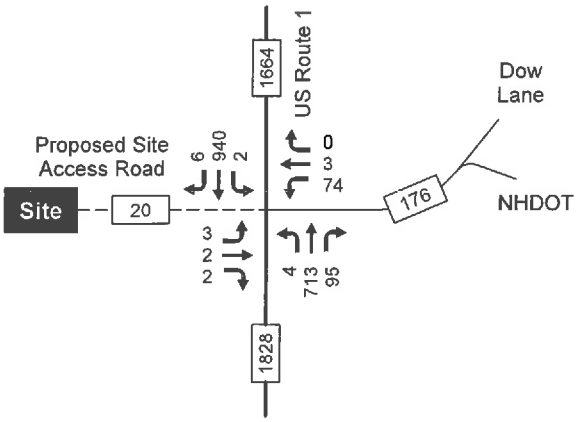
The Build projections are based on the existing traffic volumes (January 2021 data), a Covid-19 adjustment factor of 1.19, a 1.0 percent annual background traffic growth rate (compounded annually) to account for regional growth in the area, and a peak-month seasonal adjustment factor of 1.26. The derivation of these factors is contained in Attachments 17 – 19. These traffic projections also reflect completion of the proposed assisted-living facility at the abutting site to the north (Evolve at Rye).

[1] Institute of Transportation Engineers, *Trip Generation*, tenth edition (Washington, D.C., 2017).

2022 Build

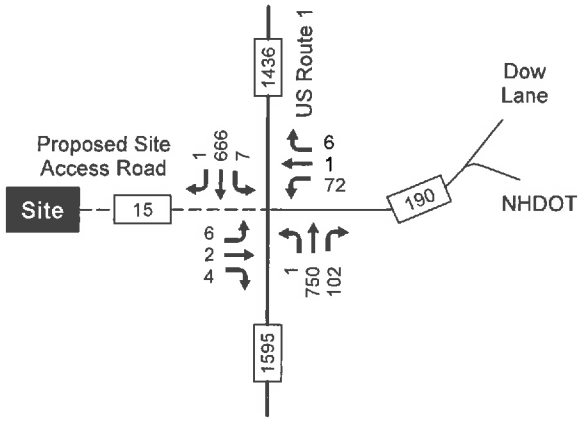


AM Peak Hour

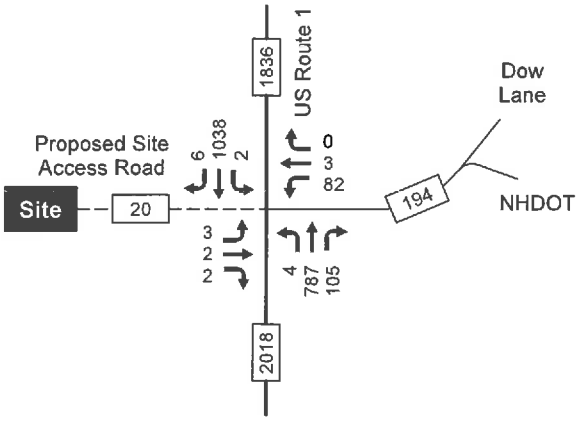


PM Peak Hour

2032 Build



AM Peak Hour



PM Peak Hour

NORTH

2066A

Figure 2

2022 & 2032 Build Traffic Volumes

Traffic Impact Asessment, Proposed Residential Development, Rye, New Hampshire

Auxiliary Turn Lane Warrants Analyses

Left-Turn Treatment - The type of treatment needed to accommodate left-turning vehicles from any street or highway to an intersecting side street (or driveway) can range from no treatment, where turning volumes are low; to the provision of a bypass lane for through traffic to travel around left-turning vehicles; to the addition of a formal center turn lane used exclusively by left-turning vehicles for deceleration and storage while waiting to complete their maneuvers.

Analysis of the 2032 Horizon Year traffic volumes using NCHRP 457 guidelines indicates that left-turn treatment is warranted in 2032 on US1 at the proposed site access road (see Table 2), but not in the 2022 opening year. It should be noted that only 1 (AM) and 4 (PM) northbound vehicles are expected to turn left into the subject site during the worst-case peak hour periods. Favorably, this section of US1 currently provides a continuous two-way center left-turn lane. This lane will be available for use by the occasional vehicle turning left into the subject site; similar to the occasional left-turning vehicle into the NHDOT patrol shed or Dow Lane.

Right-Turn Treatment - The type of treatment needed to accommodate right-turning vehicles from any street or highway to any intersecting side street (or driveway) can range from a radius only, where turning volumes are low; to the provision of a short 10:1 right-turn taper; to the addition of an exclusive right-turn lane, where turning volumes and through traffic volumes are significant.

Analysis of the 2022 and 2032 Build traffic volume projections using NCHRP 457 guidelines confirmed that right-turn treatment is not warranted at the proposed site access road on US1 (see Table 2). This means that the existing southbound travel lane on US1 will function safely and adequately as a shared through-right lane for the 1 (AM) and 6 (PM) southbound vehicles that are expected to turn right to the subject site during the worst-case peak hour periods.

Minor-Road Approach Analysis – The type of treatment needed to accommodate exiting vehicles from the minor-road approach at a stop-controlled intersection can range from a single lane (shared left-right lane) in low-volume conditions, to two exit lanes (exclusive left-turn lane and exclusive right-turn lane) where turning volumes and through traffic volumes are significant, to multiple exit lanes in extreme cases.

Analysis of the 2022 and 2032 Build traffic volumes using NCHRP 457 guidelines confirmed that one exit lane on the proposed site access road approach to US1 is sufficient for the anticipated traffic volumes (see Table 2).

The computations pertaining to the auxiliary turn lane warrants analyses are found in Attachments 20 – 31.

Table 2 — Auxiliary Turn Lane Warrants Analysis
US Route 1 / Proposed Site Access Road

	2022 AM Build	2022 PM Build	2032 AM Build	2032 PM Build
I. LEFT-TURN LANE WARRANTS ANALYSIS				
Peak Hour Inputs:				
Left-Turn Volume (NB)	1	4	1	4
Advancing Volume (NB)	772	812	853	896
Opposing Volume (SB)	610	948	674	1046
Percent Lefts	0.1%	0.5%	0.1%	0.4%
Speed (mph)	45	45	45	45
Limiting Advancing Volume (veh/h)	>1000	852	>1000	809
Left-Turn Treatment Warranted?	**NO**	**NO**	**NO**	**YES**
II.RIGHT-TURN LANE WARRANTS ANALYSIS				
Peak Hour Inputs:				
Right-Turn Volume (SB)	1	6	1	6
Approach Volume (SB)	610	948	674	1046
Speed (mph)	45	45	45	45
Limiting Right-Turn Volume (veh/h)	30	13	25	11
Add Right-Turn Bay?	**NO**	**NO**	**NO**	**NO**
III. MINOR-ROAD APPROACH ANALYSIS				
Peak Hour Inputs:				
Major-Road Volume (NB-SB)	1382	1760	1527	1942
% Right-Turns on Minor (EB)	33	29	33	29
Minor-Road Approach Volume	12	7	12	7
Limiting Minor-Road Volume (veh/h)	108	62	89	48
Consider TWO Approach Lanes?	**NO**	**NO**	**NO**	**NO**

Sight Distance – Sight distance at an intersection is an important safety consideration. The operator of a vehicle approaching an intersection should have an unobstructed view of the intersection and sufficient length of roadway to enable a full stop, should it be required to avoid a collision. Similarly, exiting vehicles from a minor approach (proposed site access road) should have sufficient visibility of approaching traffic in order to safely enter the traffic flow on to the major street (US1).

The view looking left and right from the proposed site access road approach on US1 is shown photographically in Attachment 32. With adequate maintenance of roadside vegetation (and snow banks) within the highway right-of-way, the required stopping sight distance for the posted speed limit (45 mph = 360 feet) and a reasonable design speed (55 mph = 495 feet) can be achieved.

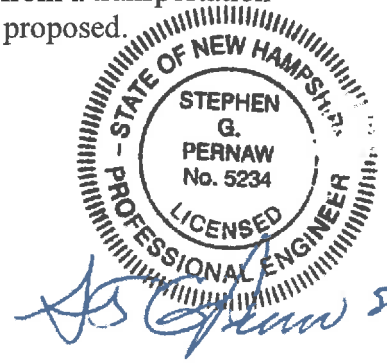
Findings & Conclusions:

Based upon the existing conditions data collected on US Route 1, the anticipated traffic volume increases associated with the proposed residential development, and the analysis of future traffic conditions at this study area intersection, Pernaw & Company, Inc. finds that:

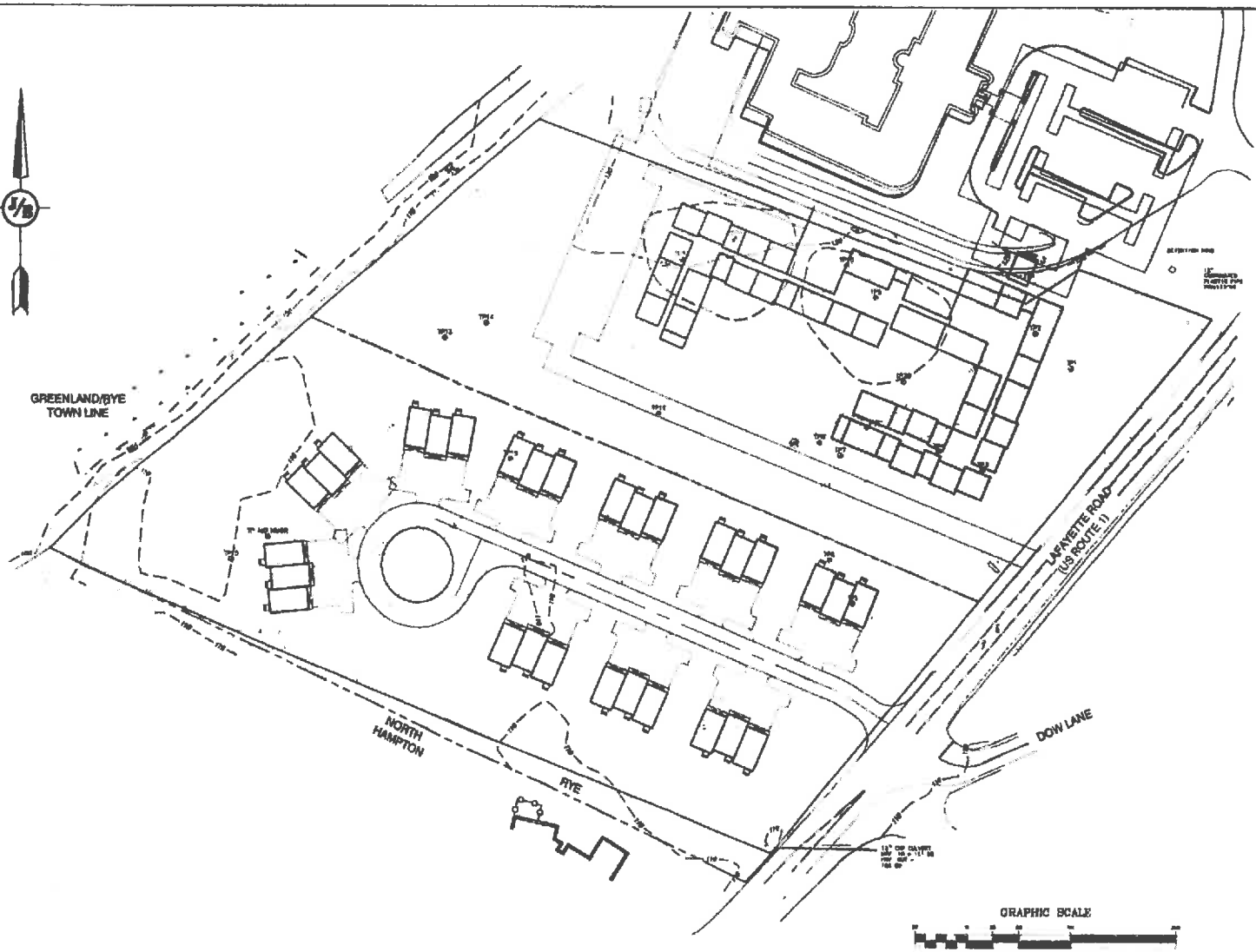
1. The traffic counts conducted by Pernaw & Company, Inc. at the Dow Lane intersection on US1 in January 2021 revealed that the peak traffic hours on US1 occurred from 8:00 to 9:00 AM and from 3:30 to 4:30 PM on a typical weekday. During these periods, 945 vehicles (AM) and 1,196 vehicles (PM) were observed traveling south of Dow Lane. These volumes are known to be below normal due to the ongoing pandemic; thus, they were subsequently adjusted to reflect normal peak-month conditions in 2032 for analysis purposes.
2. The Dow Lane (and the NHDOT patrol shed driveway) accommodated a total of 111 (AM) and 113 (PM) vehicles during the peak hour periods. The patrol shed was not active during the PM peak hour.
3. The trip generation analysis revealed that, on an average weekday basis, the proposed residential development will generate approximately +15 vehicle-trips (3 arrivals, 12 departures) during the AM peak hour, and 20 vehicle-trips (13 arrivals, 7 departures) during the PM peak hour period. The trip distribution analysis indicates that approximately 46% of site traffic will travel to/from points north on US1, 21% will travel east via Dow Lane, and the remaining 33% will travel to/from points south on US1.
4. The left-turn lane warrants analyses contained herein indicates that left-turn treatment will be advisable in 2032 for the 4 northbound vehicles turning left into the site during the PM peak hour. Favorably, this section of US1 currently provides a continuous two-way center left-turn lane that will be available to safely accommodate this movement.
5. The right-turn lane warrants analyses indicate that no special treatment is needed for southbound vehicles entering the site. This means that the existing southbound travel lane on US1 will function adequately as a shared through-right lane for southbound arrivals at the subject site.
6. The minor-road approach geometry analysis confirmed that one departure lane is sufficient on the site access road approach to US1.
7. Ample sight distances exist looking left and right from the proposed site access road approach to US1. Any future signs and/or plantings along the site frontage should be positioned in a manner that does not restrict the sight distance for aging drivers.
8. Given the extent of the site frontage along US1, and the proximity of the Dow Lane intersection on the opposite side of the highway, it is best to locate the proposed site access road directly across from Dow Lane with a near 90-degree approach angle, thereby creating a standard four-leg intersection (without offset approaches).

By maintaining clear "sight distance triangles" on the proposed site access road approach to US1, and designing said intersection for a reasonable Design Vehicle (and local fire apparatus), vehicular access and egress should be reasonably safe and efficient from a transportation engineering standpoint, for the size and type of development that is proposed.

Attachments



ATTACHMENTS



GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION DOES NOT GUARANTEE APPROXIMATE SHALL. HOYLE, TANNER & ASSOCIATES, INC., AND ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING DIG-SAFE (888-344-7233).
2. VERTICAL DATUM SHOWN.
3. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
4. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET C1.
5. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND ELEVATION STAKED OUT FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
6. ALL ROOF DRAINS FROM BUILDING SHALL END 5' OUTSIDE THE GRADING LIMITS AS SHOWN ON PLAN AND SHALL BE PIPED WITH A TEMPORARY PLUG AND MARKED AT THE END. ALL EXTERIOR DROP DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW SPLASH.
7. ALL SWALES AND RETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO AREA.
8. PROPOSED SPOT ELEVATIONS AT GRANITE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADE.
9. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER, UNLESS OTHERWISE SPECIFIED.
10. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE METERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON PLANS. PLANS, CATCH BASINS SHALL HAVE 2' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
11. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE DETAIL SHEETS FOR DRAINAGE DETAILS.
12. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
13. IMMEDIATELY AFTER AND CONPACT STONE BASE FOR BUILDING PAD TO +/-.10' PRIOR TO EXCAVATING INTERIOR AND PERIMETER FOOTINGS.
14. IN AREAS WHERE CONSTRUCTION IS PERFORMED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTORS SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL LARGE AREAS. SILT FENCING IS NOT ADEQUATE.
15. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
16. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
17. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION ACTIVITIES.
18. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
19. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
20. DURING CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
21. EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
22. THE PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
23. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
24. IF INSTALLATION OF STORM DRAINAGE INLETS SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
25. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO CONTROL PERMANENT SOIL STABILIZATION.
26. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 50% FULL.
27. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
28. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
29. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET C1.

PROJECT PARCEL
TOWN OF RYE
TAX MAP 10, LOT 1

APPLICANT
TUCK REALTY CORP.
ATTN: MIKE GARFEIFY
149 EPPING ROAD, SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
418,420 SQ. FT.
9.59 ACRES

Designed: JMC	Drawn: PBL	Date: 10/17/19
Checked: JMC	Scale: 1"=40'	Project No.: 19067.1
Drawing Name: 19067PLAN.dwg		

REV	DATE	REVISION	BY
1	10/18/19	REVISED CONCEPTUAL LAYOUT	DAM
2	10/21/19	MINOR REVISIONS	DAM
3	10/23/19	REVISED PLANS ISSUED FOR REVIEW	AMJ
4	11/12/19	ISSUED FOR REVIEW	PBL
REV	DATE	REVISION	BY

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	HECTOR'S SITE LAFAYETTE ROAD, RYE, NH
Owner of Record:	MALCOLM E. SMITH III PO BOX 1680, HAMPTON, NH 03842, BK 5079 PG 0262

DRAWING No.
C3
SHEET 6 OF 14
JBE PROJECT NO. 19067.1

Attachment 1

New Hampshire DOT Department of Transportation

MS2

Transportation Data Management System

List View | All DIRs

Record 70 of 5744 Go to Record go

Location ID	02345001	MPO ID	
Type	SPOT	HPMS ID	
On NHS	Yes	On HPMS	Yes
LRS ID	U0000001__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	US 1
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	1
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Perm		
Fnct'l Class	Other Principal Arterial	Milepost	
Located On	Lafayette Rd		
Loc On Alias	US 1 (LAFAYETTE RD) NORTH OF NORTH RD (SB-NB) (01345005-01345006)		

More Detail

STATION DATA Show Data

Directions: 2-WAY | NB 1 | SB 1

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2019	16,139	1,576	10	50	14,783 (92%)	1,356 (8%)	
2018	16,254	1,620	10	54	14,985 (92%)	1,269 (8%)	
2017	16,356						
2016	16,353						
2015	16,290						

> | >>| 1-5 of 65

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total
	Sun 1/10/2021	60	9,653
	Sat 1/9/2021	60	12,129
	Fri 1/8/2021	60	14,803
	Thu 1/7/2021	60	14,049
	Wed 1/6/2021	60	13,800
	Tue 1/5/2021	60	13,321
	Mon 1/4/2021	60	13,025
	Sun 1/3/2021	60	8,526
	Sat 1/2/2021	60	10,880
	Fri 1/1/2021	60	8,555

> | >>| 1-10 of 9422

mm/dd/yyyy To Date

VOLUME TREND

Year	Annual Growth
2019	-1%
2018	-1%
2017	0%
2016	0%
2015	1%
2014	-1%
2013	-1%
2012	-3%
2011	0%
2010	0%

> | >>| 1-10 of 64

New Hampshire DOT Department of Transportation

MS2

Transportation Data Management System

Excel Version

Weekly Volume Report			
Location ID:	02345001	**Type:**	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	NORTH HAMPTON	**Period:**	Mon 1/6/2020 - Sun 1/12/2020
AADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	30	51	43	45	47	78	66	51	0.3%
1:00 AM	21	17	18	26	25	37	41	26	0.2%
2:00 AM	20	21	16	25	29	15	27	22	0.1%
3:00 AM	24	37	46	27	36	25	22	31	0.2%
4:00 AM	86	91	91	98	88	47	17	74	0.5%
5:00 AM	287	283	262	290	250	109	81	223	1.5%
6:00 AM	605	607	608	578	616	209	143	481	3.2%
7:00 AM	1077	1087	1125	1057	1081	426	294	878	5.8%
8:00 AM	1226	1265	1234	1205	1213	687	540	1,053	6.9%
9:00 AM	900	968	967	934	1013	855	688	904	5.9%
10:00 AM	906	1045	1092	1000	1058	1037	918	1,008	6.6%
11:00 AM	1081	1148	1104	1120	1169	1244	1064	1,133	7.4%
12:00 PM	1158	1163	1188	1093	1332	1302	1260	1,214	8.0%
1:00 PM	1151	1093	1075	1122	1207	1359	1181	1,170	7.7%
2:00 PM	1173	1214	1217	1185	1395	1348	1218	1,250	8.2%
3:00 PM	1306	1308	1285	1358	1356	1277	1046	1,276	8.4%
4:00 PM	1264	1395	1397	1392	1440	1118	863	1,267	8.3%
5:00 PM	1242	1267	1352	1394	1291	905	645	1,157	7.6%
6:00 PM	734	799	846	845	832	669	485	744	4.9%
7:00 PM	392	443	464	494	534	420	282	433	2.8%
8:00 PM	310	365	433	366	403	349	226	350	2.3%
9:00 PM	224	237	240	282	317	275	160	248	1.6%
10:00 PM	123	137	117	148	214	170	97	144	0.9%
11:00 PM	64	77	90	91	116	117	48	86	0.6%
Total	**15,404**	**16,116**	**16,310**	**16,175**	**17,062**	**14,078**	**11,412**		
24hr Total	15404	16116	16310	16175	17062	14078	11412	15,222	
AM Pk Hr	8:00	8:00	8:00	8:00	8:00	11:00	11:00		
AM Peak	1226	1265	1234	1205	1213	1244	1064	1,207	
PM Pk Hr	3:00	4:00	4:00	5:00	4:00	1:00	12:00		
PM Peak	1306	1395	1397	1394	1440	1359	1260	1,364	
% Pk Hr	8.48%	8.66%	8.57%	8.62%	8.44%	9.65%	11.04%	9.07%	

New Hampshire DOT Department of Transportation

MS2

Transportation Data Management System

Excel Version

Weekly Volume Report			
Location ID:	02345001	**Type:**	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	NORTH HAMPTON	**Period:**	Mon 1/4/2021 - Sun 1/10/2021
AADT:			

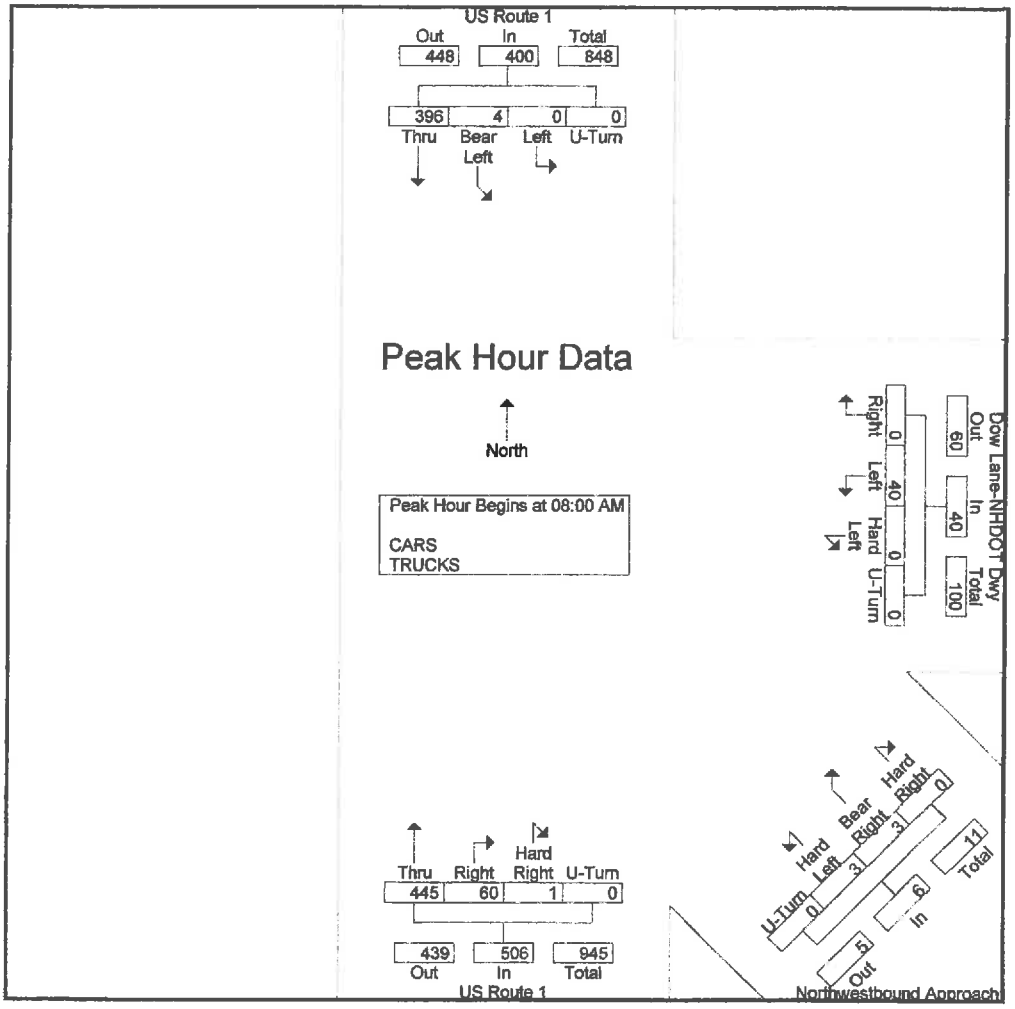
Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	22	31	32	26	48	47	34	34	0.3%
1:00 AM	18	22	28	19	19	29	34	24	0.2%
2:00 AM	24	19	21	18	24	16	23	21	0.2%
3:00 AM	19	29	28	37	32	14	16	25	0.2%
4:00 AM	71	56	72	68	57	32	22	54	0.4%
5:00 AM	176	199	198	200	179	64	45	152	1.2%
6:00 AM	423	443	434	451	433	146	100	347	2.7%
7:00 AM	835	818	897	848	808	348	228	683	5.3%
8:00 AM	888	963	944	961	940	544	350	799	6.2%
9:00 AM	788	810	816	789	800	693	527	746	5.8%
10:00 AM	910	848	891	909	942	932	711	878	6.8%
11:00 AM	979	967	946	1017	1119	1152	874	1,008	7.8%
12:00 PM	1012	1028	1162	1125	1251	1239	1068	1,126	8.7%
1:00 PM	1035	1041	1115	1138	1126	1243	1086	1,112	8.6%
2:00 PM	1118	1045	1143	1174	1266	1208	1024	1,140	8.8%
3:00 PM	1161	1155	1170	1210	1352	1119	951	1,160	8.9%
4:00 PM	1171	1181	1205	1207	1279	988	795	1,118	8.6%
5:00 PM	1001	1059	1088	1125	1193	813	607	984	7.6%
6:00 PM	578	693	627	676	711	522	437	606	4.7%
7:00 PM	320	370	360	365	477	336	259	355	2.7%
8:00 PM	187	218	241	271	292	264	203	239	1.8%
9:00 PM	136	151	204	211	186	177	132	171	1.3%
10:00 PM	88	110	109	132	173	137	86	119	0.9%
11:00 PM	65	65	69	72	96	66	41	68	0.5%
Total	**13,025**	**13,321**	**13,800**	**14,049**	**14,803**	**12,129**	**9,653**		
24hr Total	13025	13321	13800	14049	14803	12129	9653	12,969	
AM Pk Hr	11:00	11:00	11:00	11:00	11:00	11:00	11:00		
AM Peak	979	967	946	1017	1119	1152	874	1,008	
PM Pk Hr	4:00	4:00	4:00	3:00	3:00	1:00	1:00		
PM Peak	1171	1181	1205	1210	1352	1243	1086	1,207	
% Pk Hr	8.99%	8.87%	8.73%	8.61%	9.13%	10.25%	11.25%	9.40%	

Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App Total	Right	Left	Hard Left	U-Turn	App Total	Hard Right	Bear Right	Hard Left	U-Turn	App Total	Hard Right	Right	Thru	U-Turn	App Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	103	1	0	0	104	0	17	0	0	17	0	0	1	0	1	0	14	98	0	112	234
08:15 AM	109	0	0	0	109	0	8	0	0	8	0	0	1	0	1	1	19	113	0	133	251
08:30 AM	82	0	0	0	82	0	5	0	0	5	0	3	1	0	4	0	14	110	0	124	215
08:45 AM	102	3	0	0	105	0	10	0	0	10	0	0	0	0	0	0	13	124	0	137	252
Total Volume	396	4	0	0	400	0	40	0	0	40	0	3	3	0	6	1	60	445	0	506	952
% App. Total	99	1	0	0		0	100	0	0		0	50	50	0		0.2	11.9	87.9	0		
PHF	.908	.333	.000	.000	.917	.000	.588	.000	.000	.588	.000	.250	.750	.000	.375	.250	.789	.897	.000	.923	.944



Stephen G. Pernaw & Company, Inc.
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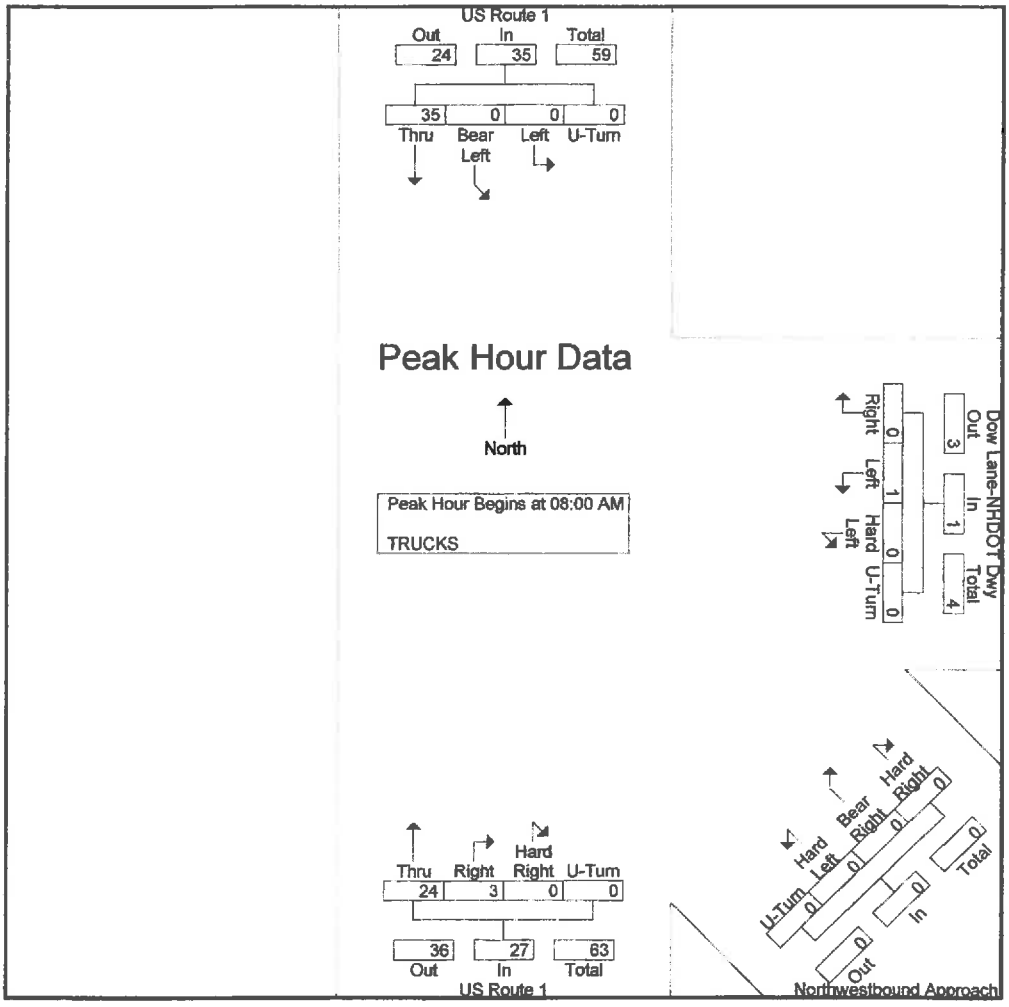
Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	17
08:15 AM	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	2	9	0	11	20
08:30 AM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
08:45 AM	7	0	0	0	7	0	1	0	0	1	0	0	0	0	0	0	0	5	0	5	13
Total Volume	35	0	0	0	35	0	1	0	0	1	0	0	0	0	0	0	3	24	0	27	63
% App. Total	100	0	0	0		0	100	0	0		0	0	0	0		0	11.1	88.9	0		
PHF	.673	.000	.000	.000	.673	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.375	.667	.000	.614	.788



Stephen G. Pernaw & Company, Inc.
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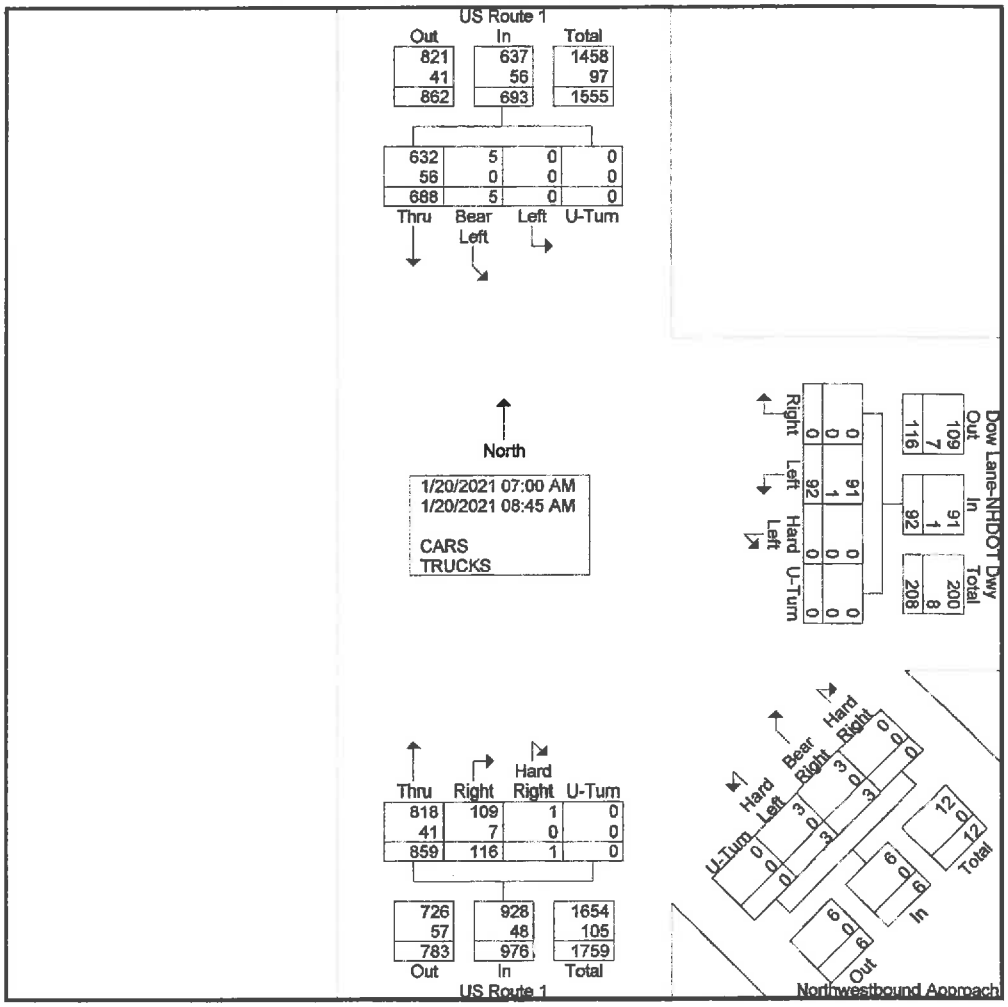
Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_PM
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- CARS - TRUCKS

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App Total	Hard Right	Bear Right	Hard Left	U-Turn	App Total	Hard Right	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	71	0	0	0	71	0	11	0	0	11	0	0	0	0	0	0	6	66	0	72	154
07:15 AM	72	1	0	0	73	0	13	0	0	13	0	0	0	0	0	0	12	114	0	126	212
07:30 AM	69	0	0	0	69	0	11	0	0	11	0	0	0	0	0	0	22	113	0	135	215
07:45 AM	80	0	0	0	80	0	17	0	0	17	0	0	0	0	0	0	16	121	0	137	234
Total	292	1	0	0	293	0	52	0	0	52	0	0	0	0	0	0	56	414	0	470	815
08:00 AM	103	1	0	0	104	0	17	0	0	17	0	0	1	0	1	0	14	98	0	112	234
08:15 AM	109	0	0	0	109	0	8	0	0	8	0	0	1	0	1	1	19	113	0	133	251
08:30 AM	82	0	0	0	82	0	5	0	0	5	0	3	1	0	4	0	14	110	0	124	215
08:45 AM	102	3	0	0	105	0	10	0	0	10	0	0	0	0	0	0	13	124	0	137	252
Total	396	4	0	0	400	0	40	0	0	40	0	3	3	0	6	1	60	445	0	506	952
Grand Total	688	5	0	0	693	0	92	0	0	92	0	3	3	0	6	1	116	859	0	976	1767
Apprch %	99.3	0.7	0	0		0	100	0	0		0	50	50	0		0.1	11.9	88	0		
Total %	38.9	0.3	0	0	39.2	0	5.2	0	0	5.2	0	0.2	0.2	0	0.3	0.1	6.6	48.6	0	55.2	
CARS	632	5	0	0	637	0	91	0	0	91	0	3	3	0	6	1	109	818	0	928	1662
% CARS	91.9	100	0	0	91.9	0	98.9	0	0	98.9	0	100	100	0	100	100	94	95.2	0	95.1	94.1
TRUCKS	56	0	0	0	56	0	1	0	0	1	0	0	0	0	0	0	7	41	0	48	105
% TRUCKS	8.1	0	0	0	8.1	0	1.1	0	0	1.1	0	0	0	0	0	0	6	4.8	0	4.9	5.9



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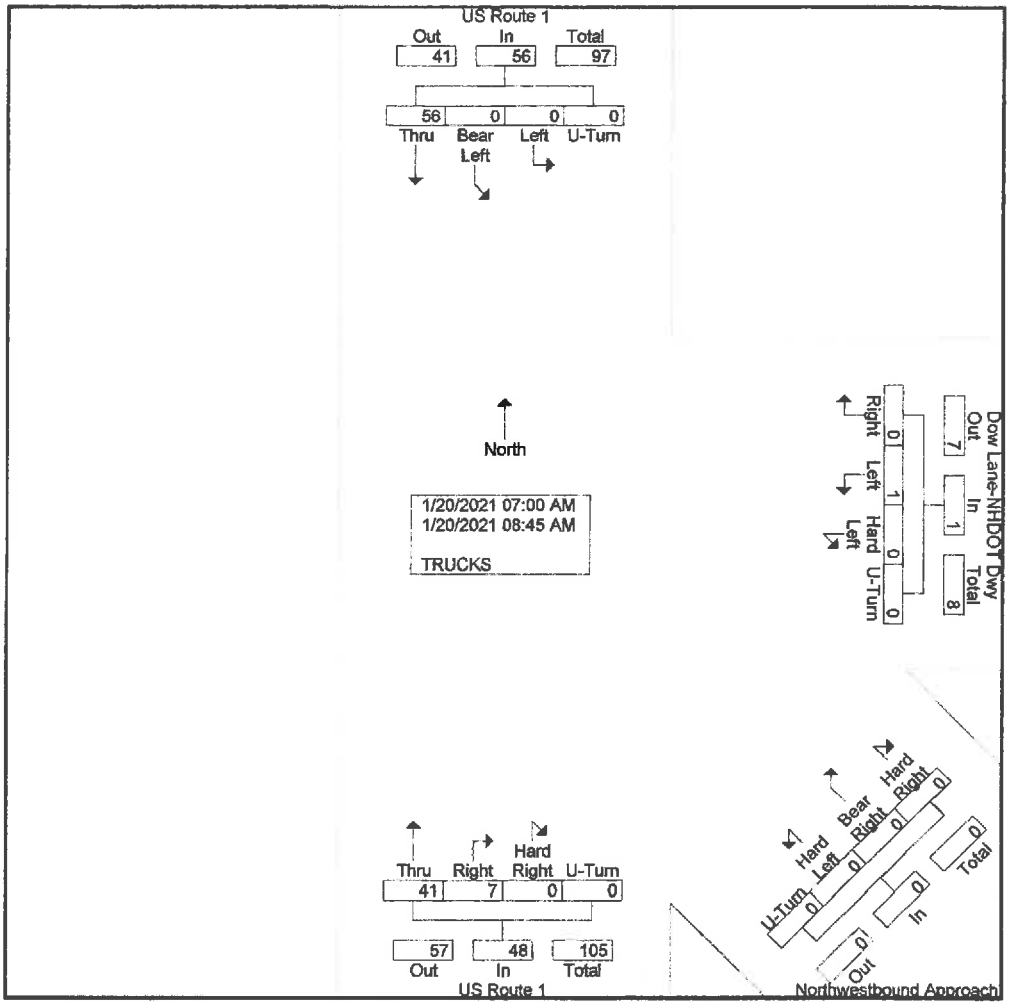
Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_Pl
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- TRUCKS

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2	5	0	7	11
07:15 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	8
07:30 AM	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	2	4	0	6	13
07:45 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	10
Total	21	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	4	17	0	21	42
08:00 AM	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	17
08:15 AM	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	2	9	0	11	20
08:30 AM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
08:45 AM	7	0	0	0	7	0	1	0	0	1	0	0	0	0	0	0	0	5	0	5	13
Total	35	0	0	0	35	0	1	0	0	1	0	0	0	0	0	0	3	24	0	27	63
Grand Total	56	0	0	0	56	0	1	0	0	1	0	0	0	0	0	0	7	41	0	48	105
Apprch %	100	0	0	0		0	100	0	0		0	0	0	0		0	14.6	85.4	0		
Total %	53.3	0	0	0	53.3	0	1	0	0	1	0	0	0	0	0	0	6.7	39	0	45.7	

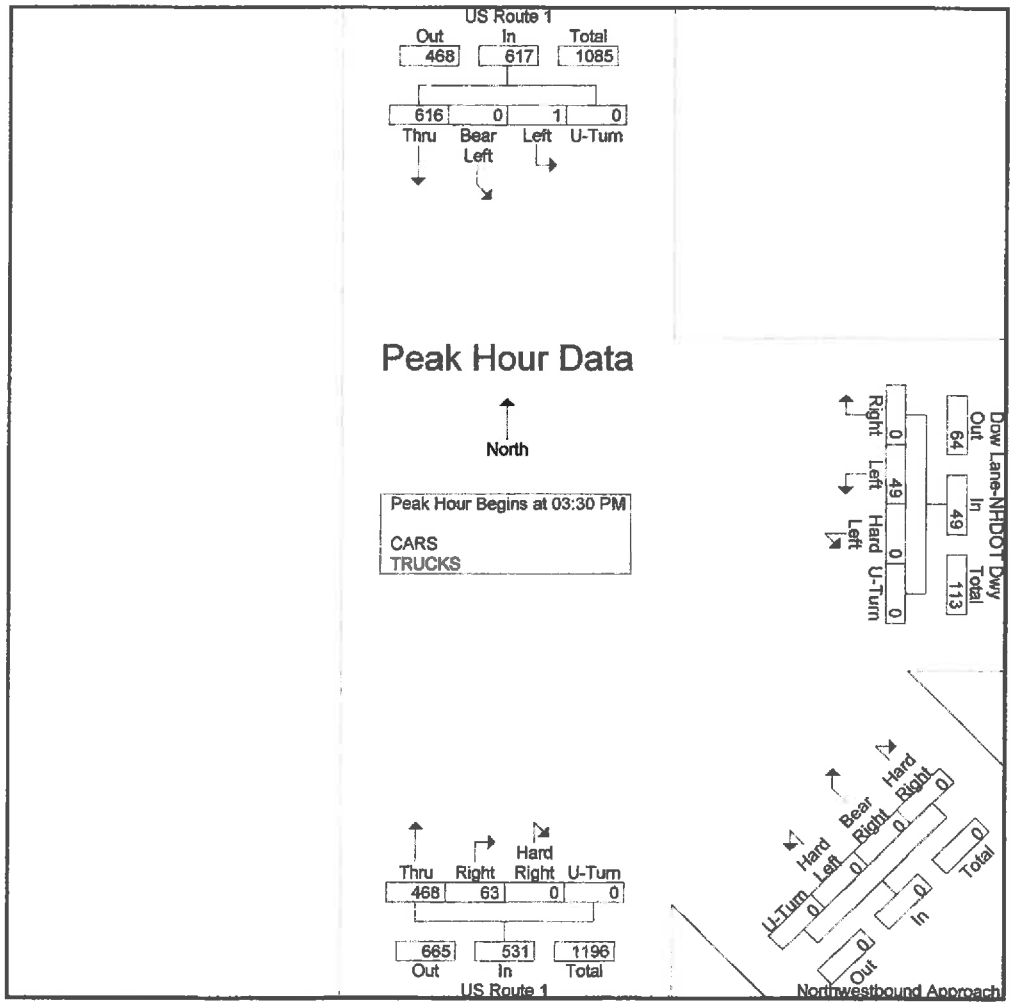


Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_Pl
Site Code : 2066A
Start Date : 1/20/2021
Page No : 3

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	172	0	0	0	172	0	11	0	0	11	0	0	0	0	0	0	12	112	0	124	307
03:45 PM	146	0	0	0	146	0	17	0	0	17	0	0	0	0	0	0	21	123	0	144	307
04:00 PM	150	0	1	0	151	0	12	0	0	12	0	0	0	0	0	0	15	132	0	147	310
04:15 PM	148	0	0	0	148	0	9	0	0	9	0	0	0	0	0	0	15	101	0	116	273
Total Volume	616	0	1	0	617	0	49	0	0	49	0	0	0	0	0	0	63	468	0	531	1197
% App. Total	99.8	0	0.2	0		0	100	0	0		0	0	0	0		0	11.9	88.1	0		
PHF	.895	.000	.250	.000	.897	.000	.721	.000	.000	.721	.000	.000	.000	.000	.000	.000	.750	.886	.000	.903	.965



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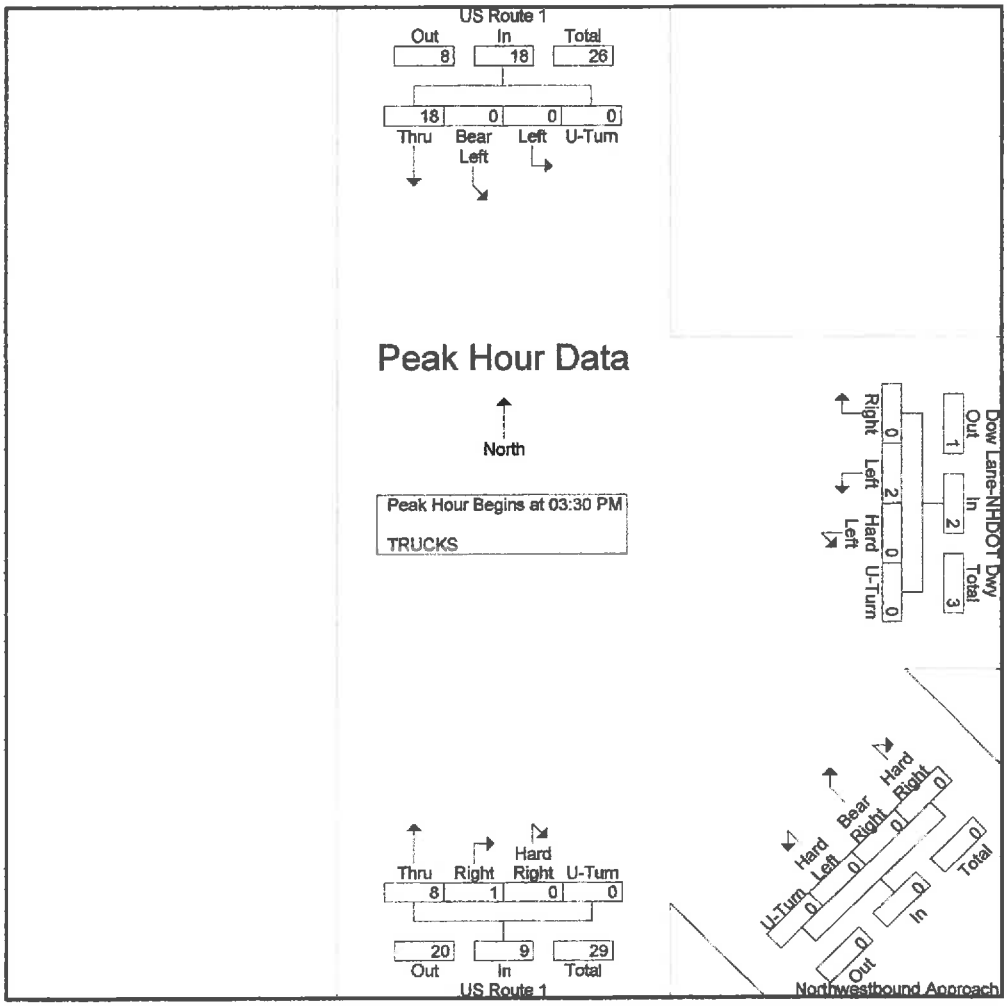
Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App Total	Right	Left	Hard Left	U-Turn	App Total	Hard Right	Bear Right	Hard Left	U-Turn	App Total	Hard Right	Right	Thru	U-Turn	App Total	Int. Total
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	8	0	0	0	8	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	10
03:45 PM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	10
04:00 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	6
04:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
Total Volume	18	0	0	0	18	0	2	0	0	2	0	0	0	0	0	0	1	8	0	9	29
% App. Total	100	0	0	0		0	100	0	0		0	0	0	0		0	11.1	88.9	0		
PHF	.563	.000	.000	.000	.563	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.667	.000	.563	.725



Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- CARS - TRUCKS

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App. Total	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	U-Turn	App. Total	Int. Total
03:00 PM	159	0	0	0	159	0	14	0	0	14	0	1	2	0	3	0	15	110	0	125	301
03:15 PM	126	1	0	0	127	0	14	0	0	14	0	0	0	0	0	0	16	105	0	121	262
03:30 PM	172	0	0	0	172	0	11	0	0	11	0	0	0	0	0	0	12	112	0	124	307
03:45 PM	146	0	0	0	146	0	17	0	0	17	0	0	0	0	0	0	21	123	0	144	307
Total	603	1	0	0	604	0	56	0	0	56	0	1	2	0	3	0	64	450	0	514	1177
04:00 PM	150	0	1	0	151	0	12	0	0	12	0	0	0	0	0	0	15	132	0	147	310
04:15 PM	148	0	0	0	148	0	9	0	0	9	0	0	0	0	0	0	15	101	0	116	273
04:30 PM	112	0	0	0	112	0	20	0	0	20	0	0	0	0	0	0	17	102	0	119	251
04:45 PM	129	0	0	0	129	0	10	0	0	10	0	0	0	0	0	0	24	112	0	136	275
Total	539	0	1	0	540	0	51	0	0	51	0	0	0	0	0	0	71	447	0	518	1109
05:00 PM	165	0	0	0	165	0	6	0	0	6	0	0	0	0	0	0	25	136	0	161	332
05:15 PM	131	0	1	0	132	1	10	0	0	11	0	0	0	0	0	0	22	104	0	126	269
05:30 PM	132	0	0	0	132	0	6	0	0	6	0	0	0	0	0	0	19	95	0	114	252
05:45 PM	103	0	1	0	104	0	10	0	0	10	0	0	0	0	0	0	20	74	0	94	208
Total	531	0	2	0	533	1	32	0	0	33	0	0	0	0	0	0	86	409	0	495	1061
Grand Total	1673	1	3	0	1677	1	139	0	0	140	0	1	2	0	3	0	221	1308	0	1527	3347
Apprch %	99.8	0.1	0.2	0		0.7	99.3	0	0		0	33.3	66.7	0		0	14.5	85.5	0		
Total %	50	0	0.1	0	50.1	0	4.2	0	0	4.2	0	0	0.1	0	0.1	0	6.6	39	0	45.6	
CARS	1632	1	3	0	1636	1	134	0	0	135	0	1	2	0	3	0	218	1286	0	1504	3278
% CARS	97.5	100	100	0	97.6	100	96.4	0	0	96.4	0	100	100	0	100	0	98.6	98.5	0	98.5	97.9
TRUCKS	41	0	0	0	41	0	5	0	0	5	0	0	0	0	0	0	3	20	0	23	69
% TRUCKS	2.5	0	0	0	2.4	0	3.6	0	0	3.6	0	0	0	0	0	0	1.4	1.5	0	1.5	2.1

Stephen G. Pernaw & Company, Inc.
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Weather: Clear
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Job Number: 2066A
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File Name : 2066A_Dow_Ln_AM_&_PI
Site Code : 2066A
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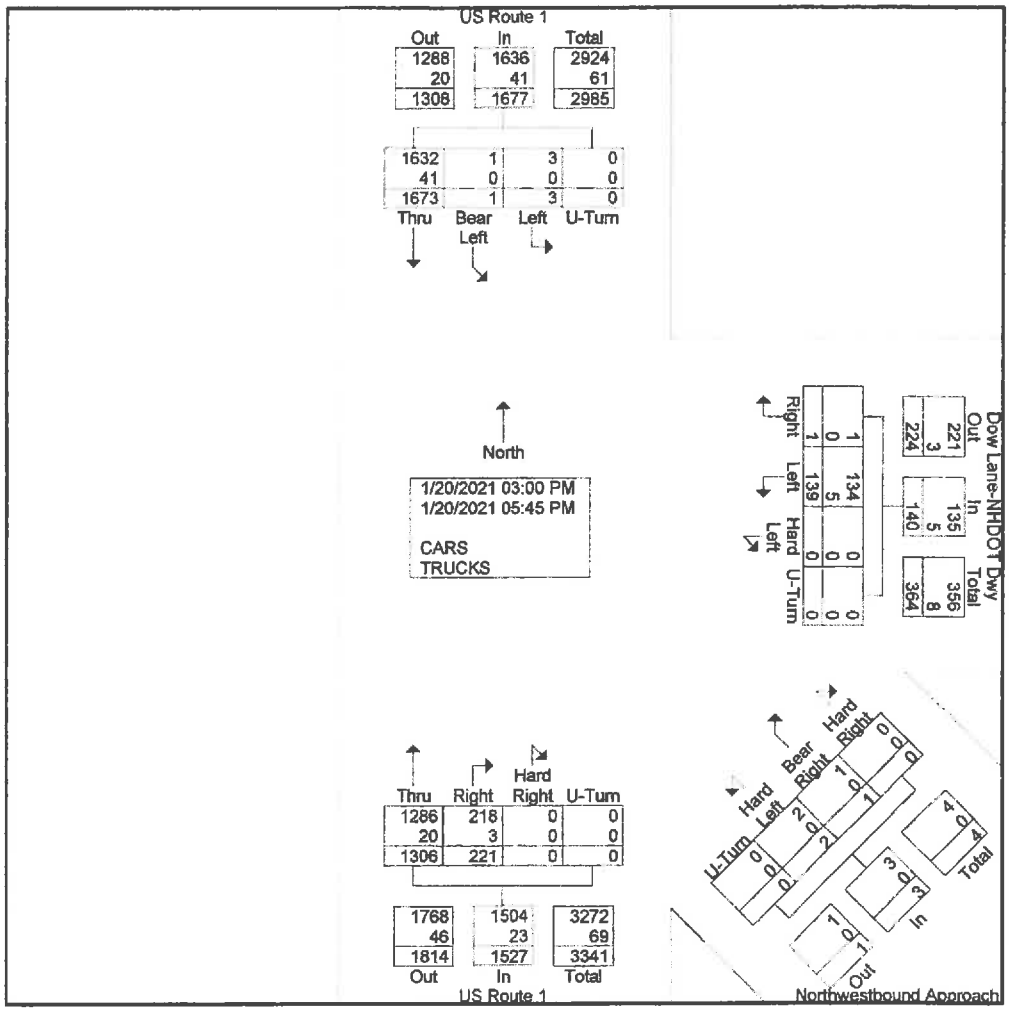
Page No : 2



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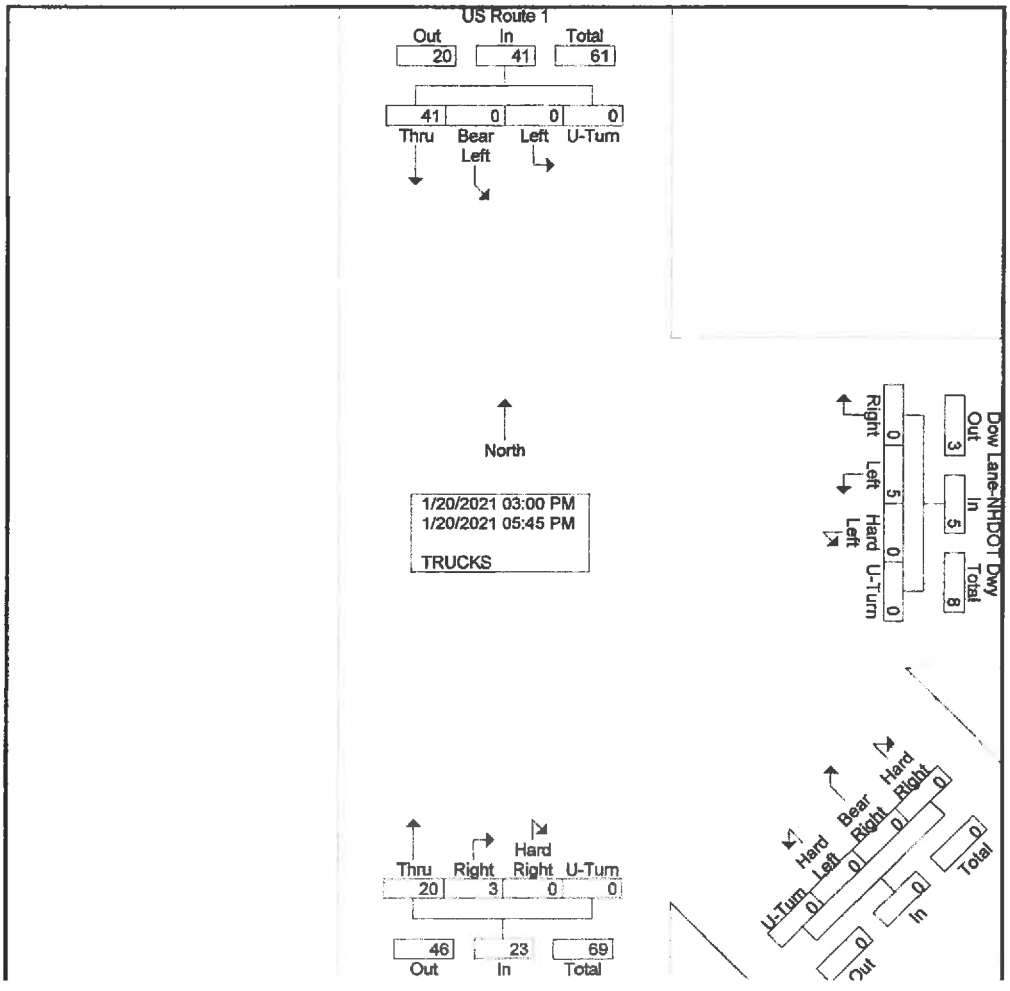
Weather: Clear
Collecteed By: MV
Job Number: 2066A
Town/State: Rye, NH

File Name : 2066A_Dow_Ln_AM_&_PM
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- TRUCKS

	US Route 1 From North					Dow Lane-NHDOT Dwy From East					Northwestbound Approach From Southeast					US Route 1 From South					
Start Time	Thru	Bear Left	Left	U-Turn	App Total	Right	Left	Hard Left	U-Turn	App Total	Hard Right	Bear Right	Hard Left	U-Turn	App Total	Hard Right	Right	Thru	U-Turn	App Total	Int. Total
03:00 PM	8	0	0	0	8	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	11
03:15 PM	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	12
03:30 PM	8	0	0	0	8	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	10
03:45 PM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	10
Total	30	0	0	0	30	0	3	0	0	3	0	0	0	0	0	0	2	8	0	10	43
04:00 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	6
04:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
04:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
Total	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	15
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	4	0	0	0	4	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	7
Total	6	0	0	0	6	0	2	0	0	2	0	0	0	0	0	0	1	2	0	3	11
Grand Total	41	0	0	0	41	0	5	0	0	5	0	0	0	0	0	0	3	20	0	23	69
Apprch %	100	0	0	0		0	100	0	0		0	0	0	0		0	13	87	0		
Total %	59.4	0	0	0	59.4	0	7.2	0	0	7.2	0	0	0	0	0	0	4.3	29	0	33.3	



Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: 2066A Gen

Open Date: 1/27/2021
Analysis Date: 1/27/2021

ITE	Land Use	*	Weekday Average Daily Trips Enter	Exit	Total	*	Weekday AM Peak Hour of Adjacent Street Traffic Enter	Exit	Total	*	Weekday PM Peak Hour of Adjacent Street Traffic Enter	Exit	Total
220	LOW-RISE 2 RATE METHOD		110	110	220		3	11	14		11	6	17
	30 Dwelling Units												
220	LOW-RISE 1 EQUATION METHOD		93	93	186		3	12	15		13	7	20
	30 Dwelling Units												
Unadjusted Volume			203	203	406		6	23	29		24	13	37
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			203	203	406		6	23	29		24	13	37

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC

Attachment 14

Stephen G. Pernaw & Company, Inc.

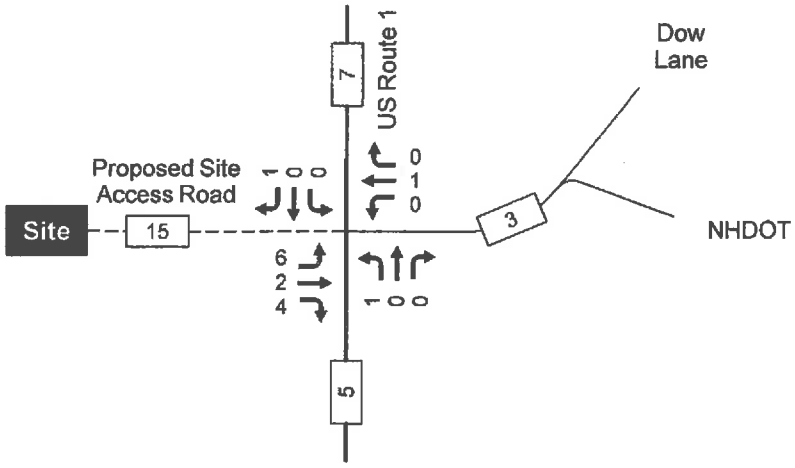
Location: Rye, New Hampshire
Job Number: 2066A

TRIP DISTRIBUTION ANALYSIS

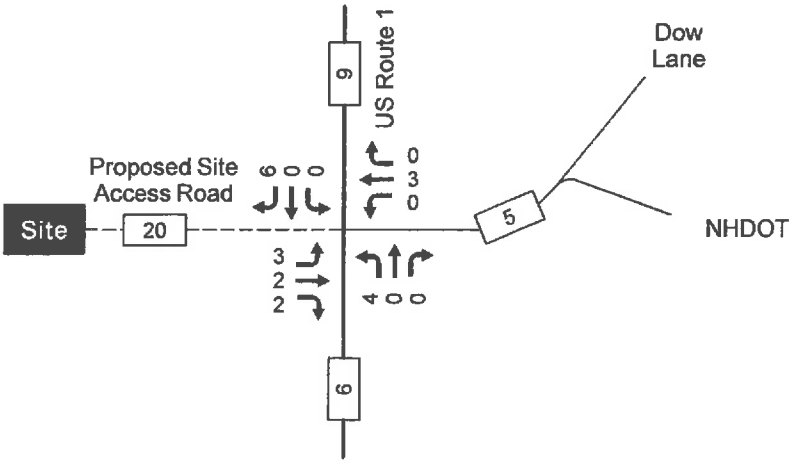
Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by County Subdivisions

Jobs Counts by County Subdivisions Where Workers are Employed - All Jobs	Count	Gateway % North	Gateway % South	Gateway % East		Gateway Allocation North	Gateway Allocation South	Gateway Allocation East	
Portsmouth city (Rockingham, NH)	595	0.80		0.20	1.00	476	0	119	595
Rye town (Rockingham, NH)	188	0.10		0.90	1.00	19	0	169	188
Exeter town (Rockingham, NH)	114		1.00		1.00	0	114	0	114
Manchester city (Hillsborough, NH)	110		1.00		1.00	0	110	0	110
Boston city (Suffolk, MA)	98		1.00		1.00	0	98	0	98
Dover city (Strafford, NH)	85	1.00			1.00	85	0	0	85
Hampton town (Rockingham, NH)	60		1.00		1.00	0	60	0	60
Newington town (Rockingham, NH)	57	1.00			1.00	57	0	0	57
Nashua city (Hillsborough, NH)	42		1.00		1.00	0	42	0	42
Seabrook town (Rockingham, NH)	39		1.00		1.00	0	39	0	
	1388					637	463	288	1388
						45.9%	33.4%	20.7%	100%
						46	33	21	100

Attachment 15



AM Peak Hour



PM Peak Hour

NORTH

2066A

Attachment

Site Generated Traffic Volumes

Traffic Impact Asessment, Proposed Residential Development, Rye, New Hampshire

Seasonal Adjustment Factors
NHDOT Group 4 (Urban Highways)

Stephen G. Pernaw & Company, Inc.

Year 2019 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	11,431	1.12	1.23
Feb	11,848	1.08	1.18
Mar	12,141	1.06	1.15
Apr	12,860	1.00	1.09
May	13,551	0.95	1.03
Jun	13,785	0.93	1.02
Jul	13,942	0.92	1.01
Aug	14,016	0.92	1.00
Sep	13,379	0.96	1.05
Oct	13,339	0.96	1.05
Nov	12,265	1.05	1.14
Dec	11,496	1.12	1.22

Year 2018 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	11,282	1.13	1.24
Feb	11,848	1.08	1.18
Mar	11,828	1.08	1.18
Apr	12,491	1.02	1.12
May	13,587	0.94	1.03
Jun	13,911	0.92	1.00
Jul	13,765	0.93	1.01
Aug	13,945	0.92	1.00
Sep	13,168	0.97	1.06
Oct	13,367	0.96	1.04
Nov	12,215	1.05	1.14
Dec	11,963	1.07	1.17

Year 2017 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	12254	1.21	1.33
Feb	13494	1.10	1.21
Mar	14,335	1.03	1.14
Apr	15004	0.99	1.09
May	15547	0.95	1.05
Jun	16310	0.91	1.00
Jul	15523	0.95	1.05
Aug	15974	0.93	1.02
Sep	15546	0.95	1.05
Oct	15104	0.98	1.08
Nov	14,544	1.02	1.12
Dec	14151	1.05	1.15

Average Peak-Month Factor	**1.26**

Stephen G. Pernaw & Company, Inc.

STEPHEN G. PERNAW & COMPANY, INC.
PROJECT: Proposed Residential Development, Rye, New Hampshire
NUMBER: 2066A
COUNT STATION: 02345001

HISTORICAL GROWTH CALCULATIONS

LOCATION : US1 (North of North Road) - North Hampton, NH
CASE : AADT

ARITHMETIC PROJECTIONS

YEAR	AADT
2015	16290
2016	16353
2017	16356
2018	16254
2019	16139

Regression Output:

Constant	97160.1
Std Err of Y Est	72.270556
R Squared	0.5064726
No. of Observations	5
Degrees of Freedom	3
X Coefficient	-40.1
Std Err of Coef.	22.853957

PROJECTIONS

2020	16158
2021	16118
2022	16078
2023	16038
2024	15998
2025	15958
2026	15918
2027	15877
2028	15837
2029	15797
2030	15757

RATE = -40 VPD/YEAR

GEOMETRIC PROJECTIONS

YEAR	AADT	Ln AADT
2015	16290	9.69831
2016	16353	9.70217
2017	16356	9.70235
2018	16254	9.69609
2019	16139	9.68899

Regression Output:

Constant	14.67912
Std Err of Y Est	0.004444
R Squared	0.5072766
No. of Observations	5
Degrees of Freedom	3
X Coefficient	-0.0024698
Std Err of Coef.	0.0014053

PROJECTIONS

2020	16158
2021	16118
2022	16078
2023	16039
2024	15999
2025	15960
2026	15920
2027	15881
2028	15842
2029	15803
2030	15764

Conclusion: Use 1% per year

RATE = -0.2 % / YEAR

Stephen G. Pernaw & Company, Inc.

CALCULATION SHEET

Project:	Residential Development	Job Number:	2066A
Calculated By:	SGP	Date:	5/4/2021
Checked By:	CA	Date:	5/4/2021
Sheet No:	1	Of:	1
Subject:	COVID-19 Adjustment Factor		

I. Given:

1. NHDOT continuous traffic count (Station 02345001) on US Route 1 (North of North Rd) - Rye, NH
   - A. January 2021 average weekday volume = 13,800 vpd
   - B. January 2020 average weekday volume = 16,213 vpd
   - C. Annual growth rate = 1.0% per year

2. Calculate 2021 January volume (w/o Covid) from January 2020

   16213 X 1.01 = 16,375

3. Calculate Covid Factor

   $$\frac{\text{January 2021 estimate w/o Covid}}{\text{January 2021 actual volume w/Covid}} = \frac{16{,}375}{13{,}800} = \boxed{1.19}$$

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

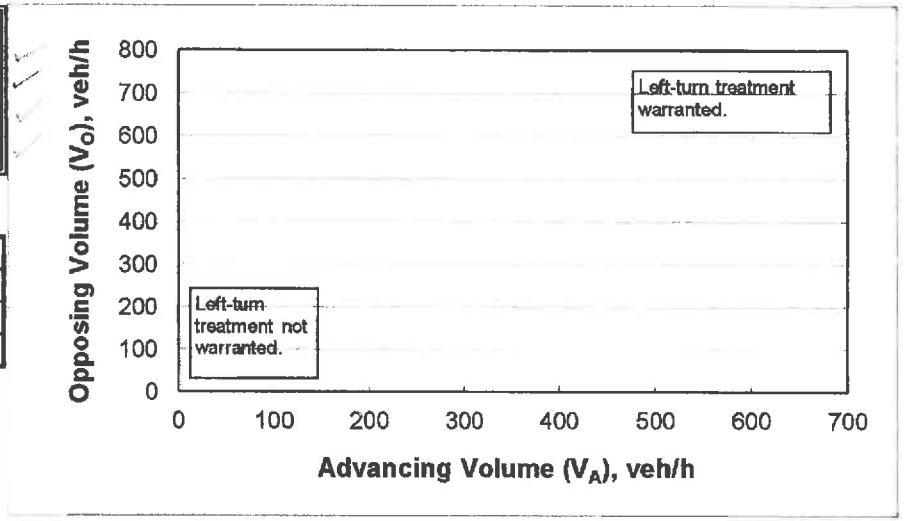
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	772
Opposing volume (V_O), veh/h:	610

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	2306
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

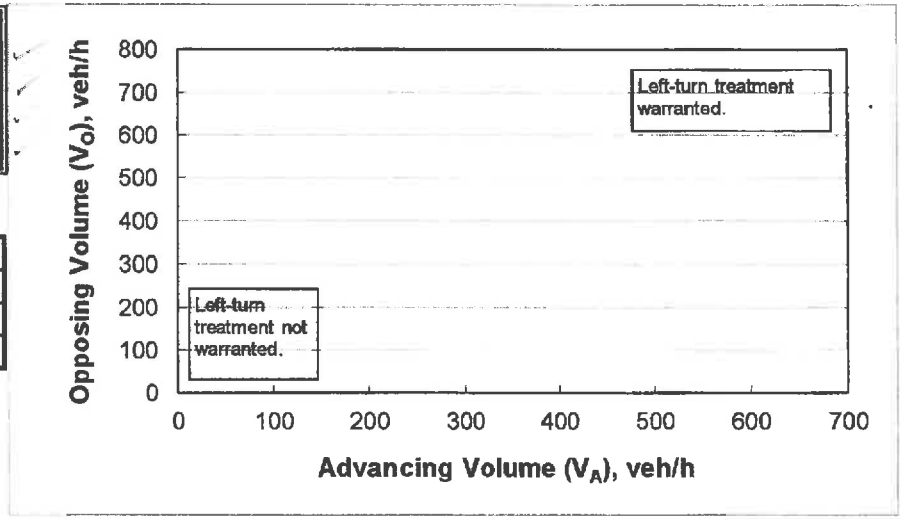
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	812
Opposing volume (V_O), veh/h:	948

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	852
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Attachment 21

Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

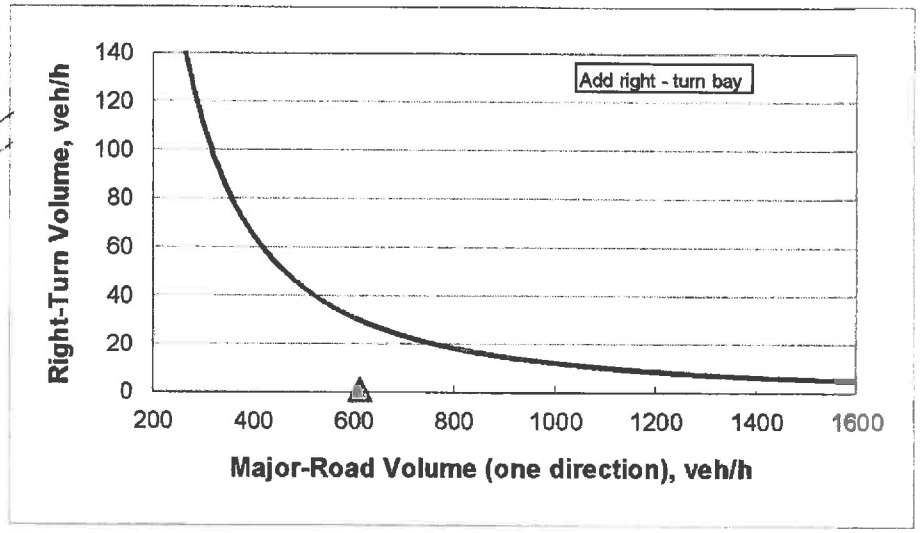
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	610
Right-turn volume, veh/h:	1

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	30
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Attachment 22

Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

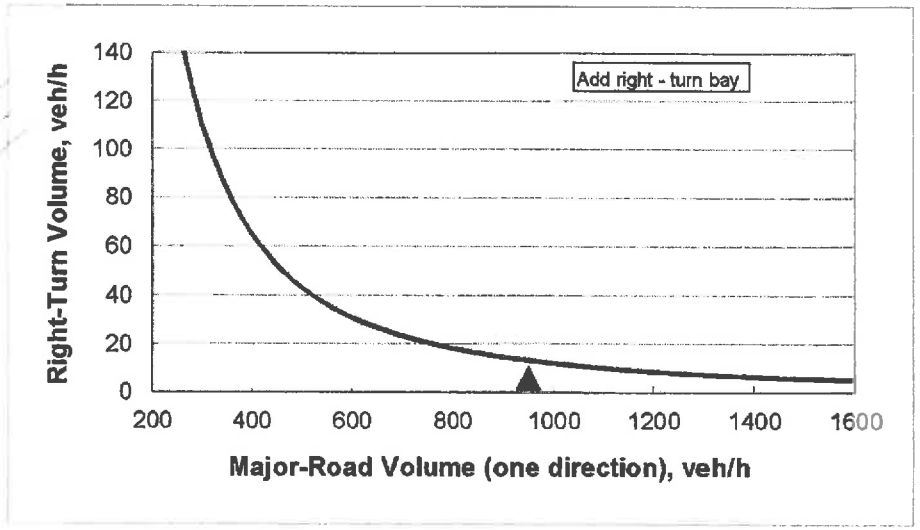
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	948
Right-turn volume, veh/h:	6

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	13
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Parnaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1382
Percentage of right-turns on minor road, %:	33%
Minor-road volume (one direction), veh/h:	12

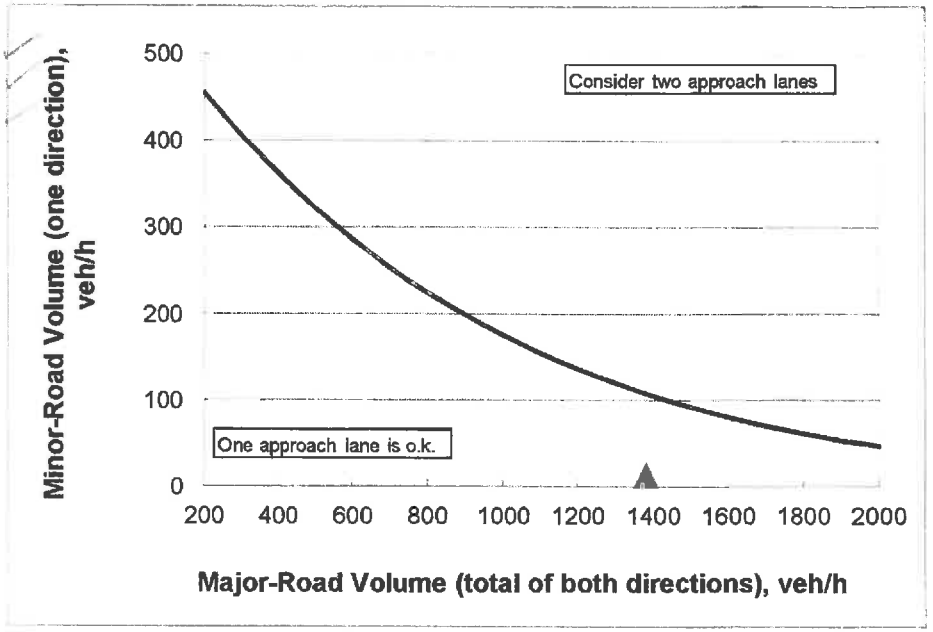
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	108
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1780
Percentage of right-turns on minor road, %:	29%
Minor-road volume (one direction), veh/h:	7

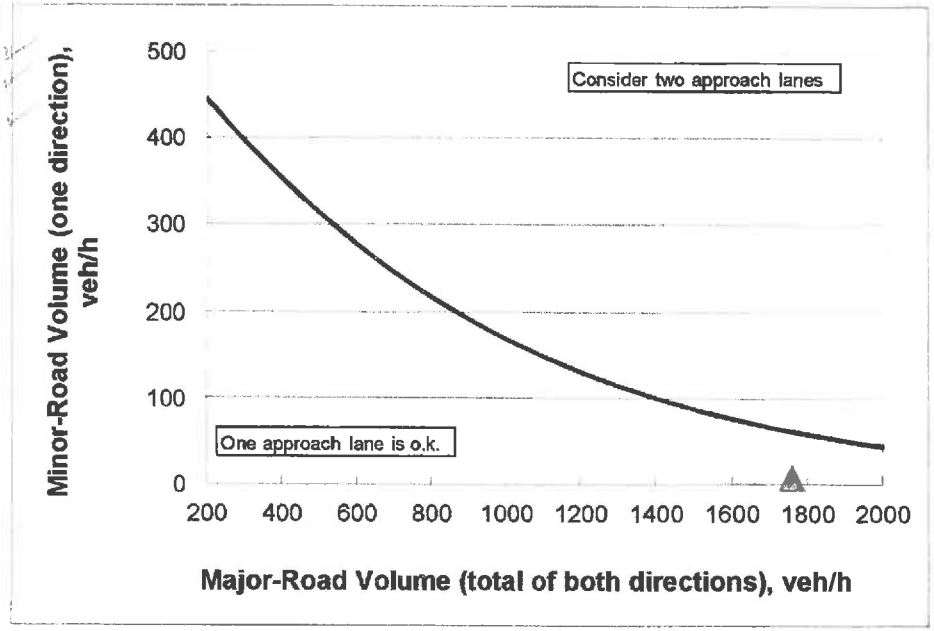
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	62
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Attachment 25

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

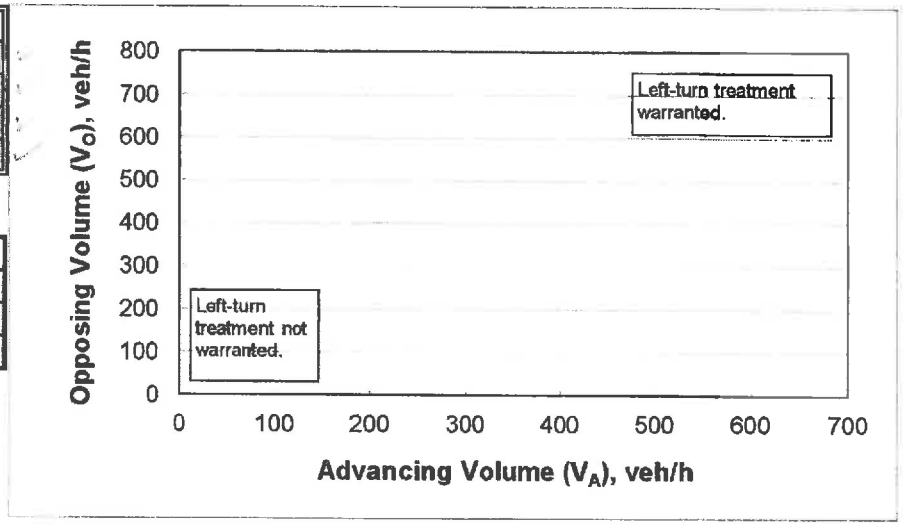
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	853
Opposing volume (V_O), veh/h:	674

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	2251
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

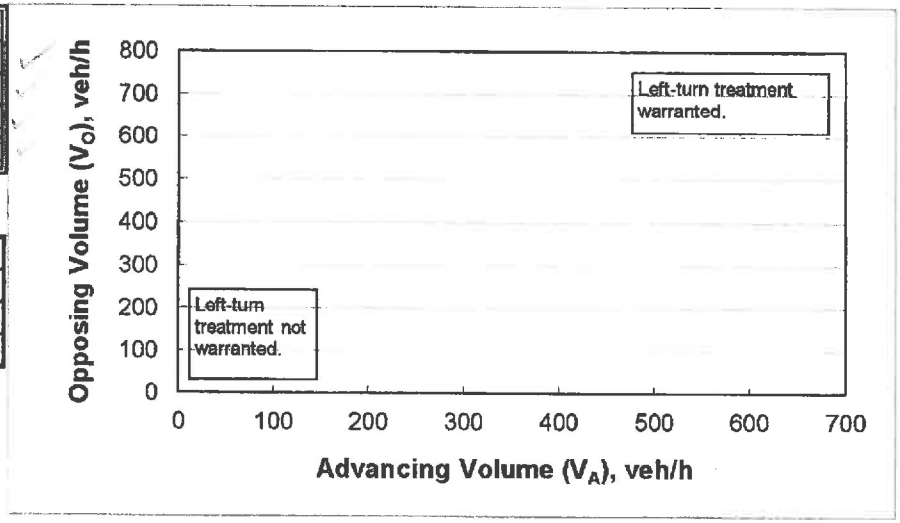
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	896
Opposing volume (V_O), veh/h:	1046

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	809
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

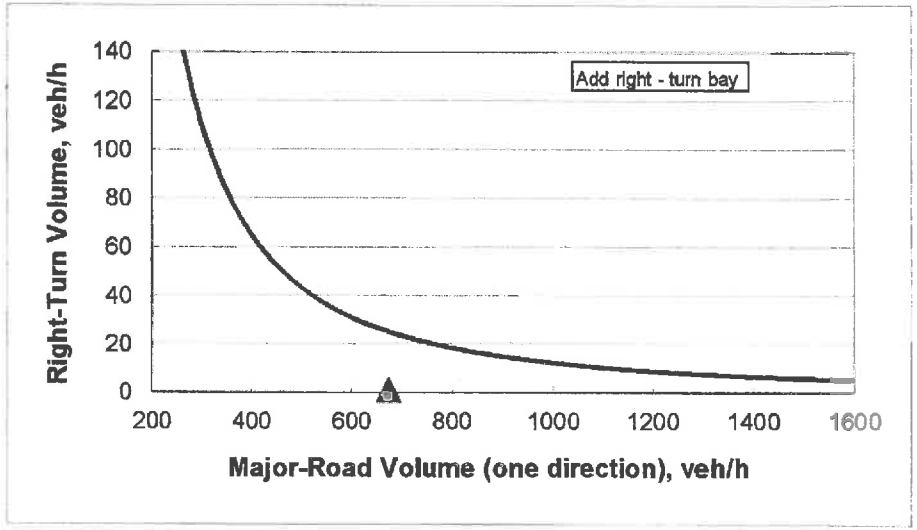
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	674
Right-turn volume, veh/h:	1

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	25
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

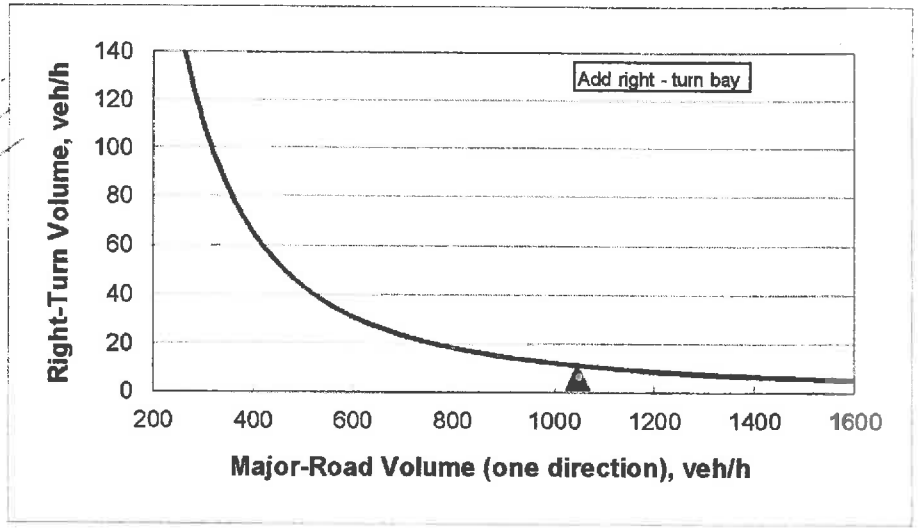
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	1046
Right-turn volume, veh/h:	6

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	11
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1527
Percentage of right-turns on minor road, %:	33%
Minor-road volume (one direction), veh/h:	12

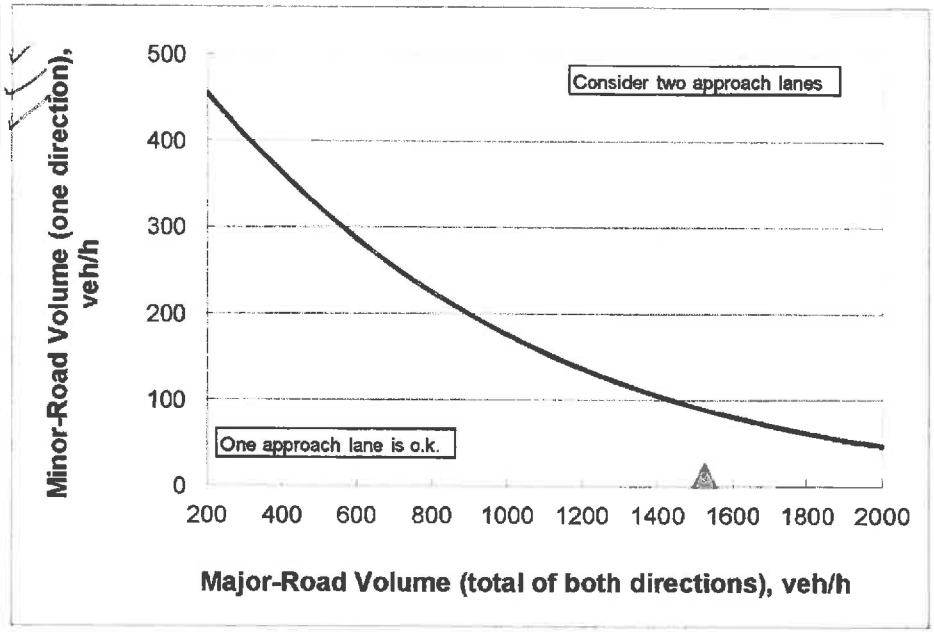
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	89
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

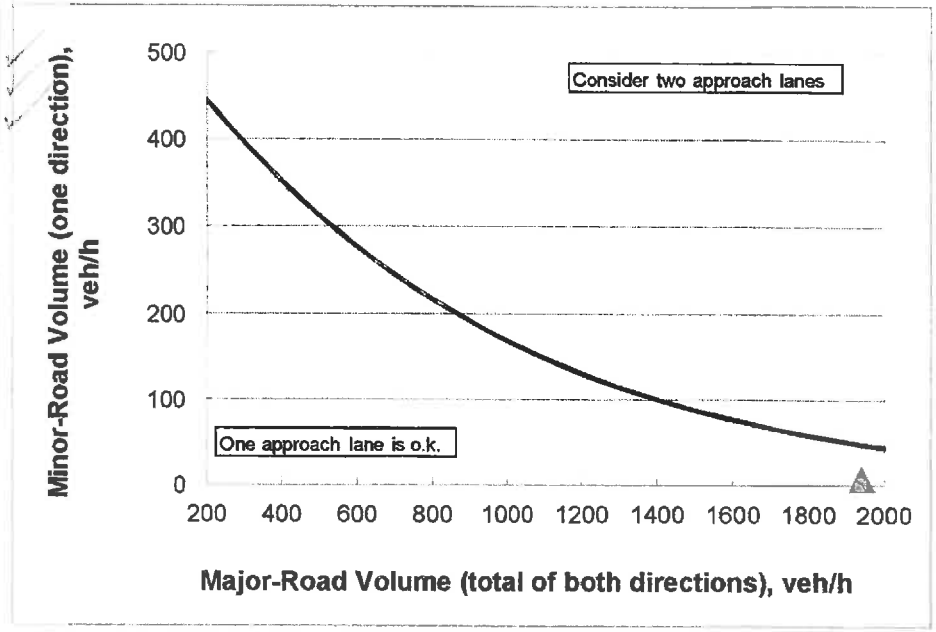
Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1942
Percentage of right-turns on minor road, %:	29%
Minor-road volume (one direction), veh/h:	7

OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	48
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	



CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM

Looking Left

Looking Right

2066A

Attachment

Sight Distance Photographs - US Route 1 / Proposed Site Access Road

Traffic Evaluation, Proposed Residential Townhomes - Hector's Site, Rye, New Hampshire

Rye Triplex

(3/18/2021)

Artform Home Plans

Prelim / Work in Progress 603-431-9559

Dear Builders and Home Buyers,

In addition to our Terms and Conditions (the "Terms"), please be aware of the following:

This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings'). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on www.ArtformHomePlans.com to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors.

Artform Home Plans ("Artform") requires that our Drawings be built substantially as designed. Artform will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Artform. It is recommended that you have your Drawing updated by Artform prior to attaching any Drawing to any builder agreement. Artform shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

Facade Changes:

• To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Artform.

• Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

Floor plan layout and/or Structural Changes:

• Structural changes always require the express written consent of Artform

• If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

Rye Triplex

(3/18/2021)

Artform Home Plans

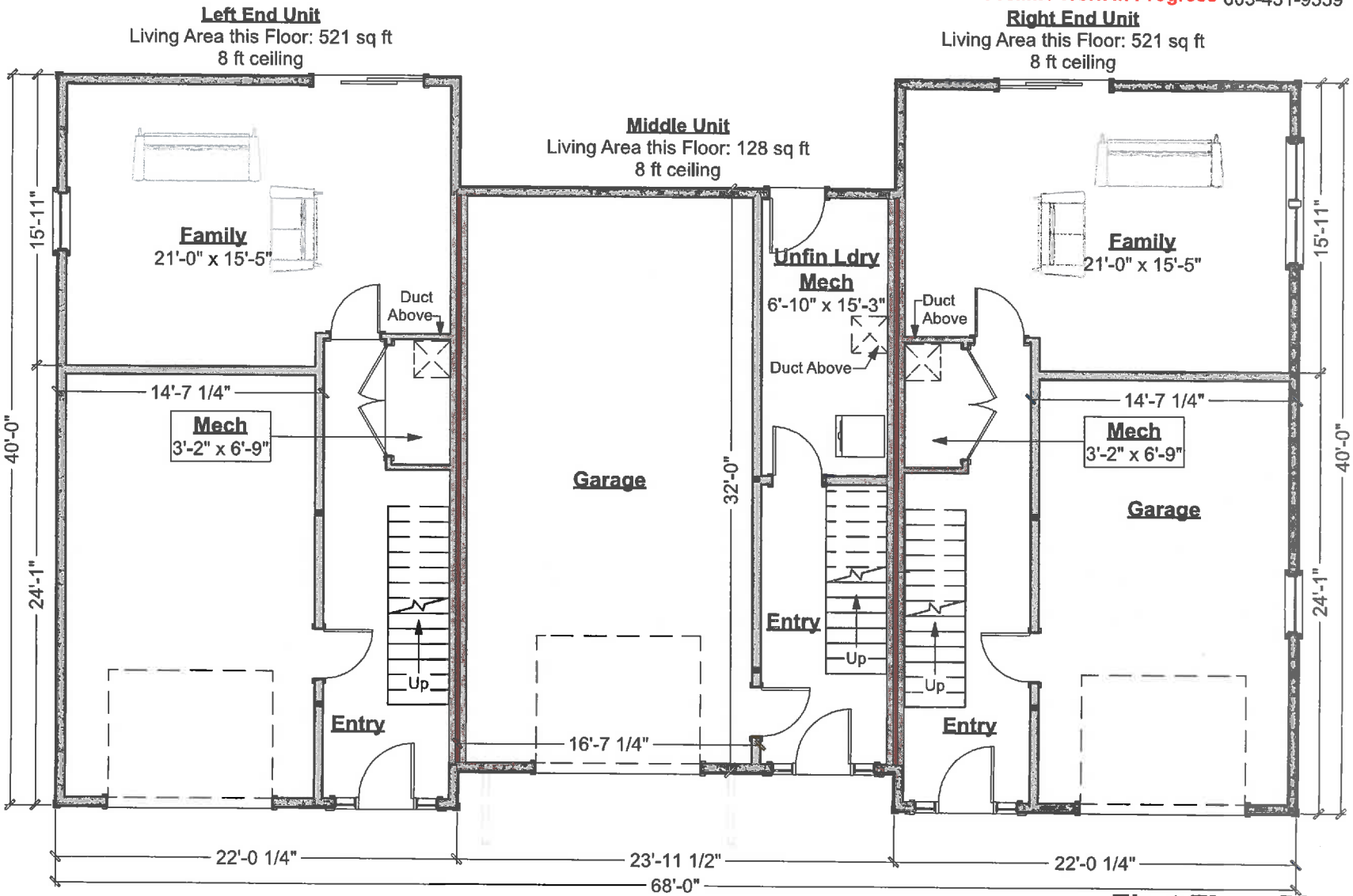
Prelim / Work in Progress 603-431-9559

Rye Triplex

(3/18/2021)

Artform Home Plans

Prelim / Work in Progress 603-431-9559



First Floor Plan

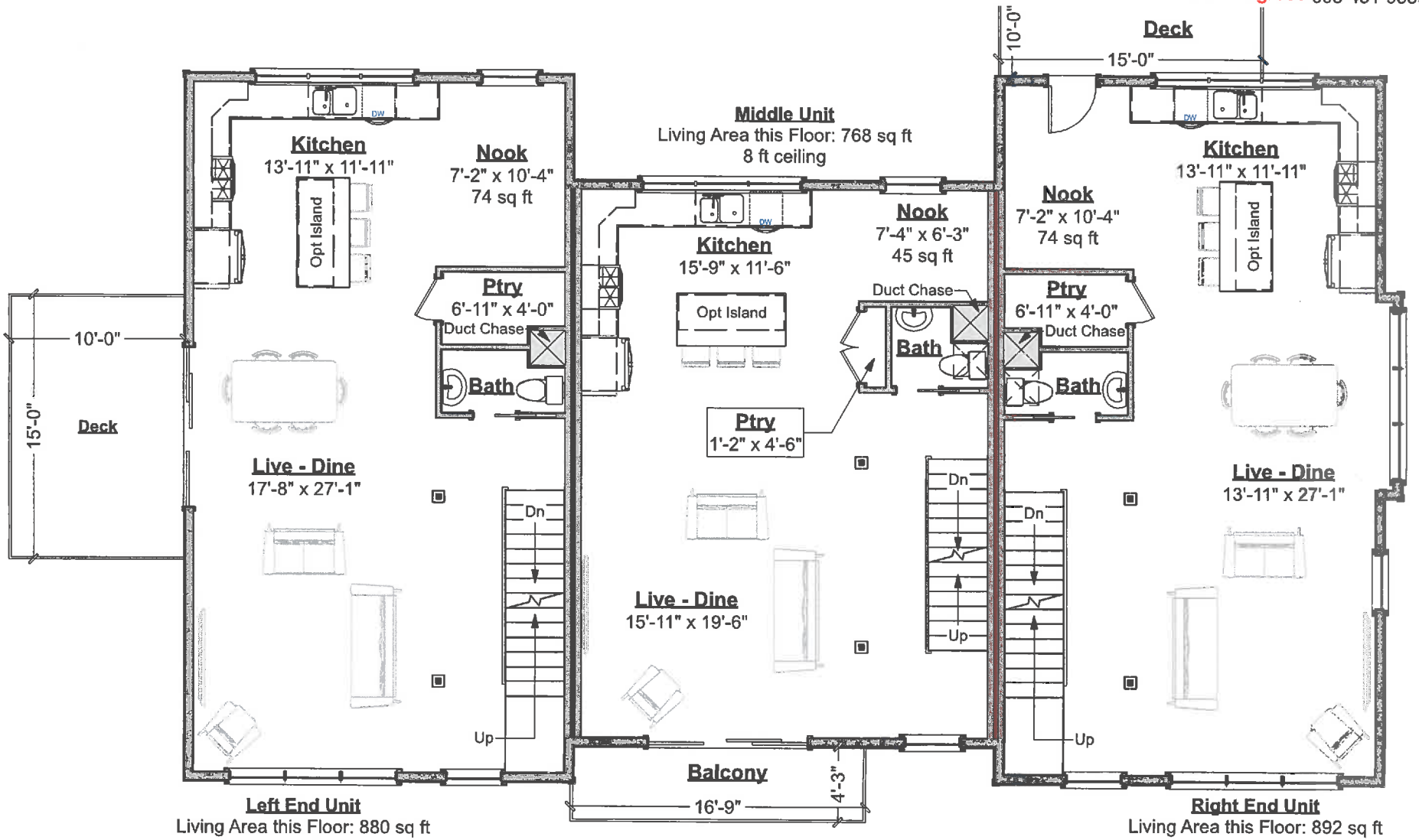
Scale: 1/8" = 1'-0"

Rye Triplex

(3/18/2021)

Artform Home Plans

Prelim / Work in Progress 603-431-9559



Left End Unit
Living Area this Floor: 880 sq ft
9 ft ceiling

Right End Unit
Living Area this Floor: 892 sq ft
9 ft ceiling

Second Floor Plan

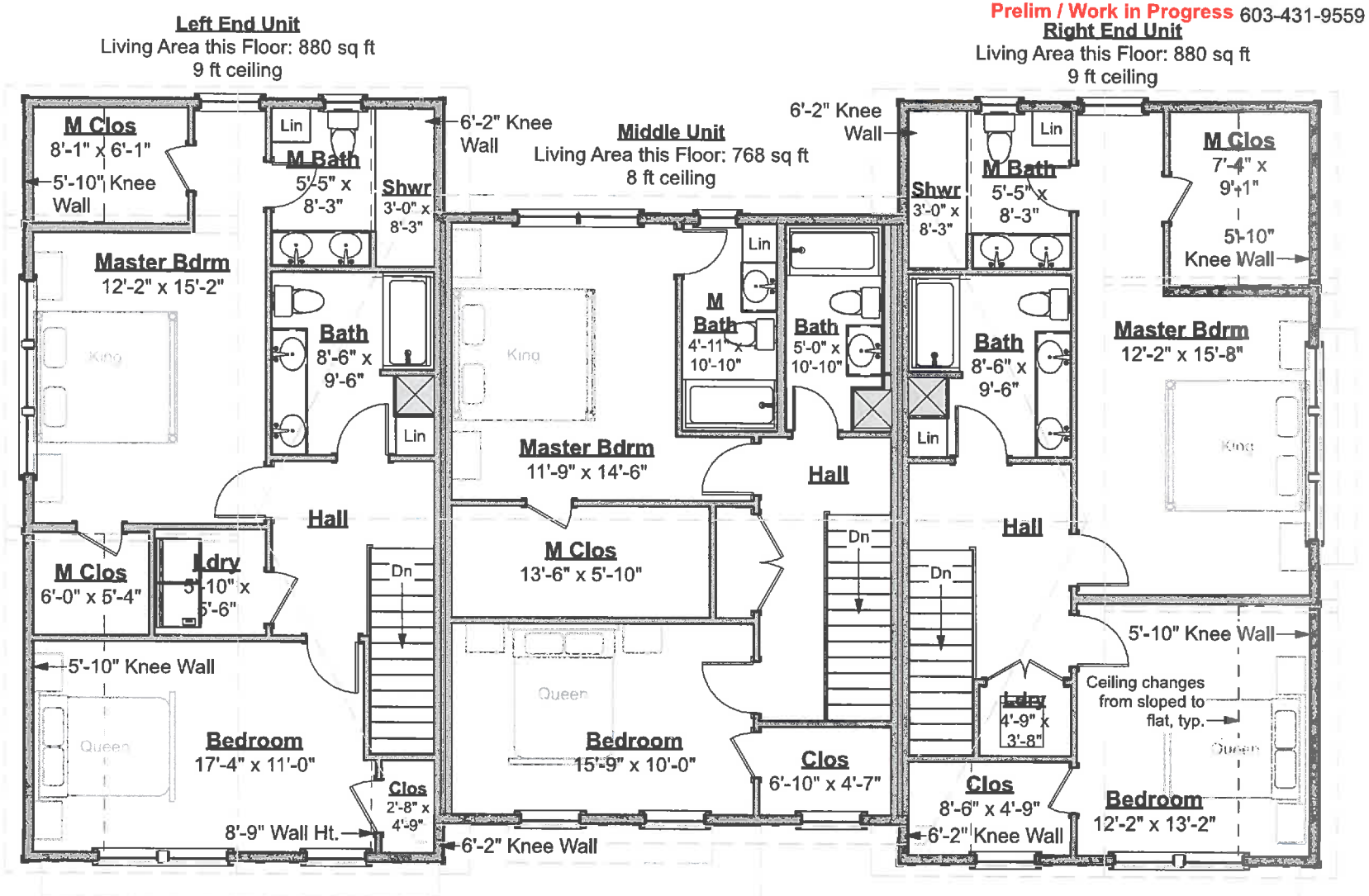
Scale: 1/8" = 1'-0"

Rye Triplex

(3/18/2021)

Artform Home Plans

Prelim / Work in Progress 603-431-9559



Third Floor Plan

Scale: 1/8" = 1'-0"

Rye Triplex

(3/18/2021)

Artform Home Plans
Prelim / Work in Progress 603-431-9559

Front Elevation

Scale: 1/8" = 1'-0"

Rye Triplex
(3/18/2021)

Artform Home Plans
Prelim / Work in Progress 603-431-9559

Right Elevation
Scale: 1/8" = 1'-0"

Rye Triplex

(3/18/2021)

Artform Home Plans

Prelim / Work in Progress 603-431-9559

Rear Elevation

Scale: 1/8" = 1'-0"

Rye Triplex

(3/18/2021)

Artform Home Plans

Prelim / Work in Progress 603-431-9559

Left Elevation

Scale: 1/8" = 1'-0"

ABUTTERS LIST (DIRECT)
AS OF
JUNE 11, 2021
FOR
0 LAFAYETTE ROAD, RYE, NH
JBE PROJECT No. 18062.1

OWNER OF RECORD:

TAX MAP 10/ LOT 1
MALCOLM E. SMITH III
PO BOX 559
HAMPTON, NH 03842
BK 5079/PG 0262 (11/10/09)

RYE ABUTTERS (DIRECT):

6/36
STATE OF NEW HAMSPHIRE
JENNESS STATE BEACH
179 PEMBROKE RD
CONCORD, NH 03302-1856

6/37
224 LAFAYETTE LLC
PO BOX 1733
DOVER, NH 03821
6107/2873 (04/23/20)

10/3
BSL RYE INVESTORS, LLC
C/O ALTUS GROUP
PO BOX 92129
SOUTHLAKE, TX 76092
6194/1343 (11/09/20)

10/68
CONNECTING POINT REALTY LLC
PO BOX 501
RYE, NH 03870
4687/1869 (07/26/06)

10/69
NORTH HILL LEASING CO & GROUP
530 MAMMOTH RD, UNIT 4
DRACUT, MA 01826
5968/0322 (12/12/18)

NORTH HAMPTON ABUTTERS (DIRECT):

20/12
MAC PROPERTIES LAFAYETTE LLC
209 GOSPORT RD
PORTSMOUTH, NH 03801
5834/0176 (07/10/17)

21/31
224 LAFAYETTE LLC
10 WOODS LANE
OLD ORCHARD BEACH, ME 04064
6107/2873 (04/29/20)

GREENLAND ABUTTERS (DIRECT):

R1/9B
TOWN OF GREENLAND
PO BOX 100
GREENLAND, NH 03840-0100
3454/1131 (02/10/00)

ENGINEERS/SURVEYORS:

JONES & BEACH ENGINEERS, INC.
ATTN: JOSEPH CORONATI
PO BOX 219
STRATHAM, NH 03885

MALCOLM E. SMITH III
PO BOX 559
HAMPTON, NH 03842

MALCOLM E. SMITH III
PO BOX 559
HAMPTON, NH 03842

MALCOLM E. SMITH III
PO BOX 559
HAMPTON, NH 03842

STATE OF NEW HAMSPHIRE
JENNESS STATE BEACH
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179 PEMBROKE RD
CONCORD, NH 03302-1856

224 LAFAYETTE LLC
PO BOX 1733
DOVER, NH 03821

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DOVER, NH 03821

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PO BOX 1733
DOVER, NH 03821

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SOUTHLAKE, TX 76092

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BSL RYE INVESTORS, LLC
C/O ALTUS GROUP
PO BOX 92129
SOUTHLAKE, TX 76092

CONNECTING POINT REALTY LLC
PO BOX 501
RYE, NH 03870

CONNECTING POINT REALTY LLC
PO BOX 501
RYE, NH 03870

CONNECTING POINT REALTY LLC
PO BOX 501
RYE, NH 03870

NORTH HILL LEASING CO & GROUP
530 MAMMOTH RD, UNIT 4
DRACUT, MA 01826

NORTH HILL LEASING CO & GROUP
530 MAMMOTH RD, UNIT 4
DRACUT, MA 01826

NORTH HILL LEASING CO & GROUP
530 MAMMOTH RD, UNIT 4
DRACUT, MA 01826

MAC PROPERTIES LAFAYETTE LLC
209 GOSPORT RD
PORTSMOUTH, NH 03801

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209 GOSPORT RD
PORTSMOUTH, NH 03801

MAC PROPERTIES LAFAYETTE LLC
209 GOSPORT RD
PORTSMOUTH, NH 03801

224 LAFAYETTE LLC
10 WOODS LANE
OLD ORCHARD BEACH, ME 04064

224 LAFAYETTE LLC
10 WOODS LANE
OLD ORCHARD BEACH, ME 04064

224 LAFAYETTE LLC
10 WOODS LANE
OLD ORCHARD BEACH, ME 04064

TOWN OF GREENLAND
PO BOX 100
GREENLAND, NH 03840-0100

TOWN OF GREENLAND
PO BOX 100
GREENLAND, NH 03840-0100

TOWN OF GREENLAND
PO BOX 100
GREENLAND, NH 03840-0100

JONES & BEACH ENGINEERS, INC.
ATTN: JOSEPH CORONATI
PO BOX 219
STRATHAM, NH 03885

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STRATHAM, NH 03885

JONES & BEACH ENGINEERS, INC.
ATTN: JOSEPH CORONATI
PO BOX 219
STRATHAM, NH 03885

June 11, 2021

Rye, NH

1 inch = 137 Feet

0 137 275 413

www.cai-tech.com

CAI Technologies
Precision Mapping, Geospatial Solutions

Greenland

North Hampton

TON

U.S. RTE. 1

DOW

HA

1
9.56 Ac

3
5.82 Ac

37
8585 sf(c)

84
34641 sf

78
2.23 Ac

85
29749 sf

72
31109 sf

71
30010 sf

70
30463 sf

69
1.59 Ac

66
1.13 Ac

65
1.02 Ac

64
1.01 Ac

68
1.04 Ac(c)

67
1.03 Ac(c)

36
3.24 Ac(p)

377.50 271 270.97 55.87 503.54 60.89 135.00 36.60 113.17 85.62 159.35 78.24 42.95 115.29 28.32 39.12 47.73 47.05 14.82 212.07 73.65 72.31 73.65 44.57 34.23 72.10 34.47 666.12 309.24 170S 203.54 213 273.19 241.62 96.00 131.89 117.32 145.96 50.00 45.00 300.00 349.05 39.17 16.60 222.00 78.00 96.46 144.15 104.68 153.24 24.98 150 197.63 161.07 162.68 296.33 12' ACCESS ESMT

Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

GREENLAND

22–3
63.36

22–1
40.31

21–45
20.20

21–43
2.80

21–44
6.00

21–42
2.80

21–41
14.10

21–40
5.50

21–39
2.20

21–38
1.60

21–37
0.34

21–36
3.13

21–35
1.69

21–34
1.64

21–33
13.10

21–32
15.90

21–31
2.84

20–12
1.00

21–28–1
2.54

21–29
1.55

21–28
6.76

21–1
37.54

21–2
2.55

21–3
2.58

21–27
8.46

21–4
2.58

21–27–1
2.00

21–5
7.26

21–14–1
2.22

21–26
1.20

21–14
1.15

21–22
0.42

21–15
0.10

21–16
0.15

21–12
0.48

21–10
0.35

21–8
0.40

21–17
0.15

21–11
0.27

21–46
0.11

21–18
0.10

21–7–200
43.55

17–87
2.61

21–7
2.59

17–86
11.61

17–82
35.25

17–73
103.30

17–72
46.00

17–71
40.30

17–69–9
5.15

17–69–8
4.57

17–68
124.00

17–69–7
1.65

124.00

BOSTON AND MAINE RAILROAD

LAFAYETTE ROAD

LAFAYETTE TERRACE

HIGHLANDER DRIVE

LAST UPDATED: AUGUST 2020
DIGITIZED BY THE ROCKINGHAM PLANNING COMMISSION FROM A TRACING OF THE ORIGINAL TOWN MAP BY EDWARD M. SMITH, SURVEYOR, DATED APRIL 1, 1940 AND UPDATED BY JAMES VERRA AND ASSOCIATES, INC., THIS MAP IS REPRODUCED BY THE TOWN OF NORTH HAMPTON, NEW HAMPSHIRE.

	23	22	21	20
	19	18	17	16
	15	14	13	12	11
10	9	8	7	6	5
		4	3	2	1

ACREAGE IS IN BLUE
LOTS ARE IN BLACK

ASSESSOR'S MAP OF THE TOWN OF NORTH HAMPTON, NEW HAMPSHIRE

200 0 200 400 600 800 FEET

THIS MAP IS TO BE USED FOR ASSESSING PURPOSES ONLY, NOT FOR THE CONVEYANCE OF REAL ESTATE.

MAP UPDATED BY
JAMES VERRA AND ASSOCIATES, INC.
101 SHATTUCK WAY, SUITE 8
NEWINGTON, NEW HAMPSHIRE, 03801-7876
1-603-436-3557

Sheet No.
21

Greenland, NH

1 inch = 275 Feet

0 275 551 826

June 11, 2021

CAI Technologies
Precision Mapping, Geospatial Solutions
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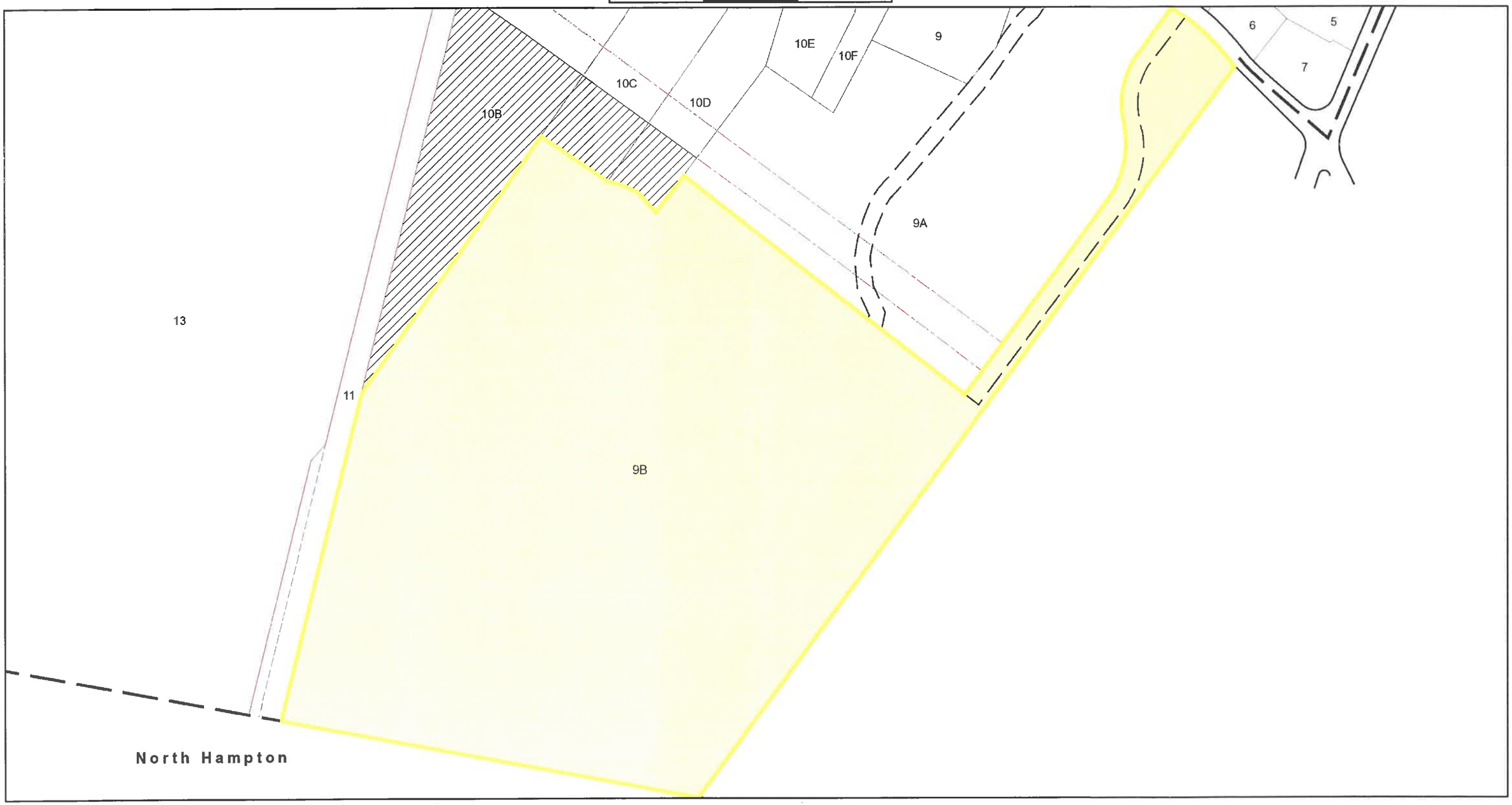


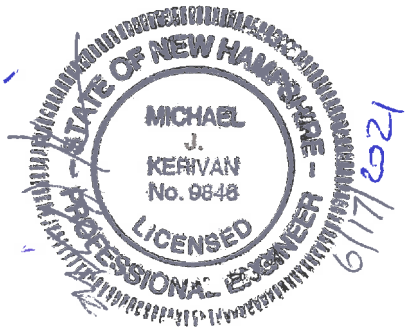
JONES & BEACH ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

Prepared for:

"Hector's Site"
Multi-Family Development
Tax Map 10 Lot 1
LaFayette Road, US Route 1
Rye, NH 03870



June 17, 2021
JBE Project No. 18062.2

TABLE OF CONTENTS

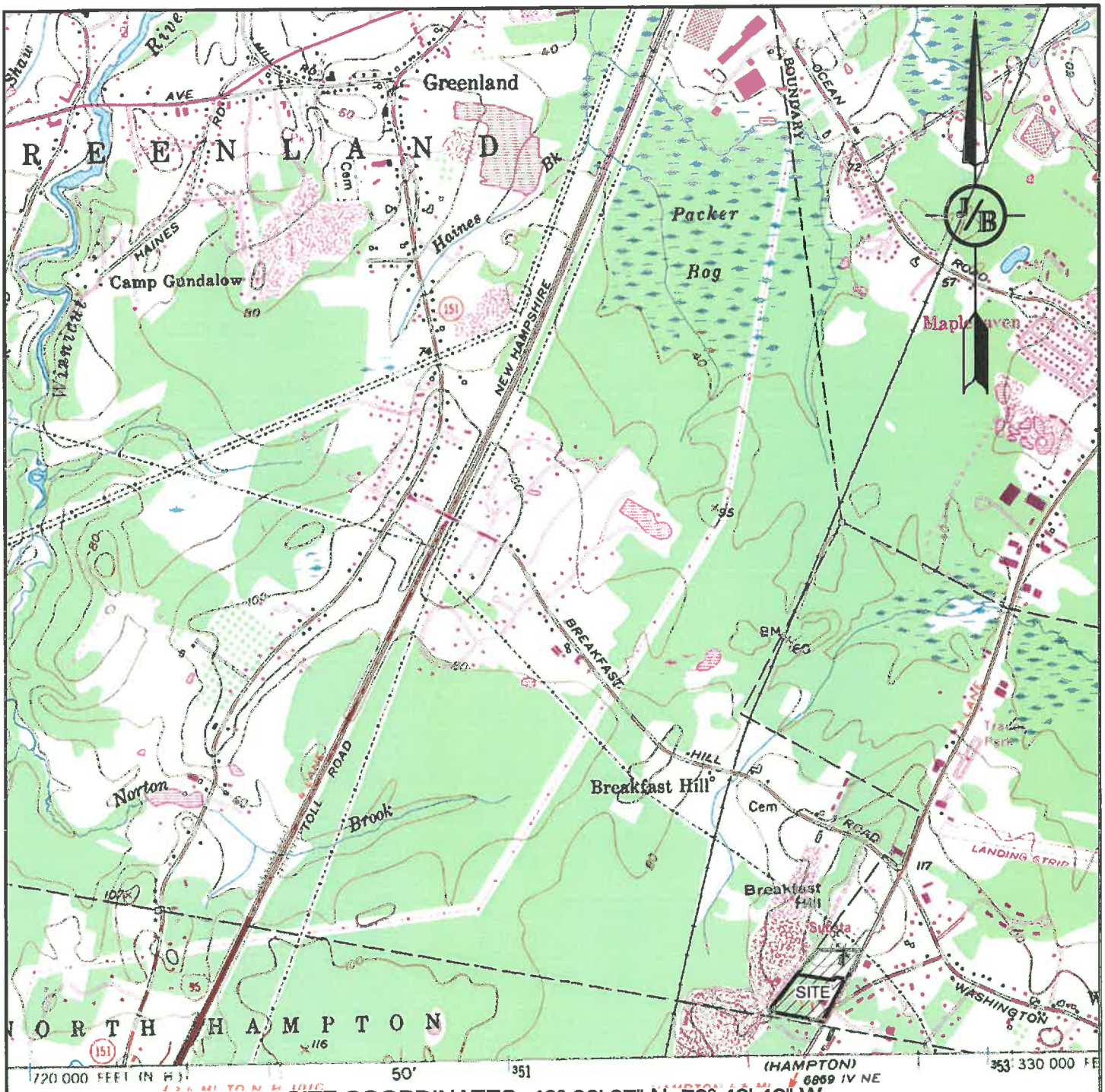
1. EXECUTIVE SUMMARY

Tuck Realty Corporation propose to construct a 30-unit, two-bedroom residential condominium development on a ±5.05-acre parcel of land located on the northwest side of Lafayette Road (Route 1) in Rye, NH. A drainage analysis of the entire site and its offsite contributing watershed areas was conducted for the purpose of estimating the peak rate of stormwater runoff 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. A summary of the existing and proposed conditions peak rates of runoff is as follows:

COMPONENT	PEAK DISCHARGE COMPARISON							
	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.08	0.07	1.75	1.36	4.97	3.26	9.09	4.85
Analysis Point #1	0.00	0.00	0.01	0.02	0.09	0.12	0.48	0.53

The drainage design intent for this site is to maintain the post-development peak flow to the pre-development peak flow conditions to the extent practicable and to effectively treat stormwater from the development of this site. This has been accomplished through the use of porous pavement, and roof drip edges to maintain the peak discharge and effectively treat stormwater exiting the site.

There are slight increases at Analysis Point #2 for all analyzed storm events. This is do to the fact that there will be more grass area as opposed to the wooded area that exists currently. There is no flow being discharged rom the impervious areas. These are very small flows and also very small increases and therefore will have minimal, if any, effect on the offsite runoff.



SITE COORDINATES: 43° 00' 07" N, 70° 48' 42" W

GRAPHIC SCALE

2000 0 1000 2000 4000 8000

(IN FEET)

1 inch = 2000ft.

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-Mail: JBE@jonesandbeach.com

Drawing Name:	USGS
Project:	HECTOR'S SITE
Owner of Record:	MALCOLM E. SMITH, III PO BOX 1020, HAMPTON, NH, 03842

DRAWING No.
C1
SHEET 1 OF 1
JBE PROJECT No. **18062.2**

Soil Map—Rockingham County, New Hampshire

Map Scale: 1:2,290 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

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 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

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
298	Pits, sand and gravel	2.4	17.6%
299	Udorthents, smoothed	0.0	0.3%
510A	Hoosic gravelly fine sandy loam, 0 to 3 percent slopes	11.3	82.1%
Totals for Area of Interest		**13.8**	**100.0%**

4. DRAINAGE ANALYSIS

4.1 METHODOLOGY

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.74"), 10 Year – 24 Hour (5.68"), 25 Year – 24 Hour (7.22"), and 50 Year – 24 Hour (8.65") storm events.

4.2 EXISTING CONDITIONS ANALYSIS

The study area consists of the subject property and upstream contributing area. The study area contains 10.285 acres including offsite contributing areas. The existing site is currently vacant and is a mix of meadow and woods with some pavement remnants from the previous use of the site. The existing site contains a high point located in the central portion of the subject parcel. The site drains from this high point to the southeast and southwest portions of the property resulting in the Analysis Points as defined below.

Classified through the use of a Site Specific Soil Survey (SSSS), the land of the site is composed of two (2) soil types, Merrimac and Urban Land-Hoosic Complex. The in-situ soils are categorized into Hydrologic Soil Groups (HSG) A (see appendix for soil types and HSG designations). The infiltration rate, or saturated hydraulic conductivity (Ksat) value was determined using the 'Ksat Values for New Hampshire Soils', SSSNNE Special Publication No. 5, September, 2009. The Merrimac Ksat (6.0 - 20 inches/hour in the 'C' horizon) was chosen for the overall infiltration rate, this being the soil underlaying the proposed porous pavement and roof drip edges. The 'C' horizon rate was chosen as the bottom of the ponds will exfiltrate below the 'B' horizon, which is at 18" to 24" below ground. A factor of safety of 2 was applied and a Ksat value of 3.0 inches/hour was used in the analysis.

Two (2) Analysis Points (AP's) were defined for this project.

Analysis Point #1 is defined as the southern corner of the property. Stormwater to this Analysis Point is collected from the front 75% of the site, adjacent to Lafayette Road. The flow to this point discharges to a 12" culvert located under Lafayette Road.

Analysis Point #2 is defined as the western corner of the property. Stormwater to this Analysis Point is collected from the rear 25% of the site. The flow to this point discharges to the abutting property to an existing wetland.

4.3 PROPOSED CONDITIONS ANALYSIS

The proposed site includes the construction of a 30-unit, two-bedroom residential condominium development with associated parking, utilities, and drainage.

Stormwater treatment and mitigation has been obtained along the access road that enters and extends to the rear of the site, along with the proposed roof dip edge design.

Stormwater falling on the proposed porous pavement will be treated through the filter coarse and then be exfiltrated to the surrounding soil. Stormwater from the proposed roofs will be directed to proposed drip edges where this will also be exfiltrated to the surrounding soil.

4.4 CONCLUSION

This proposed site development will have minimal effect on abutting infrastructures or properties by way of stormwater runoff or siltation. Peak runoff rate from the proposed site has been maintained to the existing conditions peak rate to the extent practicable. Treatment is obtained through the use of porous pavement as described above. The required infiltration is obtained within the porous pavement and roof drip edges.

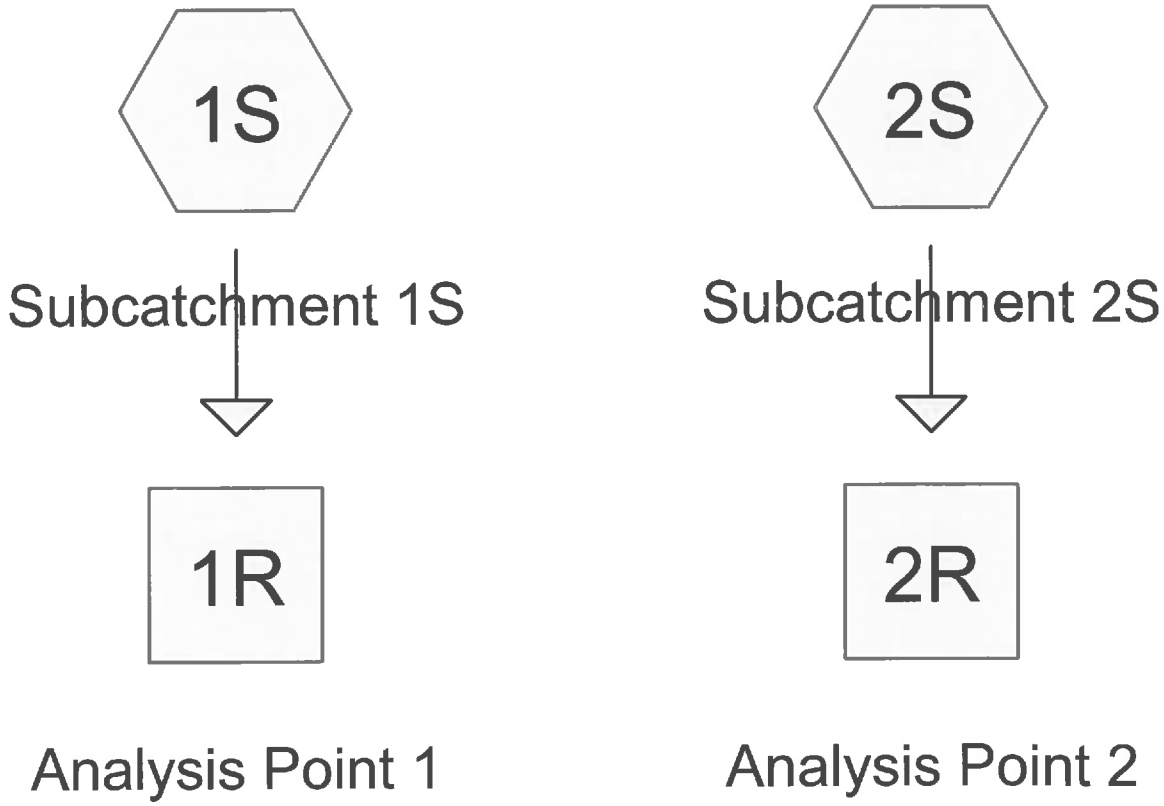
The area of disturbance is greater than 100,000 square feet and will require an NHDES Alteration of Terrain Permit.

Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

Michael J. Kerivan, P.E.
Project Engineer

4.5 EXISTING CONDITIONS ANALYSIS
APPENDIX I

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 18062 EX CONDITION
Prepared by Microsoft, Printed 6/17/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.667	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.135	96	Gravel surface, HSG A (1S)
0.617	98	Paved parking, HSG A (1S)
0.381	98	Paved roads w/curbs & sewers, HSG A (1S)
6.485	30	Woods, Good, HSG A (1S, 2S)
10.285	**40**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.285	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
10.285		**TOTAL AREA**

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=334,760 sf 12.98% Impervious Runoff Depth>0.08"
Flow Length=704' Tc=22.0 min CN=43 Runoff=0.08 cfs 0.053 af

Subcatchment 2S: Subcatchment 2S Runoff Area=113,266 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=365' Tc=17.4 min CN=30 Runoff=0.00 cfs 0.000 af

Reach 1R: Analysis Point 1 Inflow=0.08 cfs 0.053 af
Outflow=0.08 cfs 0.053 af

Reach 2R: Analysis Point 2 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 10.285 ac Runoff Volume = 0.053 af Average Runoff Depth = 0.06"
90.30% Pervious = 9.288 ac 9.70% Impervious = 0.998 ac

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=334,760 sf 12.98% Impervious Runoff Depth>0.56"
Flow Length=704' Tc=22.0 min CN=43 Runoff=1.75 cfs 0.361 af

Subcatchment 2S: Subcatchment 2S Runoff Area=113,266 sf 0.00% Impervious Runoff Depth>0.04"
Flow Length=365' Tc=17.4 min CN=30 Runoff=0.01 cfs 0.009 af

Reach 1R: Analysis Point 1 Inflow=1.75 cfs 0.361 af
Outflow=1.75 cfs 0.361 af

Reach 2R: Analysis Point 2 Inflow=0.01 cfs 0.009 af
Outflow=0.01 cfs 0.009 af

Total Runoff Area = 10.285 ac Runoff Volume = 0.370 af Average Runoff Depth = 0.43"
90.30% Pervious = 9.288 ac 9.70% Impervious = 0.998 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.75 cfs @ 12.52 hrs, Volume= 0.361 af, Depth> 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
16,580	98	Paved roads w/curbs & sewers, HSG A
26,876	98	Paved parking, HSG A
5,885	96	Gravel surface, HSG A
115,623	39	>75% Grass cover, Good, HSG A
169,796	30	Woods, Good, HSG A
334,760	43	Weighted Average
291,304		87.02% Pervious Area
43,456		12.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.74"
2.2	114	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	115	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.2	425	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.0	704	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.01 cfs @ 17.23 hrs, Volume= 0.009 af, Depth> 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
570	39	>75% Grass cover, Good, HSG A
112,696	30	Woods, Good, HSG A
113,266	30	Weighted Average
113,266		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.74"
2.3	138	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.7	177	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	365	Total			

Summary for Reach 1R: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.685 ac, 12.98% Impervious, Inflow Depth > 0.56" for 10-YR. STORM event
Inflow = 1.75 cfs @ 12.52 hrs, Volume= 0.361 af
Outflow = 1.75 cfs @ 12.52 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs / 3

Summary for Reach 2R: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.600 ac, 0.00% Impervious, Inflow Depth > 0.04" for 10-YR. STORM event
Inflow = 0.01 cfs @ 17.23 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 17.23 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs / 3

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=334,760 sf 12.98% Impervious Runoff Depth>1.17"
Flow Length=704' Tc=22.0 min CN=43 Runoff=4.97 cfs 0.750 af

Subcatchment 2S: Subcatchment 2S Runoff Area=113,266 sf 0.00% Impervious Runoff Depth>0.25"
Flow Length=365' Tc=17.4 min CN=30 Runoff=0.09 cfs 0.055 af

Reach 1R: Analysis Point 1 Inflow=4.97 cfs 0.750 af
Outflow=4.97 cfs 0.750 af

Reach 2R: Analysis Point 2 Inflow=0.09 cfs 0.055 af
Outflow=0.09 cfs 0.055 af

Total Runoff Area = 10.285 ac Runoff Volume = 0.805 af Average Runoff Depth = 0.94"
90.30% Pervious = 9.288 ac 9.70% Impervious = 0.998 ac

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Subcatchment 1S Runoff Area=334,760 sf 12.98% Impervious Runoff Depth>1.87"
Flow Length=704' Tc=22.0 min CN=43 Runoff=9.09 cfs 1.197 af

Subcatchment 2S: Subcatchment 2S Runoff Area=113,266 sf 0.00% Impervious Runoff Depth=0.58"
Flow Length=365' Tc=17.4 min CN=30 Runoff=0.48 cfs 0.126 af

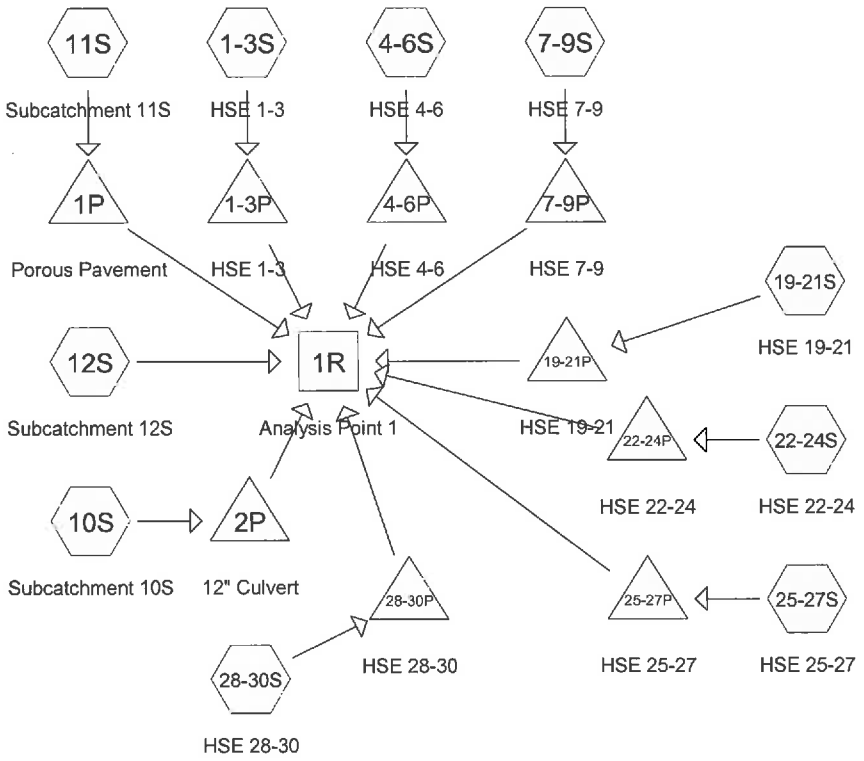
Reach 1R: Analysis Point 1 Inflow=9.09 cfs 1.197 af
Outflow=9.09 cfs 1.197 af

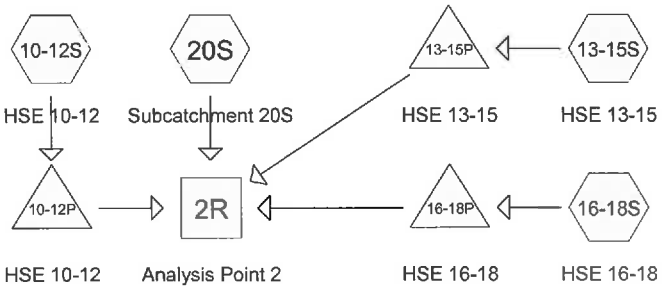
Reach 2R: Analysis Point 2 Inflow=0.48 cfs 0.126 af
Outflow=0.48 cfs 0.126 af

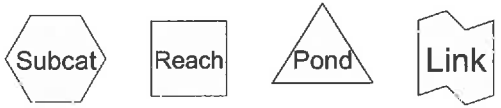
Total Runoff Area = 10.285 ac Runoff Volume = 1.323 af Average Runoff Depth = 1.54"
90.30% Pervious = 9.288 ac 9.70% Impervious = 0.998 ac

4.6 PROPOSED CONDITIONS ANALYSIS
APPENDIX II

2 Year - 24 Hour Summary
10 Year - 24 Hour Complete
25 Year - 24 Hour Summary
50 Year - 24 Hour Summary







Routing Diagram for 18062 PR CONDITION
Prepared by Microsoft, Printed 6/17/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.243	39	>75% Grass cover, Good, HSG A (10S, 11S, 12S, 20S)
0.514	98	Paved parking, HSG A (10S)
0.380	98	Paved roads w/curbs & sewers, HSG A (10S, 11S, 12S)
0.580	98	Roofs, HSG A (1-3S, 4-6S, 7-9S, 10-12S, 13-15S, 16-18S, 19-21S, 22-24S, 25-27S, 28-30S)
0.991	98	Water Surface, HSG A (1-3S, 4-6S, 7-9S, 10-12S, 11S, 13-15S, 16-18S, 19-21S, 22-24S, 25-27S, 28-30S)
4.576	30	Woods, Good, HSG A (10S, 12S, 20S)
10.285	**49**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
10.285	HSG A	1-3S, 4-6S, 7-9S, 10-12S, 10S, 11S, 12S, 13-15S, 16-18S, 19-21S, 20S, 22-24S, 25-27S, 28-30S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
10.285		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1-3S: HSE 1-3 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 4-6S: HSE 4-6 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 7-9S: HSE 7-9 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 10-12S: HSE 10-12 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 10S: Subcatchment 10S Runoff Area=210,867 sf 16.09% Impervious Runoff Depth>0.10"
Flow Length=664' Tc=25.8 min CN=44 Runoff=0.07 cfs 0.040 af

Subcatchment 11S: Subcatchment 11S Runoff Area=47,954 sf 85.87% Impervious Runoff Depth>2.54"
Tc=216.0 min CN=90 Runoff=0.57 cfs 0.233 af

Subcatchment 12S: Subcatchment 12S Runoff Area=62,706 sf 4.78% Impervious Runoff Depth>0.02"
Flow Length=295' Tc=10.6 min CN=39 Runoff=0.00 cfs 0.003 af

Subcatchment 13-15S: HSE 13-15 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 16-18S: HSE 16-18 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 19-21S: HSE 19-21 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 20S: Subcatchment 20S Runoff Area=97,193 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=365' Tc=17.4 min CN=31 Runoff=0.00 cfs 0.000 af

Subcatchment 22-24S: HSE 22-24 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 25-27S: HSE 25-27 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Subcatchment 28-30S: HSE 28-30 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

Reach 1R: Analysis Point 1 Inflow=0.07 cfs 0.043 af
Outflow=0.07 cfs 0.043 af

Reach 2R: Analysis Point 2 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1-3P: HSE 1-3 Peak Elev=109.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 1P: Porous Pavement Peak Elev=108.01' Storage=122 cf Inflow=0.57 cfs 0.233 af
Discarded=0.57 cfs 0.233 af Primary=0.00 cfs 0.000 af Outflow=0.57 cfs 0.233 af

Pond 2P: 12" Culvert Peak Elev=109.35' Storage=13 cf Inflow=0.07 cfs 0.040 af
12.0" Round Culvert n=0.013 L=44.0' S=0.0045 '/' Outflow=0.07 cfs 0.040 af

Pond 4-6P: HSE 4-6 Peak Elev=109.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 7-9P: HSE 7-9 Peak Elev=108.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 10-12P: HSE 10-12 Peak Elev=111.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 13-15P: HSE 13-15 Peak Elev=111.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 16-18P: HSE 16-18 Peak Elev=111.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 19-21P: HSE 19-21 Peak Elev=109.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 22-24P: HSE 22-24 Peak Elev=108.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 25-27P: HSE 25-27 Peak Elev=109.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Pond 28-30P: HSE 28-30 Peak Elev=109.31' Storage=211 cf Inflow=0.24 cfs 0.020 af
Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af

Total Runoff Area = 10.285 ac Runoff Volume = 0.473 af Average Runoff Depth = 0.55"
76.03% Pervious = 7.819 ac 23.97% Impervious = 2.465 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1-3S: HSE 1-3 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 4-6S: HSE 4-6 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 7-9S: HSE 7-9 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 10-12S: HSE 10-12 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 10S: Subcatchment 10S Runoff Area=210,867 sf 16.09% Impervious Runoff Depth>0.61"
Flow Length=664' Tc=25.8 min CN=44 Runoff=1.23 cfs 0.247 af

Subcatchment 11S: Subcatchment 11S Runoff Area=47,954 sf 85.87% Impervious Runoff Depth>4.33"
Tc=216.0 min CN=90 Runoff=0.95 cfs 0.397 af

Subcatchment 12S: Subcatchment 12S Runoff Area=62,706 sf 4.78% Impervious Runoff Depth>0.36"
Flow Length=295' Tc=10.6 min CN=39 Runoff=0.17 cfs 0.043 af

Subcatchment 13-15S: HSE 13-15 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 16-18S: HSE 16-18 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 19-21S: HSE 19-21 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 20S: Subcatchment 20S Runoff Area=97,193 sf 0.00% Impervious Runoff Depth>0.06"
Flow Length=365' Tc=17.4 min CN=31 Runoff=0.02 cfs 0.012 af

Subcatchment 22-24S: HSE 22-24 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 25-27S: HSE 25-27 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Subcatchment 28-30S: HSE 28-30 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>5.44"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af

Reach 1R: Analysis Point 1 Inflow=1.36 cfs 0.289 af
Outflow=1.36 cfs 0.289 af

Reach 2R: Analysis Point 2 Inflow=0.02 cfs 0.012 af
Outflow=0.02 cfs 0.012 af

Pond 1-3P: HSE 1-3 Peak Elev=110.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 1P: Porous Pavement Peak Elev=108.02' Storage=204 cf Inflow=0.95 cfs 0.397 af
Discarded=0.95 cfs 0.397 af Primary=0.00 cfs 0.000 af Outflow=0.95 cfs 0.397 af

Pond 2P: 12" Culvert Peak Elev=109.90' Storage=153 cf Inflow=1.23 cfs 0.247 af
12.0" Round Culvert n=0.013 L=44.0' S=0.0045 '/' Outflow=1.22 cfs 0.247 af

Pond 4-6P: HSE 4-6 Peak Elev=110.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 7-9P: HSE 7-9 Peak Elev=109.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 10-12P: HSE 10-12 Peak Elev=112.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 13-15P: HSE 13-15 Peak Elev=112.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 16-18P: HSE 16-18 Peak Elev=112.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 19-21P: HSE 19-21 Peak Elev=110.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 22-24P: HSE 22-24 Peak Elev=109.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 25-27P: HSE 25-27 Peak Elev=110.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Pond 28-30P: HSE 28-30 Peak Elev=110.23' Storage=359 cf Inflow=0.37 cfs 0.030 af
Discarded=0.09 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.030 af

Total Runoff Area = 10.285 ac Runoff Volume = 1.003 af Average Runoff Depth = 1.17"
76.03% Pervious = 7.819 ac 23.97% Impervious = 2.465 ac

Summary for Subcatchment 1-3S: HSE 1-3

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4-6S: HSE 4-6

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 7-9S: HSE 7-9

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 10-12S: HSE 10-12

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 1.23 cfs @ 12.55 hrs, Volume= 0.247 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
11,553	98	Paved roads w/curbs & sewers, HSG A
22,380	98	Paved parking, HSG A
5,885	39	>75% Grass cover, Good, HSG A
73,251	39	>75% Grass cover, Good, HSG A
97,798	30	Woods, Good, HSG A
210,867	44	Weighted Average
176,934		83.91% Pervious Area
33,933		16.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.74"
2.2	114	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.9	115	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	115	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	270	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.8	664	Total			

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.95 cfs @ 14.65 hrs, Volume= 0.397 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,008	98	Paved roads w/curbs & sewers, HSG A
39,172	98	Water Surface, HSG A
6,774	39	>75% Grass cover, Good, HSG A
47,954	90	Weighted Average
6,774		14.13% Pervious Area
41,180		85.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
216.0					**Direct Entry,**

Summary for Subcatchment 12S: Subcatchment 12S

Runoff = 0.17 cfs @ 12.45 hrs, Volume= 0.043 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
3,000	98	Paved roads w/curbs & sewers, HSG A
39,860	39	>75% Grass cover, Good, HSG A
19,846	30	Woods, Good, HSG A
62,706	39	Weighted Average
59,706		95.22% Pervious Area
3,000		4.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.74"
3.7	245	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.6	295	Total			

Summary for Subcatchment 13-15S: HSE 13-15

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 16-18S: HSE 16-18

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 19-21S: HSE 19-21

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S: Subcatchment 20S

Runoff = 0.02 cfs @ 15.72 hrs, Volume= 0.012 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
15,501	39	>75% Grass cover, Good, HSG A
81,692	30	Woods, Good, HSG A
97,193	31	Weighted Average
97,193		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.74"
2.3	138	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.7	177	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	365	Total			

Summary for Subcatchment 22-24S: HSE 22-24

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 25-27S: HSE 25-27

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 28-30S: HSE 28-30

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR. STORM Rainfall=5.68"

Area (sf)	CN	Description
2,528	98	Roofs, HSG A
400	98	Water Surface, HSG A
2,928	98	Weighted Average
2,928		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.852 ac, 28.83% Impervious, Inflow Depth > 0.44" for 10-YR. STORM event
Inflow = 1.36 cfs @ 12.57 hrs, Volume= 0.289 af
Outflow = 1.36 cfs @ 12.57 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Reach 2R: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.433 ac, 8.29% Impervious, Inflow Depth > 0.06" for 10-YR. STORM event
Inflow = 0.02 cfs @ 15.72 hrs, Volume= 0.012 af
Outflow = 0.02 cfs @ 15.72 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1-3P: HSE 1-3

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	107.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.99	400	0.0	0	0
108.00	400	40.0	2	2
111.99	400	40.0	638	640
112.00	400	100.0	4	644
112.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	112.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	107.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 107.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=110.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=107.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 1P: Porous Pavement

Inflow Area = 1.101 ac, 85.87% Impervious, Inflow Depth > 4.33" for 10-YR. STORM event
Inflow = 0.95 cfs @ 14.65 hrs, Volume= 0.397 af
Outflow = 0.95 cfs @ 14.77 hrs, Volume= 0.397 af, Atten= 0%, Lag= 7.2 min
Discarded = 0.95 cfs @ 14.77 hrs, Volume= 0.397 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 108.02' @ 14.77 hrs Surf.Area= 39,122 sf Storage= 204 cf

Plug-Flow detention time= 3.6 min calculated for 0.397 af (100% of inflow)
Center-of-Mass det. time= 3.1 min (957.4 - 954.3)

Volume	Invert	Avail.Storage	Storage Description
#1	107.99'	43,778 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)
107.99	39,122	0.0	0	0	39,122
108.00	39,122	15.0	59	59	39,129
108.24	39,122	15.0	1,408	1,467	39,297
108.25	39,122	40.0	156	1,624	39,304
108.91	39,122	40.0	10,328	11,952	39,767
108.92	39,122	15.0	59	12,010	39,774
109.16	39,122	15.0	1,408	13,419	39,942
109.17	39,122	5.0	20	13,438	39,949
110.66	39,122	5.0	2,915	16,353	40,994
110.67	39,122	30.0	117	16,470	41,001
111.16	39,122	30.0	5,751	22,221	41,345
111.17	39,122	15.0	59	22,280	41,352
111.50	39,122	15.0	1,937	24,217	41,583
111.51	39,122	100.0	391	24,608	41,590
112.00	39,122	100.0	19,170	43,778	41,934

Device	Routing	Invert	Outlet Devices
#1	Primary	111.50'	**10.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	107.99'	**3.000 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 103.50' Phase-In= 0.10'

Discarded OutFlow Max=0.95 cfs @ 14.77 hrs HW=108.02' (Free Discharge)
↑**2=Exfiltration** (Controls 0.95 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=107.99' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: 12" Culvert

Inflow Area = 4.841 ac, 16.09% Impervious, Inflow Depth > 0.61" for 10-YR. STORM event
Inflow = 1.23 cfs @ 12.55 hrs, Volume= 0.247 af
Outflow = 1.22 cfs @ 12.59 hrs, Volume= 0.247 af, Atten= 1%, Lag= 2.4 min
Primary = 1.22 cfs @ 12.59 hrs, Volume= 0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.90' @ 12.59 hrs Surf.Area= 387 sf Storage= 153 cf

Plug-Flow detention time= 2.4 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (945.5 - 943.8)

Volume	Invert	Avail.Storage	Storage Description
#1	109.20'	6,659 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.20	50	0	0
110.00	435	194	194
112.00	6,030	6,465	6,659

Device	Routing	Invert	Outlet Devices
#1	Primary	109.20'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 109.20' / 109.00' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.22 cfs @ 12.59 hrs HW=109.90' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.22 cfs @ 2.92 fps)

Summary for Pond 4-6P: HSE 4-6

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	107.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.99	400	0.0	0	0
108.00	400	40.0	2	2
111.99	400	40.0	638	640
112.00	400	100.0	4	644
112.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	112.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	107.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 107.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=110.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=107.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 7-9P: HSE 7-9

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	106.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
106.99	400	0.0	0	0
107.00	400	40.0	2	2
110.99	400	40.0	638	640
111.00	400	100.0	4	644
111.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	111.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	106.99'	**3.000 in/hr Exfiltration over Surface area**

Conductivity to Groundwater Elevation = 106.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=109.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=106.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 10-12P: HSE 10-12

Inflow Area =	0.067 ac,100.00% Impervious,	Inflow Depth >	5.44"	for 10-YR. STORM event
Inflow =	0.37 cfs @	12.08 hrs, Volume=	0.030 af	
Outflow =	0.09 cfs @	12.46 hrs, Volume=	0.030 af,	Atten= 76%, Lag= 22.6 min
Discarded =	0.09 cfs @	12.46 hrs, Volume=	0.030 af	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 112.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.99	400	0.0	0	0
110.00	400	40.0	2	2
113.99	400	40.0	638	640
114.00	400	100.0	4	644
114.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	114.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	109.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 109.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=112.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=109.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13-15P: HSE 13-15

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 112.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.99	400	0.0	0	0
110.00	400	40.0	2	2
113.99	400	40.0	638	640
114.00	400	100.0	4	644
114.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	114.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	109.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 109.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=112.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=109.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16-18P: HSE 16-18

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 112.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.99	400	0.0	0	0
110.00	400	40.0	2	2
113.99	400	40.0	638	640
114.00	400	100.0	4	644
114.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	114.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	109.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 109.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=112.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=109.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 19-21P: HSE 19-21

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	107.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.99	400	0.0	0	0
108.00	400	40.0	2	2
111.99	400	40.0	638	640
112.00	400	100.0	4	644
112.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	112.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	107.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 107.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=110.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=107.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 22-24P: HSE 22-24

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	106.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
106.99	400	0.0	0	0
107.00	400	40.0	2	2
110.99	400	40.0	638	640
111.00	400	100.0	4	644
111.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	111.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	106.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 106.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=109.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=106.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 25-27P: HSE 25-27

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	107.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.99	400	0.0	0	0
108.00	400	40.0	2	2
111.99	400	40.0	638	640
112.00	400	100.0	4	644
112.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	112.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	107.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 107.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=110.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=107.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 28-30P: HSE 28-30

Inflow Area = 0.067 ac,100.00% Impervious, Inflow Depth > 5.44" for 10-YR. STORM event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.09 cfs @ 12.46 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 110.23' @ 12.46 hrs Surf.Area= 400 sf Storage= 359 cf

Plug-Flow detention time= 33.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 32.1 min (777.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	107.99'	844 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.99	400	0.0	0	0
108.00	400	40.0	2	2
111.99	400	40.0	638	640
112.00	400	100.0	4	644
112.50	400	100.0	200	844

Device	Routing	Invert	Outlet Devices
#1	Primary	112.00'	**80.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	107.99'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 107.00' Phase-In= 0.10'

Discarded OutFlow Max=0.09 cfs @ 12.46 hrs HW=110.23' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=107.99' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1-3S: HSE 1-3 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 4-6S: HSE 4-6 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 7-9S: HSE 7-9 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 10-12S: HSE 10-12 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 10S: Subcatchment 10S Runoff Area=210,867 sf 16.09% Impervious Runoff Depth>1.24"
Flow Length=664' Tc=25.8 min CN=44 Runoff=3.29 cfs 0.502 af

Subcatchment 11S: Subcatchment 11S Runoff Area=47,954 sf 85.87% Impervious Runoff Depth>5.78"
Tc=216.0 min CN=90 Runoff=1.26 cfs 0.530 af

Subcatchment 12S: Subcatchment 12S Runoff Area=62,706 sf 4.78% Impervious Runoff Depth>0.84"
Flow Length=295' Tc=10.6 min CN=39 Runoff=0.65 cfs 0.101 af

Subcatchment 13-15S: HSE 13-15 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 16-18S: HSE 16-18 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 19-21S: HSE 19-21 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 20S: Subcatchment 20S Runoff Area=97,193 sf 0.00% Impervious Runoff Depth>0.30"
Flow Length=365' Tc=17.4 min CN=31 Runoff=0.12 cfs 0.056 af

Subcatchment 22-24S: HSE 22-24 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 25-27S: HSE 25-27 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 28-30S: HSE 28-30 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>6.98"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Reach 1R: Analysis Point 1 Inflow=3.26 cfs 0.603 af
Outflow=3.26 cfs 0.603 af

Reach 2R: Analysis Point 2 Inflow=0.12 cfs 0.056 af
Outflow=0.12 cfs 0.056 af

Pond 1-3P: HSE 1-3 Peak Elev=111.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 1P: Porous Pavement Peak Elev=108.04' Storage=268 cf Inflow=1.26 cfs 0.530 af
Discarded=1.25 cfs 0.530 af Primary=0.00 cfs 0.000 af Outflow=1.25 cfs 0.530 af

Pond 2P: 12" Culvert Peak Elev=110.57' Storage=894 cf Inflow=3.29 cfs 0.502 af
12.0" Round Culvert n=0.013 L=44.0' S=0.0045 '/' Outflow=2.80 cfs 0.501 af

Pond 4-6P: HSE 4-6 Peak Elev=111.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 7-9P: HSE 7-9 Peak Elev=110.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 10-12P: HSE 10-12 Peak Elev=113.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 13-15P: HSE 13-15 Peak Elev=113.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 16-18P: HSE 16-18 Peak Elev=113.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 19-21P: HSE 19-21 Peak Elev=111.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 22-24P: HSE 22-24 Peak Elev=110.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 25-27P: HSE 25-27 Peak Elev=111.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Pond 28-30P: HSE 28-30 Peak Elev=111.00' Storage=482 cf Inflow=0.48 cfs 0.039 af
Discarded=0.11 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.039 af

Total Runoff Area = 10.285 ac Runoff Volume = 1.580 af Average Runoff Depth = 1.84"
76.03% Pervious = 7.819 ac 23.97% Impervious = 2.465 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1-3S: HSE 1-3 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 4-6S: HSE 4-6 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 7-9S: HSE 7-9 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 10-12S: HSE 10-12 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 10S: Subcatchment 10S Runoff Area=210,867 sf 16.09% Impervious Runoff Depth>1.96"
Flow Length=664' Tc=25.8 min CN=44 Runoff=5.83 cfs 0.792 af

Subcatchment 11S: Subcatchment 11S Runoff Area=47,954 sf 85.87% Impervious Runoff Depth>7.13"
Tc=216.0 min CN=90 Runoff=1.54 cfs 0.654 af

Subcatchment 12S: Subcatchment 12S Runoff Area=62,706 sf 4.78% Impervious Runoff Depth>1.44"
Flow Length=295' Tc=10.6 min CN=39 Runoff=1.49 cfs 0.172 af

Subcatchment 13-15S: HSE 13-15 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 16-18S: HSE 16-18 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 19-21S: HSE 19-21 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 20S: Subcatchment 20S Runoff Area=97,193 sf 0.00% Impervious Runoff Depth>0.66"
Flow Length=365' Tc=17.4 min CN=31 Runoff=0.53 cfs 0.123 af

Subcatchment 22-24S: HSE 22-24 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 25-27S: HSE 25-27 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Subcatchment 28-30S: HSE 28-30 Runoff Area=2,928 sf 100.00% Impervious Runoff Depth>8.40"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.047 af

Reach 1R: Analysis Point 1 Inflow=4.85 cfs 0.963 af
Outflow=4.85 cfs 0.963 af

Reach 2R: Analysis Point 2 Inflow=0.53 cfs 0.123 af
Outflow=0.53 cfs 0.123 af

Pond 1-3P: HSE 1-3 Peak Elev=111.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 1P: Porous Pavement Peak Elev=108.05' Storage=328 cf Inflow=1.54 cfs 0.654 af
Discarded=1.54 cfs 0.654 af Primary=0.00 cfs 0.000 af Outflow=1.54 cfs 0.654 af

Pond 2P: 12" Culvert Peak Elev=111.28' Storage=3,049 cf Inflow=5.83 cfs 0.792 af
12.0" Round Culvert n=0.013 L=44.0' S=0.0045 '/' Outflow=4.20 cfs 0.791 af

Pond 4-6P: HSE 4-6 Peak Elev=111.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 7-9P: HSE 7-9 Peak Elev=110.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 10-12P: HSE 10-12 Peak Elev=113.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 13-15P: HSE 13-15 Peak Elev=113.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 16-18P: HSE 16-18 Peak Elev=113.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 19-21P: HSE 19-21 Peak Elev=111.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 22-24P: HSE 22-24 Peak Elev=110.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 25-27P: HSE 25-27 Peak Elev=111.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Pond 28-30P: HSE 28-30 Peak Elev=111.74' Storage=600 cf Inflow=0.57 cfs 0.047 af
Discarded=0.13 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.047 af

Total Runoff Area = 10.285 ac Runoff Volume = 2.212 af Average Runoff Depth = 2.58"
76.03% Pervious = 7.819 ac 23.97% Impervious = 2.465 ac

- Select Product
- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location Double-click the map to place a marker, or enter address or latitude/longitude.

Locate by Address | Locate by Lat/Lon (°N °W) | Locate by State/County

Select Options

Smoothing	Delivery
Yes	Popup

Submit

This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) | Natural Resources Conservation Service (NRCS)

Contact: precip@cornell.edu

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.811 degrees West
Latitude	43.002 degrees North
Elevation	0 feet
Date/Time	Fri, 04 Jun 2021 14:21:06 -0400

+15%
2 YR. 3.74
10 YR. 5.68
25 YR 7.22
50 YR. 8.65

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	0.66	0.82	1.04	**1yr**	0.71	0.98	1.22	1.57	2.05	2.70	2.97	**1yr**	2.39	2.85	3.27	3.99	4.62	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.31	**2yr**	0.89	1.19	1.52	1.95	2.51	3.25	3.62	**2yr**	2.88	3.48	3.99	4.74	5.40	**2yr**
5yr	0.38	0.58	0.73	0.98	1.26	1.62	**5yr**	1.08	1.48	1.90	2.45	3.18	4.13	4.65	**5yr**	3.65	4.47	5.12	6.03	6.80	**5yr**
10yr	0.42	0.65	0.83	1.12	1.46	1.91	**10yr**	1.26	1.74	2.25	2.93	3.80	4.94	5.62	**10yr**	4.38	5.40	6.19	7.23	8.10	**10yr**
25yr	0.48	0.77	0.98	1.35	1.79	2.36	**25yr**	1.55	2.16	2.81	3.68	4.81	6.28	7.22	**25yr**	5.56	6.94	7.96	9.20	10.22	**25yr**
50yr	0.54	0.87	1.11	1.56	2.10	2.79	**50yr**	1.81	2.55	3.33	4.39	5.75	7.52	8.73	**50yr**	6.66	8.40	9.63	11.04	12.19	**50yr**
100yr	0.61	0.98	1.27	1.80	2.45	3.30	**100yr**	2.12	3.01	3.96	5.24	6.89	9.02	10.57	**100yr**	7.98	10.16	11.65	13.25	14.54	**100yr**
200yr	0.69	1.12	1.45	2.08	2.87	3.90	**200yr**	2.48	3.56	4.70	6.24	8.23	10.82	12.79	**200yr**	9.57	12.29	14.10	15.92	17.36	**200yr**
500yr	0.82	1.34	1.75	2.53	3.54	4.86	**500yr**	3.06	4.44	5.87	7.86	10.43	13.76	16.46	**500yr**	12.18	15.83	18.15	20.29	21.95	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.89	**1yr**	0.62	0.87	0.92	1.33	1.66	2.27	2.63	**1yr**	2.01	2.53	2.90	3.16	3.95	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.87	1.17	1.37	1.82	2.33	3.10	3.52	**2yr**	2.75	3.39	3.89	4.62	5.14	**2yr**
5yr	0.35	0.55	0.68	0.93	1.18	1.41	**5yr**	1.02	1.38	1.62	2.12	2.73	3.87	4.31	**5yr**	3.42	4.14	4.81	5.67	6.39	**5yr**
10yr	0.39	0.60	0.75	1.04	1.35	1.62	**10yr**	1.16	1.58	1.81	2.39	3.06	4.47	5.03	**10yr**	3.96	4.84	5.63	6.61	7.39	**10yr**
25yr	0.45	0.68	0.85	1.21	1.59	1.92	**25yr**	1.38	1.88	2.11	2.75	3.54	4.81	6.15	**25yr**	4.25	5.91	6.96	8.11	8.97	**25yr**
50yr	0.49	0.75	0.94	1.35	1.81	2.20	**50yr**	1.57	2.15	2.36	3.07	3.94	5.45	7.14	**50yr**	4.82	6.87	8.18	9.47	10.39	**50yr**
100yr	0.55	0.84	1.05	1.52	2.08	2.51	**100yr**	1.79	2.45	2.65	3.40	4.36	6.14	8.30	**100yr**	5.43	7.99	9.62	11.07	12.03	**100yr**
200yr	0.62	0.93	1.17	1.70	2.37	2.86	**200yr**	2.05	2.80	2.96	3.76	4.82	6.90	9.66	**200yr**	6.11	9.29	11.32	12.96	13.95	**200yr**
500yr	0.72	1.07	1.38	2.00	2.85	3.43	**500yr**	2.46	3.36	3.45	4.29	5.50	8.07	11.79	**500yr**	7.14	11.34	14.07	15.98	16.93	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.73	0.89	1.09	**1yr**	0.77	1.06	1.27	1.74	2.20	3.04	3.17	**1yr**	2.69	3.05	3.64	4.42	5.13	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.25	1.48	1.96	2.51	3.47	3.73	**2yr**	3.07	3.58	4.11	4.88	5.71	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.89	2.53	3.24	4.39	4.97	**5yr**	3.89	4.78	5.44	6.40	7.19	**5yr**
10yr	0.47	0.72	0.90	1.25	1.62	1.99	**10yr**	1.40	1.94	2.28	3.10	3.93	5.40	6.19	**10yr**	4.78	5.95	6.79	7.86	8.78	**10yr**
25yr	0.58	0.88	1.10	1.57	2.06	2.59	**25yr**	1.78	2.53	2.95	4.05	5.11	7.89	8.28	**25yr**	6.99	7.96	9.03	10.34	11.42	**25yr**
50yr	0.68	1.03	1.28	1.84	2.48	3.15	**50yr**	2.14	3.08	3.59	4.97	6.26	9.88	10.33	**50yr**	8.75	9.94	11.22	12.71	13.95	**50yr**
100yr	0.80	1.20	1.51	2.18	2.99	3.84	**100yr**	2.58	3.75	4.36	6.12	7.67	12.36	12.89	**100yr**	10.94	12.40	13.93	15.65	17.04	**100yr**
200yr	0.93	1.40	1.78	2.57	3.59	4.69	**200yr**	3.09	4.58	5.32	7.54	9.41	15.50	16.10	**200yr**	13.72	15.49	17.31	19.24	20.83	**200yr**
500yr	1.15	1.72	2.21	3.21	4.57	6.09	**500yr**	3.94	5.95	6.91	9.96	12.35	20.93	21.60	**500yr**	18.52	20.77	23.06	25.30	27.18	**500yr**

Powered by ACIS
Northeast Regional Climate Center

SITE-SPECIFIC SOIL SURVEY REPORT
Hector's Site
Lafayette Road
Rye, NH
GES # 2020014

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 5.0, December 2017. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special product, intended for the submission to NH DES Alteration of Terrain. It was produced by a professional soil scientist and is not a product of the USDA Natural Resource Conservation Service.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Survey (HISS) Symbols were determined using SSSNNE Special Publication No. 1, High Intensity Soil Maps for New Hampshire, December 2017.

2. DATE SOIL MAP PRODUCED
13 July 2020

3. GEOGRAPHIC LOCATION AND SIZE OF SITE

Approximately 9.56 acres. Tax map 10, Lot 1. The site is located in the Town of Rye, NH.

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

4. PURPOSE OF THE SOIL MAP

The preparation of this map was requested by Jones & Beach Engineers. The purpose was to meet the requirements of NH Alteration of Terrain and NH DES Subsurface.

5. SOIL IDENTIFICATION LEGEND

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
10	Merrimac fine sandy loam	111	A
599	Urban land – Hoosic Complex	261	A

SLOPE PHASE:					
0-8%	B	8-15%	C	15-25%	D
25%+	E				

6. SOIL MAP UNIT DESCRIPTIONS

24 MERRIMAC FINE SANDY LOAM.

This soil has developed on outwash plains. By contrast to the excessively drained Windsor or Hinckley, this soil has a fine sandy loam solum (Ap and Bw) which overlays a coarse gravelly sand textured substratum (2C). The fine sandy loam cap gives Agawam a somewhat excessively drainage classification.

The typical Ap horizon ranges from 7.5YR to 2.5Y, with value of 3 or 4 and chroma of 2 to 4, with textures of fine sandy loam to loam,

The Bw horizon ranges from 7.5YR to 10YR, with value of 4 to 7 and chroma of 3 to 8. Textures are fine sandy loam to loam.

The 2C horizon ranges from 10YR to 5Y, with value of 3 to 7 and chroma of 1-4. Textures are coarse to fine sand. Gravel fragments range are 40%.

In review the test pits that were logged by Chris Albert of Jones & Beach, the range of soil characteristics noted in the test pits match the above range in characteristics noted above for the Merrimac soil series.

The "2" C notation on the substratum denotes a lithologic discontinuity in the soil profile, which is to say that two geologic events created this soil profile.

The following soil map unit represent areas that have been disturbed, graded, excavated or filled. Hydrologic soil groups have been estimated based upon the soil textures, mineral restrictive layers (if present), and estimated seasonal high water table (if they could be determined by redoximorphic features or other indicators).

599 URBAN LAND – HOOSIC COMPLEX

This map unit represents an area of pavement and gravel parking that has been compacted to be virtually impervious. However, if the pavement was removed and the packed gravel was broken up, it would have rapid infiltration in the substratum. The water table is very deep and the textures are similar to the Hoosic or Merrimac, where there is no pavement.

7. RESPONSIBLE SOIL SCIENTIST

James P. Gove, C.S.S. #004

8. OTHER DISTINGUISHING FEATURES OF SITE

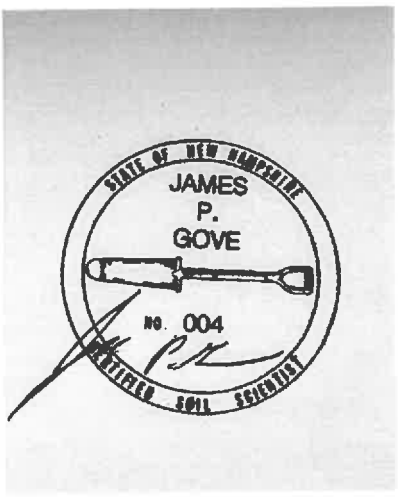
The site is relatively flat to slightly sloping. Directly to the west is a cut face of an old gravel pit. In places, the pit was excavated down to the water table.

9. MAXIMUM SIZE OF LIMITING INCLUSIONS

25% non-limiting and similar inclusions.
15% limiting and dis-similar inclusions

10. SPECIAL FEATURE SYMBOLS

None used


STATE OF NEW HAMPSHIRE
JAMES
P.
GOVE
NO. 004
CERTIFIED SOIL SCIENTIST

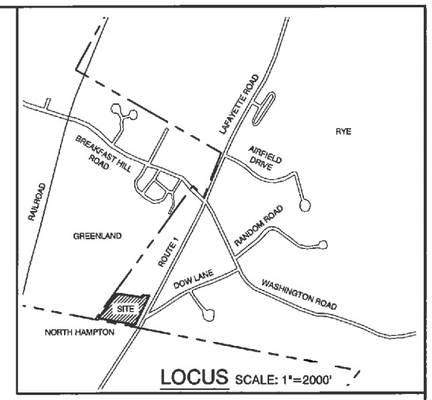
10-16-2020

PLAN REFERENCES:

1. "BOUNDARY LINE ADJUSTMENT AND MERGER PLAN FOR RYE SANCTUARY." BY DOUCET SURVEY DATED 1-12-2101 AND RECORDED AT R.C.R.D. AS PLAN #36366
2. "SUBDIVISION OF LAND, NORTH HAMPTON N.H. FOR JACOB CIBROWSKI & L.A.B. REALTY CORP." DATED 12-11-1979 AND RECORED AT R.C.R.D. AS PLAN #6584.
3. "PLAN OF LAND IN GREENLAND N.H., A SUBDIVISION FOR THE ESTATE OF PATRICK COAKLEY" BY KIMBALL CHASE DATED 10-14-1981 AND RECORDED AT R.C.R.D. AS PLAN #10435.
4. "PLAN OF THE RYE-GREENLAND TOWN LINE" DATED MAY, 1978 AND RECORDED AT THE R.C.R.D. AS PLAN #3745.
5. "BOUNDARY PLAN OF LAND, COAKLEY LANDFILL SUPERFUND SITE, GREENLAND AND NORTH HAMPTON N.H." DATED 9-11-1992 AND RECORDED AT THE R.C.R.D. AS PLAN #22068
6. "STATE OF NH, STATE HIGHWAY DEPARTMENT PLAN & PROFILE OF PROPOSED FEDERAL AID PROJECT #37 LAFAYETTE ROAD". ON RECORD AT THE NHDOT DISTRICT 6 OFFICE.

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		TREE LINE
		SIGN
		SEWER MANHOLE
		HYDRANT
		WATER SHUTOFF
		MONUMENT
		ZONE LINE
		EDGE OF WETLAND
		IRON ROD/DRILL HOLE
		UTILITY POLE
		EDGE OF PAVEMENT
		SETBACKS
		STONEWALL
		FENCE
		MAJOR CONTOUR
		MINOR CONTOUR
OHE		OVERHEAD ELECTRIC



LOCUS SCALE: 1"=2000'

MAP 10 LOT 003
EVOLVE AT RYE L.L.C.
295 LAFAYETTE ROAD
RYE, NH 03870
BOOK: 5843 PAGE: 353

MAP R01 LOT 009
TOWN OF GREENLAND
P.O. BOX 100
GREENLAND, NH 03840
BOOK: 3454 PAGE: 1131

GREENLAND/RYE TOWN LINE

MAP 21 LOT 31
MICHAEL R. SCANLAN
&
GEANNINA-GUZMAN SCANLAN
P.O. BOX 561
HAMPTON, NH 03843
BOOK: 6034 PAGE: 613

MAP 10 LOT 84
AF REAL ESTATE HOLDINGS L.L.C.
P.O. BOX 839
EPPING, NH 03042
BOOK: 3450 PAGE: 2294

MAP 10 LOT 85
ALLEGIANT MANAGEMENT CORP.
P.O. BOX 507
RYE, NH 03870
BOOK: 3450 PAGE: 2294 (01/14/00)

MAP 10 LOT 70
DAVID M. MARCHEFKA
70 OAKLEY ROAD
BELMONT, MA 02478
BOOK: 3450 PAGE: 2294

MAP 10 LOT 69
NORTH HILL LEASING CO. &
GROUP
530 MAMMOTH ROAD, UNIT 4
DRACUT, MA, 01862
BOOK: 3450 PAGE: 2294

Site-specific Soil Map prepared by GES, Inc., JP Gove, CSS #004 13 July 2020

CERTIFICATION:

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS

STATE OF NEW HAMPSHIRE — No. 892 DAVID M. COLLIER — LICENSED LAND SURVEYOR

SIGNATURE

DAVID M. COLLIER, LLS 892 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
TOWN OF RYE
TAX MAP 10, LOT 1

APPLICANT
TUCK REALTY CORP.
ATTN: MIKE GARREPY
149 EPPING ROAD, SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
416,460 SQ. FT.
9.56 ACRES

NOTES:

1. THE INTENT OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS FOR TAX MAP 10, LOT 001 RYE N.H.
2. CURRENT OWNER OF RECORD:
   OWNER: MALCOLM E. SMITH
   ADDRESS: 228 WOODLAND ROAD
   TOWN: HAMPTON
   BK 5079 PG 262
3. ZONING DISTRICT:
   LOT AREA MINIMUM = 44,000 SF
   LOT FRONTAGE MINIMUM = 150.0'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK =50.0 '
   SIDE SETBACK =20.0'
   REAR SETBACK =24.0'
   WETLAND SETBACK = '
   MAX. BUILDING HEIGHT =35.0 '
4. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
5. THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE "X" DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 33015C0270E, WITH EFFECTIVE DATE OF 5-17-2005.
6. BASIS OF BEARING: HORIZONTAL=MAGNETIC, VERTICAL=NGVD 29, RYE GPS DISK 10.
7. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
8. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
9. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE TOWN OF RYE TAX RECORDS AND ARE SUBJECT TO CHANGE.
10. RESEARCH WAS PERFORMED AT THE TOWN OF RYE ASSESSOR'S OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
11. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
12. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL. TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
13. NO WETLANDS WERE OBSERVED ON THE SUBJECT PREMISES. OFFSITE WETLANDS WERE DELINEATED BY CHRIS ALBERT, CWS, IN SPRING, 2020 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A) THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B) THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    C) THE CURRENT VERSION OF THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
    D) THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
14. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 62557.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

Design: JAC	Draft: PSL	Date: 12/17/19	
Checked: JAC	Scale: 1"=50'	Project No.: 18062.1	
Drawing Name: 18062-PLAN.dwg			

REV.	DATE	REVISION	BY
2	06/03/20	MINOR REVISIONS	DJM
1	02/21/20	REVISED PLANS ISSUED FOR REVIEW	AMJ
0	12/17/19	ISSUED FOR REVIEW	PSL

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	HECTOR'S SITE LAFAYETTE ROAD, RYE, NH
Owner of Record:	MALCOLM E. SMITH III PO BOX 1020, HAMPTON, NH 03842, BK 5079 PG 0262

DRAWING No.
C1
SHEET 2 OF 14
JBE PROJECT NO. 18062.1

TEST PITS
FOR
0 LAFAYETTE RD
RYE, NEW HAMPSHIRE
March 5, 2020
JBE Project No. 18062.1

Performed by: Chris Albert, Jones & Beach Engineers, Inc., SSD #1085
Witnessed by: Dennis Plante

Test Pit #1

		grass mat
0"- 44"	10YR 5/6	yellowish brown fine sandy loam few stones
44"-96"	10YR 4/4	dark yellowish brown loamy sand gravelly small stones

SHWT = none-96"
Roots to 44"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #2

0"- 24"	10YR 4/6	dark yellowish brown fine sandy loam few roots
24"-96"	10YR 5/3	brown fine sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #3

0"- 6"	10YR 3/3	dark brown fine sandy loam few roots
6"-32"	10YR 5/6	yellowish brown fine sandy loam few roots
32"-96"	10YR 4/4	dark yellowish brown medium to fine gravelly sand small stones

SHWT = none-96"
Roots to 32"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #4

0"- 6"	10YR 3/3	dark brown fine sandy loam few roots
6"-32"	10YR 5/6	yellowish brown fine sandy loam few roots
32"-96"	10YR 4/4	dark yellowish brown medium to fine gravelly sand small stones with construction rubble

SHWT = none-96"
Roots to 32"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #5

0"- 2"	10YR 3/3	dark brown fine sandy loam Thin "A"
2"-24"	10YR 5/4	yellowish brown fine sandy loam few roots
24"-96"	10YR 4/6	dark yellowish brown medium sand few stones

SHWT = none-96"
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #6

0"- 2"	10YR 3/3	dark brown fine sandy loam few roots thin "A"
2"-24"	10YR 5/6	yellowish brown fine sandy loam few roots graded material
24"-96"	10YR 4/4	dark yellowish brown loamy sand to fine sand shaky rock with construction rubble

SHWT =none-96"
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #7

		forest mat
0"- 8"	10YR 3/3	dark brown fine sandy loam many roots
8"-24"	10YR 5/6	yellowish brown fine sandy loam few roots
24"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #8

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #9

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #10

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #11

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #12

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #13

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #14

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #15

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

TEST PITS
FOR
0 LAFAYETTE RD
RYE, NEW HAMPSHIRE
March 6, 2020
JBE Project No. 18062.1

Performed by: Chris Albert, Jones & Beach Engineers, Inc., SSD #1085
Witnessed by: Dennis Plante

Test Pit #16

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #17

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-24"	10YR 4/4	dark yellowish brown fine sandy loam few roots
24"-120"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #18

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-24"	10YR 4/4	dark yellowish brown fine sandy loam few roots
24"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #19

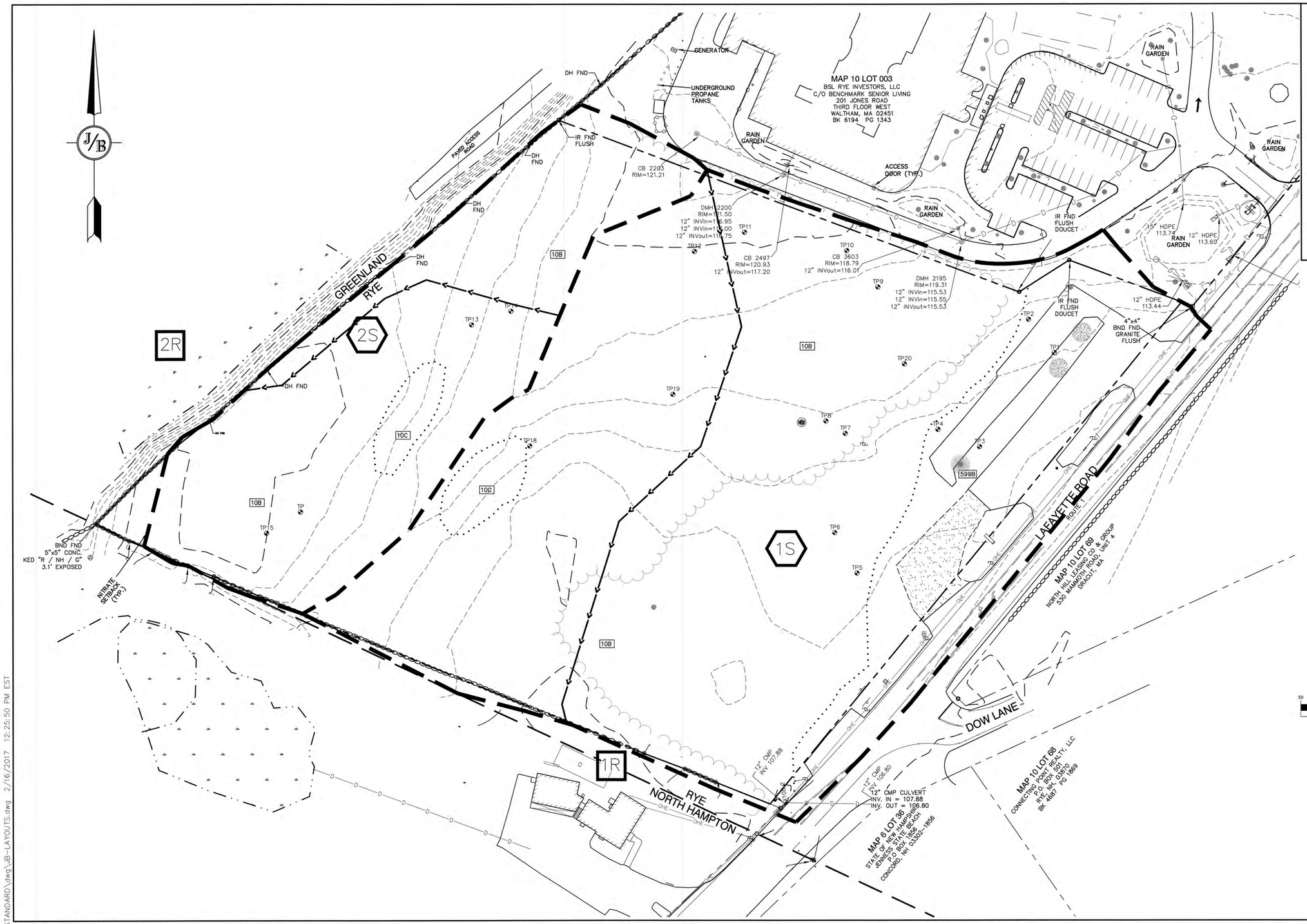
		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-24"	10YR 4/4	dark yellowish brown fine sandy loam few roots
24"-96"	10YR 4/4	dark yellowish brown medium sand few stones

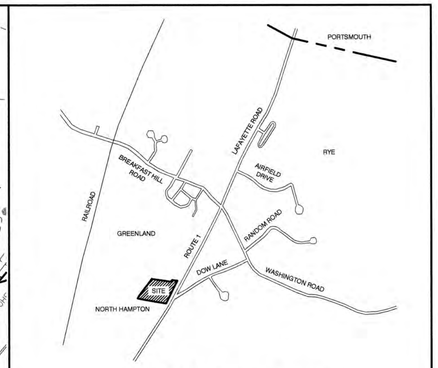
No SHWT observed
Roots to 24"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch

Test Pit #20

		forest mat
0"- 6"	10YR 3/3	dark brown fine sandy loam many roots
6"-18"	10YR 5/6	yellowish brown fine sandy loam few roots
18"-96"	10YR 4/4	dark yellowish brown medium sand few stones

No SHWT observed
Roots to 18"
No H_2O observed
No Refusal observed
Perc Rate = 4 min/inch





LOCUS SCALE: 1"=2000'

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH [X]
- POND
- TC PATH
- WETLANDS
- HISS SOILS
- FLOW ARROW

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

PROJECT PARCEL
TOWN OF RYE
TAX MAP 10, LOT 1

APPLICANT
TUCK REALTY CORP.
ATTN: MIKE GARREPY
149 EPPING ROAD, SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
416,460 SQ. FT.
9.56 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 2/16/2017 12:25:50 PM EST

Design: JAC	Draft: MJK	Date: 06/18/21
Checked: JAC	Scale: 1"=50'	Project No.: 18062.2
Drawing Name: 18062-WATERSHED.dwg		

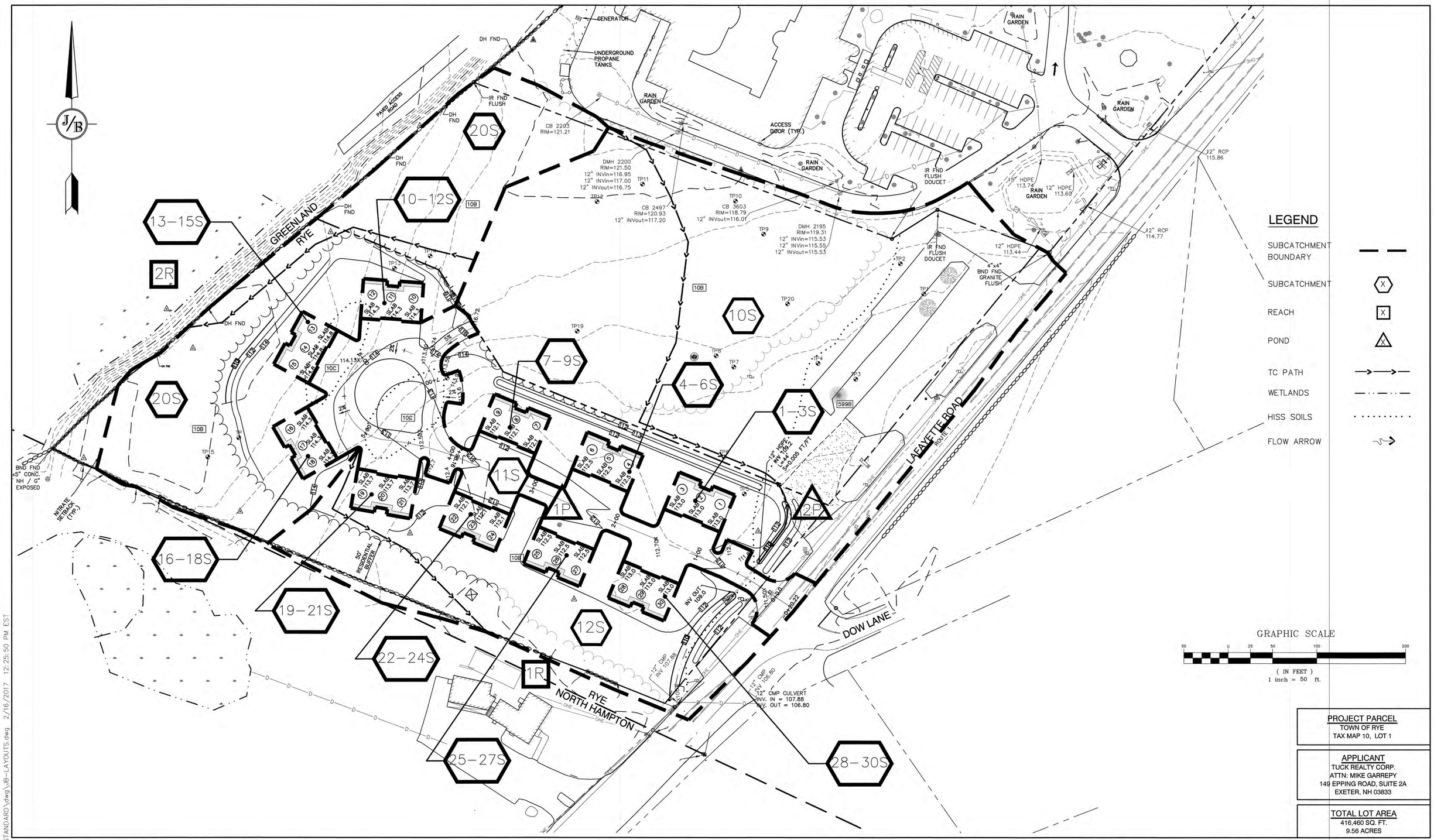
STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9946 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
0	06/18/21	ISSUED FOR REVIEW	MJK

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING WATERSHED PLAN
Project:	HECTOR'S SITE LAFAYETTE ROAD, RYE, NH
Owner of Record:	MALCOLM E. SMITH III PO BOX 1020, HAMPTON, NH 03842, BK 5079 PG 0262

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 18062.2



PROJECT PARCEL
TOWN OF RYE
TAX MAP 10, LOT 1

APPLICANT
TUCK REALTY CORP.
ATTN: MIKE GARREPY
149 EPPING ROAD, SUITE 2A
EXETER, NH 03833

TOTAL LOT AREA
416,460 SQ. FT.
9.56 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 2/16/2017 12:25:50 PM EST

Design: JAC	Draft: MJK	Date: 06/18/21
Checked: JAC	Scale: 1"=50'	Project No.: 18062.2
Drawing Name: 18062-WATERSHED.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
0	06/18/21	ISSUED FOR REVIEW	MJK

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	PROPOSED WATERSHED PLAN
Project:	HECTOR'S SITE LAFAYETTE ROAD, RYE, NH
Owner of Record:	MALCOLM E. SMITH III PO BOX 1020, HAMPTON, NH 03842, BK 5079 PG 0262

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 18062.2

GeoInsight
ENVIRONMENTAL STRATEGY & ENGINEERING

AQUIFER PROTECTION DISTRICT – HYDROGEOLOGIC STUDY REPORT
TUCK REALTY CORPORATION, PROPOSED CONDOMINIUM DEVELOPMENT
MAP 10, LOT 1
LAFAYETTE ROAD
RYE, NEW HAMPSHIRE

Prepared for:

Tuck Realty Corporation
P.O. Box 190
Exeter, New Hampshire 03833

Prepared By:

GeoInsight, Inc.
186 Granite Street, 3rd Floor, Suite A
Manchester, New Hampshire 03101
Tel: 603-314-0820
Fax: 603-314-0821

info@geoinc.com
www.geoinsightinc.com

June 17, 2021

June 17, 2021 GeoInsight Project 9212-007

Kimberly Reed
Town of Rye Planning & Zoning Administrator
10 Central Road
Rye, New Hampshire 03870

RE: Aquifer Protection District – Hydrogeologic Study Report
Tuck Realty Corporation, Proposed Condominium Development
Map 10, Lot 1, Lafayette Road
Rye, New Hampshire

Dear Ms Reed:

At the request of Tuck Realty Corporation (Tuck), GeoInsight, Inc. (GeoInsight) completed a Hydrogeologic Study of a vacant parcel of land adjacent to Lafayette Road (Route 1) in Rye, New Hampshire (the Property). The Property is identified by the Town of Rye as Map 10, Lot 1 and is a 9.56-acre parcel that was formerly known as 355 Lafayette Road (former Hector's Motel). The location of the Property is shown on Figure 1 and on the Rye Assessors map included in Attachment A. The Hydrogeologic Study was completed pursuant to Town of Rye General Code, §190-3.6 E(2) and F(1). Based upon the mapped limits of stratified-drift aquifers (June 2003 Town map in Attachment A), and according to Rye General Code, §190-3.6, the Property is located within the Town's Aquifer and Wellhead Protection Overlay District.

As you may be aware, a lot line revision is proposed which would separate the Property into two new parcels. Redevelopment efforts include the construction of a proposed 30-unit condominium (condo) development on the southern portion of the parcel by Tuck and construction of a senior living facility by Benchmark Senior Living (Benchmark) on the northern portion of Map 10, Lot 1, with future connection of the senior facility to Benchmark's Evolve Memory Care (Evolve) facility, located on the abutting parcel farther to the north. Current preliminary layouts of the Tuck condo development and proposed Benchmark assisted living facility are presented on Figures 2 and 3.

This Hydrogeologic Study Report addresses the Tuck condo development as it relates to the Town's Aquifer Protection District rules and requirements with a separate Hydrogeologic Study Report anticipated to be submitted under separate cover for Benchmark's proposed facility on the future northern portion of the subdivided lot. Soil boring and monitoring well data from the entire current parcel, and existing data from wells at the Evolve facility were considered in development of this Hydrogeologic Study.

PROPOSED DEVELOPMENT DETAILS

Tuck has proposed 10 residential condo buildings each comprised of three, 2-bedroom condo units. Each building will be served by on-site subsurface disposal systems ("leach fields"), 10 total,

with design flows of 320 gallons per day (GPD) per unit, or 960 GPD per field. GeoInsight understands stormwater will be managed in the development using porous pavement and sheet flow to vegetated/landscaped areas and roof line drip edges to minimize and manage runoff. A stormwater retention or infiltration basin to collect and manage collected stormwater runoff is not planned.

FIELD DATA COLLECTION ACTIVITIES AND RESULTS

As a part of the Hydrogeologic Study, on May 13 and 14, 2021, GeoInsight oversaw the drilling of six soil borings completed as groundwater monitoring wells at the Property (GEO-1 through GEO-6). Borings/wells GEO-2, GEO-3, GEO-4, were advanced on the Tuck condo development portion of the Property. Boring/well GEO-5 was located near the proposed future lot line separating the Tuck and Benchmark developments, and GEO-1 and GEO-6 are located on the proposed Benchmark (northern) part of the Property. These six borings/wells, along with pre-existing wells MW-3 and MW-6 associated with the Evolve facility to the north, were used in this Hydrogeologic Study. Boring/well completion logs for GEO-1 through GEO-6 are presented in Attachment B and the locations are illustrated on Figures 1 through 3.

On May 23 and 28, 2021, GeoInsight collected depth to groundwater measurements and water quality indicator parameter readings (pH, temperature, dissolved oxygen, specific conductance, and oxidation-reduction potential) in the eight wells (Tables 1 and 2, respectively). On May 28, 2021, wells GEO-1 through GEO-6 and MW-3 and MW-6 were surveyed relative to a local benchmark (see Figure 2) to establish wellhead elevations for use in determining groundwater flow calculations (Table 1).

Wells GEO-1 through GEO-6, and MW-3 and MW-6 were sampled on May 23, 2021, and samples were analyzed by a laboratory for ammonia-nitrogen, nitrate-nitrogen, and chloride. A copy of the laboratory analytical report is presented in Attachment C and the nitrogen and chloride data are presented in Table 2.

Nitrate and chloride concentrations reported in groundwater samples collected from wells GEO-1 through GEO-6 ranged from not detected above the laboratory reporting limit of 0.1 milligrams per liter (mg/L) to 2.9 mg/L (nitrate) and 3.9 mg/L to 240 mg/L (chloride). In wells MW-3 and MW-6 located at the Evolve facility and upgradient of the Property, reported nitrate and chloride concentrations were 0.9 mg/L and 1.3 mg/L (nitrate) and 420 mg/L and 430 mg/L (chloride).

On May 28, 2021, *in-situ* monitoring well/aquifer hydraulic conductivity testing ("slug tests") were performed at wells GEO-1 through GEO-6. Because the monitoring wells had screens intersecting the water table (not fully submerged), slug-out (falling head) tests were conducted. Hydraulic conductivity values from the slug tests ranged from 23 to 27 feet per day (ft/day). Note, that the aquifer responses recorded in wells GEO-3, GEO-4, and GEO-5 (and for the second test at GEO-2) were too rapid to provide useful data for calculating hydraulic conductivities. Slug test data and charts for wells GEO-1, GEO-2, and GEO-6 are presented in Attachment D.

Previous hydraulic conductivity testing by others in a February 2010 hydrogeologic study report for the Evolve facility to the north reported hydraulic conductivity values from 22 to 250 feet per day. The higher end range in values in that report appear to have been calculated using rapid slug

test response data, which tends to yield higher and unrepresentative calculated hydraulic conductivity values. The 22 ft/day value from the Evolve project correlates with the range of results from the GEO-1, GEO-2, and GEO-5 tests.

HYDROGEOLOGIC SETTING

The topography of the Property is approximately 110 feet to 116 feet above mean sea level (MSL). The Property is generally level with Lafayette Road. The area surrounding the Property is mixed residential and commercial and the Coakley Landfill, which is closed landfill and a USEPA Superfund Site, borders the Property to the west/southwest (see Assessors Map in Attachment A).

Based upon information obtained during the completion of the soil borings at the Property, native soil is primarily a glacial outwash deposit. The site stratigraphy was generally observed to consist of an upper coarse-grained layer (light brown to brown, fine to coarse sand, with some to trace amounts of gravel, and some to trace amounts of silt) and a lower fine-grained layer (fine sand and silt, with little to trace amounts of clay).

Based upon a review of the Bedrock Geologic Map of New Hampshire, bedrock underlying the Property consists of quartz-feldspar granitic gneiss and pegmatite intruded into the Rye formation and forming a migmatite. Outcrops were not observed on the Property and the borings completed did not encounter refusal to explorations depths up to 33 feet below ground surface (bgs; well GEO-6). Refusal on presumed bedrock (subsequently cored for confirmation) at the Evolve facility in borings completed for the 2010 hydrogeologic study for that project, was encountered at depths of 11 feet bgs (northeast part of the Evolve property) and 35 feet bgs (southwest part of Evolve property).

Depth to groundwater in the eight wells gauged on May 23 and 28, 2021 ranged from approximately 13.5 feet bgs (well GEO-2) to 24.5 feet bgs (well GEO-5), which equates to relative elevations of 96.5 feet MSL (well GEO-2) and 93.5 feet MSL (well GEO-5). Groundwater elevation contours were mapped on the development site plan for the Property (Figures 2 and 3). Groundwater was at an elevation of approximately 104 feet at the northeast part of the Property and slopes to an elevation of 93.5 feet at the southwest part of the Property. With respect to the proposed condo development on the southern portion of the Property, groundwater flow is generally directed westerly with a high groundwater elevation of 98 feet at the eastern Property line to 93.5 feet at the western property boundary.

COAKLEY LANDFILL SUMMARY

As previously mentioned, the Property (Map 10, Lot 1) abuts the Coakley Landfill Superfund site. While groundwater quality beneath the Property does not appear to be affected by conditions at the landfill, the Property is currently recorded in the Groundwater Management Zone (GMZ) for the Coakley site. A copy of the New Hampshire Department of Environmental Services (NHDES)-issued GMP and Notice of GMP recorded at the registry of deeds for the Coakley Landfill are presented in Attachment E. Given the nature of the groundwater conditions at the Superfund site and its proximity to the Property, GeoInsight reviewed available investigation and groundwater monitoring reports for the landfill as a part of this Hydrogeologic Study. The

following information was obtained from the Draft 2019 Annual Report (dated July 31, 2020) for the Coakley Landfill on file with the NHDES:

> "*Overburden groundwater flowing westward from the landfill discharges into a large wetland complex that serves as a hydraulic boundary for groundwater and the headwaters for Berrys Brook, which then flows in a northerly direction, and Little River, which flows to the south.*
>
> *Groundwater flow in bedrock is also interpreted to move in a westerly direction from the landfill toward a bedrock trough located beneath the wetland complex. This bedrock trough is oriented north/northeast to south/southwest parallel to regional geologic structure. As groundwater encounters this bedrock trough, it is likely that groundwater in bedrock is migrating in the direction (trend) of regional geologic structure, which is coincident with the Berrys Brook valley to the north and the Little River valley to the south and ultimately discharging to Little River and Berrys Brook.*
>
> *Consistent with historical results, CL* [USEPA Cleanup Level] *and/or AGQS* [Ambient Groundwater Quality Standard] *exceedances were identified for 1,4-dioxane, TBA* [tertiary butyl alcohol], *arsenic, and manganese in one or more wells* [at and near the landfill]. *In general, the parameters and locations that exceeded the regulatory thresholds are similar to historical monitoring events. Tert-butyl alcohol exceedances were limited to two wells in 2019, consistent with historical data."*

Groundwater monitoring at the landfill also includes sampling of per- and poly-fluorinated alkyl substances (PFAS) in overburden and bedrock groundwater as PFAS are a constituent of concern at the landfill site. Groundwater elevation contour plans and constituent distribution maps from the aforementioned 2019 Annual Report are presented in Attachment E and the location of the Property is identified on these plans.

The groundwater contour plans for the overburden and bedrock aquifer for the landfill generally depict a western component to groundwater flow. This finding would generally position the Property hydraulically upgradient from the landfill, which is consistent with a mapped westerly groundwater flow direction for the Property based upon wells installed for this Hydrogeologic Study.

Based upon the mapped extent of constituent/plume iso-contours in groundwater for the landfill (Attachment E), arsenic, manganese, and 1,4-dioxane plumes were inferred to be present in overburden groundwater at the Property, and 1,4-dioxane and PFAS were inferred to be present in bedrock groundwater beneath the Property. It should be noted; however, that the iso-contours were inferred by others in the vicinity of the Property based upon data from distant monitoring wells (see well locations on CES Inc.'s Figure 3 and 4 in Attachment E) and are not based on groundwater testing data obtained from the Property (also, Property-specific overburden groundwater flow direction is westerly). Groundwater sampling data from a pre-existing overburden monitoring well on the Property ("unnamed monitoring well" on Figures 2 and 3; currently dry, and unavailable for this study) collected in January 2020 by others had detected concentration of arsenic, manganese, and PFAS, which were below applicable AGQSs (1,4-dioxane was not tested in the January 2020 sampling event).

Arsenic and manganese are commonly present in groundwater as geologic background consistent with the January 2020 concentrations reported for the unnamed well (9.4 mg/L for arsenic and 260 mg/L for manganese). The detected concentrations of two PFAS', perfluorooctanoic acid (PFOA) of 3.5 parts per trillion or ppt, and perfluorooctane sulfonic acid (PFOS) of 3.94 ppt in the unnamed monitoring well at the Property may possibly be false positives or anthropogenic background, and unrelated to the landfill, but are less than the current AGQSs of 12 ppt for PFOA and 15 ppt for PFOS. This 2020 groundwater testing data furthers the conclusion that the landfill is not adversely affecting overburden groundwater below the Property.

GROUNDWATER MOUNDING ANALYSIS

Depth to groundwater below the Property ranges from 13.5 to 24.5 feet bgs, so mounding of groundwater beneath proposed wastewater leach fields is not anticipated to reduce the unsaturated soil profile such that percolation of groundwater will be hindered. Also, with the proposed porous pavement to manage and reinfiltrate stormwater and with no localized recharge basin planned, mounding due to storm water re-infiltration is not anticipated to be significant. However, following standard practice and to verify that there will be no significant mounding beneath the leach fields, GeoInsight calculated estimated/predicted groundwater mound heights using the proposed design flows and hydraulic conductivity data obtained in conjunction with this study.

The maximum groundwater mound height beneath the wastewater disposal fields was calculated using the method described by Hantush (1967)[1]. A calculation for a single field was conducted to represent each of the ten fields as they all have the same design flows and will be located in similar soil types. Variables in the mounding calculation included:

- Initial saturated thickness: 10 feet. This was based upon soil boring with total depths of approximately 30 feet and a depth to water of approximately 20 feet. Since the borings did not reach refusal on bedrock, the actual saturated thickness is greater than 10 feet, but lower saturated thicknesses result in higher predicted mounds, so this is a conservative assumption.

- Hydraulic conductivity: 23 feet/day. This is the lowest value calculated from the slug tests performed as part of this study. Use of the lower hydraulic conductivity value results in a conservative condition (it will predict higher mound heights).

- Porosity: 0.2 (dimensionless). This is an assumption based upon literature values for the sandy materials described in the boring logs.

- Disposal field dimensions: 42 feet by 16.5 feet. This is the design size of 9 of the 10 fields. The tenth field is designed at 32 feet by 22.5 feet which results in a smaller mound.

- Discharge volume: 960 gallons per day. This is the design volume for each disposal field. The design volume is conservative and typical flows will be lower.

[1] Hantush, M.S. 1967, *Growth and decay of groundwater mounds in response to uniform percolation*: Water Resources Research, v.3, P. 227-234.

- Time of loading: 90, 180 and 365 days. These are all extremely conservative conditions. Typically, 30 days is considered the duration required to reach steady-state conditions even at maximum loading.

Results of the mounding calculations gives predicted mound heights of 0.3 feet, 0.7 feet and 1.3 feet for loading durations of 90 days, 180 days and 365 days, respectively, beneath the leach fields (Attachment F). With depths to water on site of 13 to 24 feet or greater, these mound heights are not significant.

NITRATE LOADING

Leach fields, particularly those that aggregate wastewater flows from multiple dwelling units into shared subsurface disposal systems, can result in a contribution of nitrate into the aquifer that, depending on site hydrogeology, can result in nitrate levels that exceed the New Hampshire AGQS of 10 mg/L. It is important to evaluate the nitrate loading and how that affects groundwater quality, with particular concern to meeting the AGQS of 10 mg/L at the downgradient Property boundary.

The nitrogen/nitrate concentration at the downgradient Property boundary was simulated using a commonly accepted mass-balance approach. In this method, the nitrate concentration is calculated by the total nitrate mass entering the groundwater on the property, divided by the water recharging the area of the wastewater disposal fields that flows to the downgradient boundary plus any known background concentration of nitrate. The total nitrogen/nitrate concentration is given by the volume and concentration of wastewater flows and inputs from loss from fertilized lawn area. There are 10 wastewater disposal fields with a design flow of 960 gallons per day each. A conservative nitrate concentration assumption for residential wastewater is 40 mg/L (Massachusetts DEP *Guidelines for Title 5 Aggregation of flows and Nitrogen Loading* 310 CMR 15.216 cites 35 mg/L). Assuming a post development-maintained lawn area of 1 acre in the wastewater field recharge area (Figure 3), a fertilizer application of 3 pounds per 1,000 square feet per year of which 25% is not consumed and is leached to the groundwater (MADEP *Guidelines*), the total nitrate load to the Property is approximately 545 million milligrams per year.

The area in which groundwater flows to the disposal fields from the upgradient to the downgradient boundary was delineated by interpretation of the May 28, 2021 groundwater contour map (Figure 3). This area was measured at 3.53 acres. As conservative assumption, the pavement, which is proposed to be porous, was assumed for the mass balance calculation to be impermeable. The pavement and building areas totaling 1.72 acres was deducted from the recharge area. This is conservative as permeable/porous pavement and roof run-off recharge via drip edges are planned for the development, so actual recharge to the disposal field recharge area will be higher than simulated. Annual average precipitation for Rye is 50 inches of which it is assumed 50 percent infiltrates to recharge groundwater. Since the water supply is municipal and coming from an off-site source rather than an on-site well, the wastewater fields yield a total net recharge of 17 million liters per year. This results in a calculated concentration of nitrate of 30.4 mg/L plus a known background concentration of an average 1.3 mg/L, which results in 31.7 mg/L of nitrate in groundwater at the downgradient Property boundary. Nitrate loading calculation spreadsheets are presented in Attachment F. The predicted concentration of

31.7 mg/L of nitrate exceeds the NH Ambient Groundwater Quality Standard (NH AGQS) of 10 mg/L and, therefore, denitrification via pretreatment will be necessary.

SeptiTech nitrate pretreatment systems are planned for each disposal field. According to SeptiTech / Bio-Microbics of Maine Inc., their systems will result in 85 to 90 percent reduction in nitrogen/nitrate. Assuming the low-end estimate of 85 percent reduction of nitrogen in effluent from the treatment systems, the nitrogen input to the mass balance calculation was updated substituting 6 mg/L nitrogen in place of the 40 mg/L assumption for untreated residential wastewater effluent. The resulting mass balance calculation (with other inputs remaining the same), yields a concentration of 5.3 mg/L nitrate from the pre-treated wastewater effluent from the SeptiTech systems, plus a known background concentration of an average 1.3 mg/L, for a total predicted nitrate level 6.6 mg/L at the downgradient Property boundary, which is below the NH AGQS of 10 mg/L.

CONCLUSIONS

Based upon the Hydrogeologic Study completed for the Property, recharge of residential septic wastewater into 10 leach fields in the proposed Tuck condo development, assuming pre-treatment with SeptiTech denitrification units, will result in nitrate concentrations that are below the NH AGQS of 10 mg/L at the downgradient (western) Property boundary. This conclusion indicates that the wastewater systems will not cause degradation of the water quality in the Aquifer Protection District or in groundwater migrating off-site.

It should be further noted, notwithstanding, the preceding conclusion, that the Property is located in the GMZ for the Coakley Landfill, which currently restricts use of groundwater on-site, and groundwater from the Property flows towards and onto the Coakley Landfill property, which is also a part of the landfill's GMZ where groundwater use is restricted. Therefore, use of the overburden or bedrock aquifers in the Aquifer Protection District on and in the area of the Property and landfill for a future municipal well location appears unlikely. Nonetheless, the proposed nitrate pretreatment systems for the condo development leach fields are protective of groundwater quality in the Aquifer Protection District.

Please contact us at (603) 314-0820 if you have questions regarding this Hydrogeologic Study.

Sincerely,
GEOINSIGHT, INC.

Darrin L. Santos, P.G.
Associate/Senior Geologist

Andrea W. Kenter, P.G.
Senior Associate/Senior Hydrogeologist

Attachments

cc: Tuck Realty Corporation
P:\9212-007 Tuck Realty Rye NH Hydro Study\Rye Tuck Realty Hydro study.doc

FIGURES

SUBSURFACE EXPLORATION LOCATION PLAN

1"=100'

0 100 200

APPROX. SCALE IN FEET

- N -

LEGEND

MW-3 APPROXIMATE MONITORING WELL LOCATION AND DESIGNATION

TP19 APPROXIMATE JONES & BEACH ENGINEERS, INC. TEST PIT LOCATION

GEO-1 GEO-2 GEO-3 GEO-4 GEO-5 GEO-6 MW-3 MW-6

APPROXIMATE FOOTPRINT OF FORMER MOTEL

PROPOSED PROPERTY LINE

LOT 1 192,985 S.F. 4.43 AC.

LOT 2 223,942 S.F. 5.14 AC.

100' WETLAND SETBACK & NO DISTURBANCE

PAVED ACCESS ROAD

LAFAYETTE ROAD (US ROUTE 1)

NORTH HAMPTON

RYE

NOTES

1. THIS FIGURE IS BASED UPON A PLAN TITLED "EXISTING CONDITIONS PLAN," PREPARED BY JONES & BEACH ENGINEERS, INC. AND DATED SEPTEMBER 28, 2020.

2. THE APPROXIMATE FOOTPRINT OF THE FORMER MOTEL IS BASED UPON A PLAN TITLED "SKETCH OF LAND," BY JOHN W. DURGIN CIVIL ENGINEERS DATED DECEMBER 1971 AND REVISED JANUARY 1972.

SITE LOCUS

1"=2000'

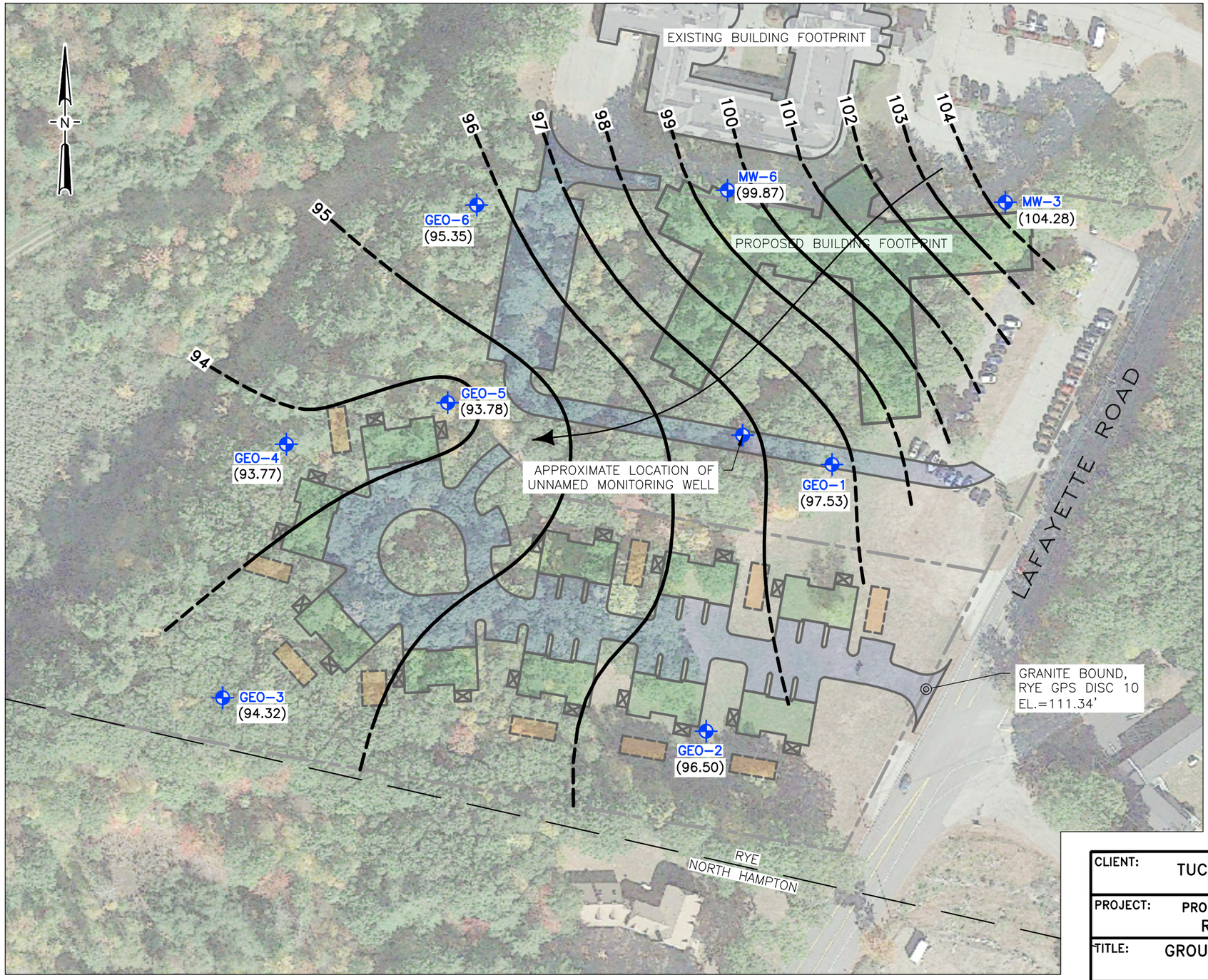
0 2000 4000

APPROX. SCALE IN FEET

CLIENT: TUCK REALTY CORPORATION			
PROJECT: PROPOSED CONDO DEVELOPMENT LAFAYETTE ROAD, RYE, NH			
TITLE: SITE LOCUS AND SITE PLAN			
DESIGNED: DLS	DRAWN: STM	CHECKED: DLS	APPROVED: MCP
SCALE: AS SHOWN	DATE: 06/17/21	FILE NO.: 9212D005	PROJECT NO.: 9212-007
FIGURE NO.: 1			

GeoInsight
Practical in Nature

PLOT DATE: 6-17-21
FILE: I:\9212\9212D005.dwg



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GEO-1 — MONITORING WELL LOCATION
- 98 — RELATIVE GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INFERRED DIRECTION OF GROUNDWATER FLOW
- (97.53) — RELATIVE GROUNDWATER ELEVATION

NOTES

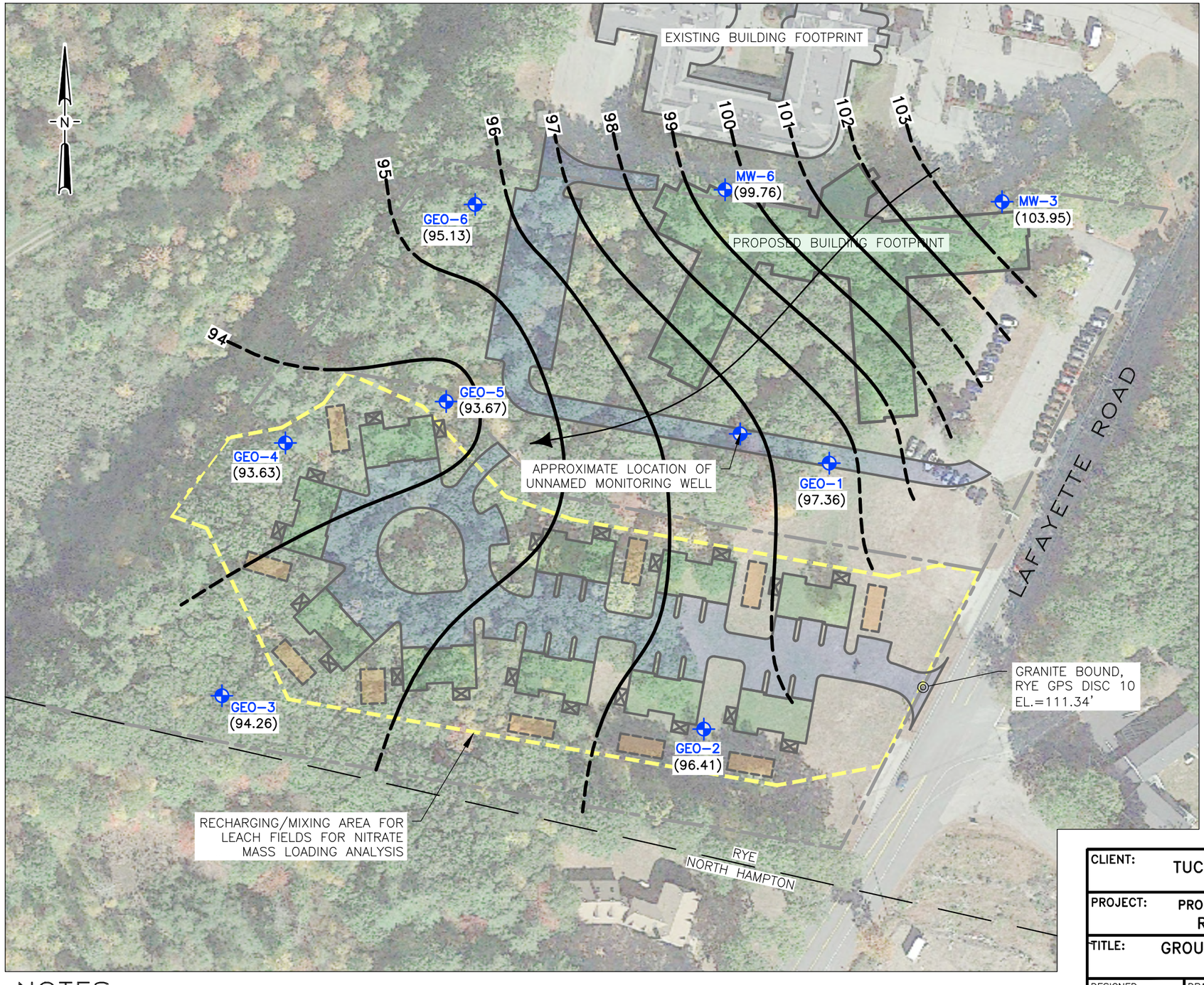
1. THIS PLAN IS BASED UPON AN AERIAL IMAGE OBTAINED FORM GOOGLE EARTH DATED OCTOBER 20, 2020 AND A SITE PLAN PREPARED BY JONES & BEACH ENGINEERS, INC. AND DATED DECEMBER 17, 2019 LAST REVISED SEPTEMBER 28, 2020.

0 100 200

APPROX. SCALE IN FEET

CLIENT: TUCK REALTY CORPORATION				
PROJECT: PROPOSED CONDO DEVELOPMENT RYE, NEW HAMPSHIRE				
TITLE: GROUNDWATER CONTOUR PLAN MAY 23, 2021				
DESIGNED: JRB	DRAWN: STM	CHECKED: DLS	APPROVED: DLS	GeoInsight
SCALE: AS SHOWN	DATE: 06/17/21	FILE NO.: 9212D004	PROJECT NO.: 9212-007	FIGURE NO.: 2

PLOT DATE: 6-17-21
FILE: C:\Users\stmckee\AppData\Local\Temp\AcPublish_39628\9212D004.dwg



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GEO-1 — MONITORING WELL LOCATION
- 98 — RELATIVE GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INFERRED DIRECTION OF GROUNDWATER FLOW
- (97.53) — RELATIVE GROUNDWATER ELEVATION

NOTES

1. THIS PLAN IS BASED UPON AN AERIAL IMAGE OBTAINED FORM GOOGLE EARTH DATED OCTOBER 20, 2020 AND A SITE PLAN PREPARED BY JONES & BEACH ENGINEERS, INC. AND DATED DECEMBER 17, 2019 LAST REVISED SEPTEMBER 28, 2020.

0 100 200

APPROX. SCALE IN FEET

CLIENT: TUCK REALTY CORPORATION			
PROJECT: PROPOSED CONDO DEVELOPMENT RYE, NEW HAMPSHIRE			
TITLE: GROUNDWATER CONTOUR PLAN MAY 28, 2021			
DESIGNED: JRB	DRAWN: STM	CHECKED: DLS	APPROVED: DLS
SCALE: AS SHOWN	DATE: 06/17/21	FILE NO.: 9212D004	PROJECT NO.: 9212-007

GeoInsight

FIGURE NO.: 3

PLOT DATE: 6-17-21
FILE: C:\Users\stmckee\AppData\Local\Temp\AcPublish_39628\9212D004.dwg

TABLES

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

TABLE 1
GROUNDWATER ELEVATION DATA
MAP 10, LOT 1
LAFAYETTE ROAD
RYE, NEW HAMPSHIRE

Well ID	Date	TOC Elevation (feet)	Depth To Water (feet)	Groundwater Elevation (feet)
GEO-1	5/23/2021 5/28/2021	116.58	19.05 19.22	97.53 97.36
GEO-2	5/23/2021 5/28/2021	112.97	16.47 16.56	96.50 96.41
GEO-3	5/23/2021 5/28/2021	111.37	17.05 17.11	94.32 94.26
GEO-4	5/23/2021 5/28/2021	113.91	20.14 20.28	93.77 93.63
GEO-5	5/23/2021 5/28/2021	121.03	27.25 27.36	93.78 93.67
GEO-6	5/23/2021 5/28/2021	120.26	24.91 25.13	95.35 95.13
MW-3	5/23/2021 5/28/2021	121.26	16.98 17.31	104.28 103.95
MW-6	5/23/2021 5/28/2021	123.46	23.59 23.70	99.87 99.76

NOTES:

1. TOC = top of casing.
2. TOC elevations were surveyed by GeoInsight, Inc. on May 28, 2021 to an benchmark with an established elevation of 111.34 feet (granite bound with a "Rye GPS" disc note on it) for the survey datum/control.

TABLE 2
GROUNDWATER FIELD AND LABORATORY TESTING DATA
MAP 10, LOT 1
LAFAYETTE ROAD
RYE, NEW HAMPSHIRE

Well ID	Date	FIELD TEST PARAMETERS					LABORATORY ANALYSES		
		Temp (celcius)	**pH** (standard units)	**Specific Conductivity** (milli-Siemens per centimeter)	**Dissolved Oxygen** (mg/L)	**Oxidation-Reduction Potential** (milli-Volts)	**Ammonia-Nitrogen** (mg/L)	**Nitrate-Nitrogen** (mg/L)	**Chloride** (mg/L)
						NH Ambient Groundwater Quality Standard (AQGS)	No Standard	**10** mg/L	No Standard
GEO-1	5/23/2021	13.8	7.8	928	2.2	72	ND(0.5)	ND(0.1)	220.0
	5/28/2021	10.4	6.8	1,166	12.6	227	--	--	--
GEO-2	5/23/2021	10.4	6.6	191	8.3	22	ND(0.5)	2.2	3.9
	5/28/2021	8.5	6.6	255	7.6	206	--	--	--
GEO-3	5/23/2021	10.9	6.8	780	8.5	29	ND(0.5)	1.1	200
	5/28/2021	8.8	6.6	935	7.4	207	--	.	--
GEO-4	5/23/2021	10.5	6.7	382	8.8	30	ND(0.5)	1.4	76
	5/28/2021	8.5	6.6	384	8.3	197	--	--	--
GEO-5	5/23/2021	10.7	6.6	111	8.5	-1	0.9	ND(0.1)	12
	5/28/2021	8.6	6.8	117	7.8	192	--	--	--
GEO-6	5/23/2021	12.1	6.3	890	8.4	-7	ND(0.5)	2.9	240
	5/28/2021	10.4	6.2	1,132	7.6	200	--	--	--
MW-3	5/23/2021	11.5	5.6	1,378	9.4	67	ND(0.5)	1.3	420
	5/28/2021	9.4	5.7	2,008	8.7	200	--	--	--
MW-6	5/23/2021	12.4	6.4	1,437	9.6	73	ND(0.5)	0.9	430
	5/28/2021	10.3	6.4	1,714	8.2	196	--	--	--

Notes:
1. ND(x) denotes analyte not detected above laboratory practical quantitation limit noted in parentheses.
2. mg/L = milligrams per liter.

ATTACHMENT A

ASSESSOR MAP AND AQUIFER PROTECTION DISTRICT MAP

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

N

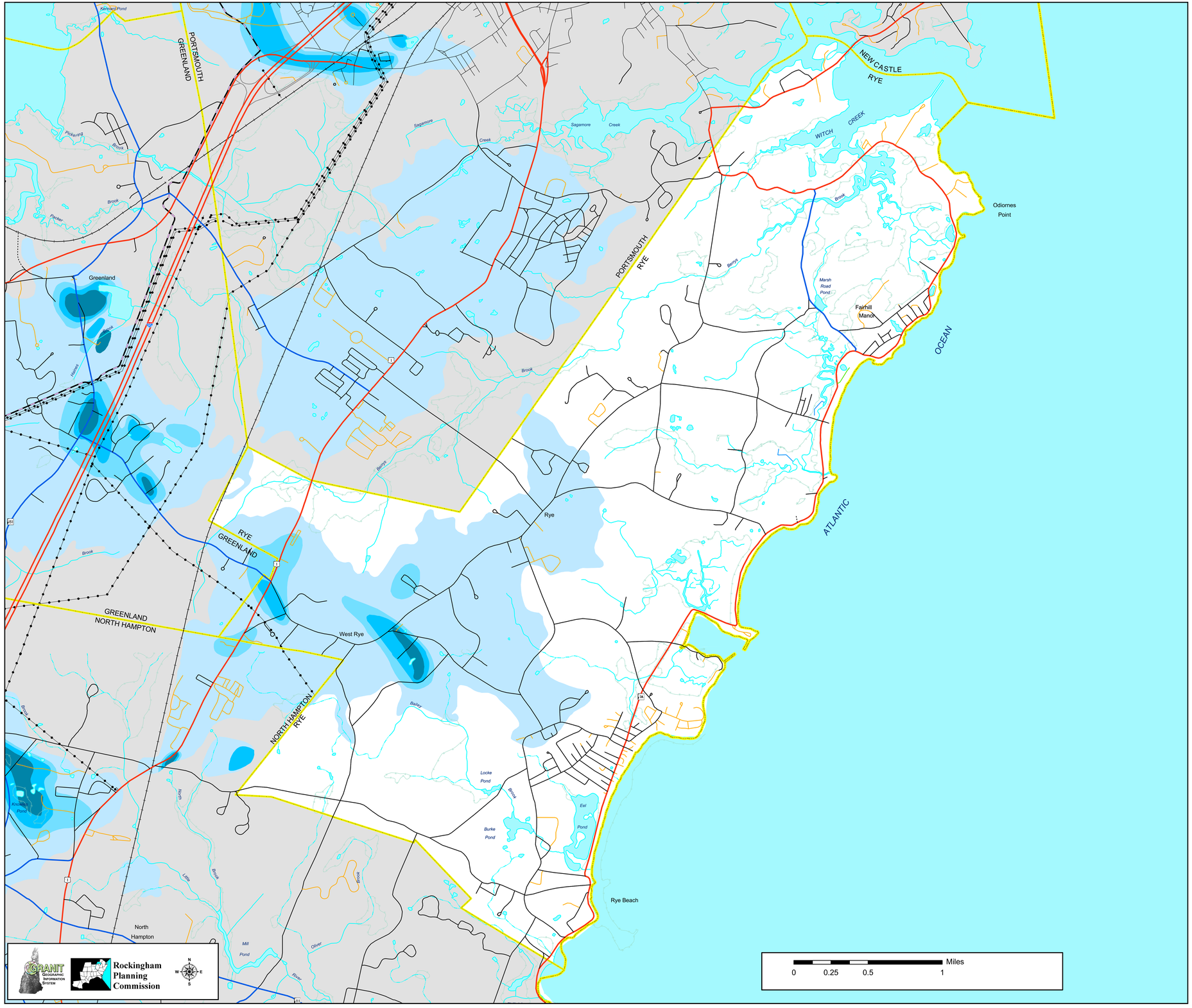
Rye, NH

1 inch = 551 Feet

0 551 1102 1653

January 28, 2021

Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.



Rockingham Planning Commission Standard Map Set

Stratified Drift Aquifers Map
Rye, New Hampshire

June 2003

LEGEND

Transmissivity in Feet Squared per Day of

Stratified-Drift Aquifers in the Lower Merrimack and Coastal River Basins

- Less than 1000
- 1000 to 2000
- 2000 to 4000
- greater than 4000

BASE FEATURES

Roads by Legislative Class
- Class I - Primary System
- Class II - Secondary System
- Class III -State Recreational
- Class IV - within Compacts
- Class V - Municipal
- Class VI - Unmaintained Municipal
- Private

Political Boundaries
- State Boundary
- County Boundary
- Town Boundary
- **Railroads**
- **Major Powerlines**
- **Major Pipelines**

Surface Water Features
- Stream, Shoreline
- Intermittent Stream
- Apparent Wetland Limit
- Other Water Feature
- Bodies of Water

Adjacent Municipalities

This is a static legend for the Rockingham Region. All features may not be present within the extent of this map.

MAP DATA SOURCES

Stratified-Drift Aquifer data was automated by Complex Systems Research Center, UNH and is archived in the GRANIT Database. The aquifer data was automated from maps generated as part of a larger study of groundwater resources in New Hampshire. The Study was conducted under a cooperative agreement between the US Geological Survey and the NH Department of Environmental Services, Water Resources Division. It included an assessment of the aquifers within stratified sand and gravel deposits.

Transmissivity of Stratified Drift Aquifers quantifies the ability of an aquifer to transmit water, measured in feet squared per day. Transmissivity/Aquifer data was automated by Complex Systems Research Center, UNH and is archived in the GRANIT Database. The aquifer data was automated from maps generated as part of a larger study of groundwater resources in New Hampshire. The Study was conducted under a cooperative agreement between the US Geological Survey and the NH Department of Environmental Services, Water Resources Division. It included an assessment of the aquifers within stratified sand and gravel deposits.

The specific reports that cover the Rockingham Planning Region are the following:
US Geological Survey Open-File Report 92-95, "**Geohydrologic and Ground-Water-Quality Data for Stratified-Drift Aquifers in the Exeter, Lamprey, and Oyster River Basins, Southeastern New Hampshire.**" This study was prepared in cooperation with the NH Department of Environmental Services, Water Resources Division and was completed in 1992.

US Geological Survey Water-Resources Investigations Report 91-4025, "**Geohydrology and Water Quality of Stratified-Drift Aquifers in the Lower Merrimack and Coastal River Basins, Southeastern New Hampshire.**" This study was prepared in cooperation with the NH Department of Environmental Services, Water Resources Division and was completed in 1992.

Base Features
Base features (transportation, political and hydrographic) were automated from the USGS Digital Line Graph data, 1:24,000. as archived in the GRANIT database at Complex Systems Research Center, Institute for the study of Earth, Oceans and Space, University of New Hampshire, Durham, NH; 1992-1999. The roads within the Rockingham Planning Region have been updated by Rockingham Planning Commission and by NH Department of Transportation through ongoing efforts.

NOTE: Base features for areas surrounding the Rockingham Region may be shown on this map. These features were automated from USGS 1:100,000 scale digital data sources. This information was provided for reference only. RPC makes no claim to its completeness or accuracy.

THIS MAP WAS FUNDED BY A GRANT FROM THE NH OFFICE OF STATE PLANNING

S:\d-Rye\d-maps\d-std\AQ_Rye_24x36.mxd....6-18-2003

ATTACHMENT B

SOIL BORING / WELL COMPLETION LOGS

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-9	**Well ID:** GEO-1
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00243721 N 70.81120395 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 116.58'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/13/2021	**Date Completed:** 5/13/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/13/2021	19.03	Top of Riser	1 hour
05/23/2021	19.05		10 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
0				--		0-2" Organic topsoil			
1				--					
				--					
2				--					
				--					
3				--		Grinding at 3'			
				--					
4				--					
				--					
5	S-1	24/12	5-7	7		**S-1:** Dense, Brown, fine to coarse SAND, some Gravel, trace organics, damp		<1	1
				17					
6				19					
				16					
7				--		Cuttings: Gravelly from 6-7'	SAND		
				--					
8				--					
				--					
9				--					
				--					
10	S-2	24/12	10-12	8		**S-2:** Medium dense, brownish gray, fine to coarse SAND, little Silt, trace Gravel, damp		<1	1
				11					
11				12					
				13					
12				--					
				--					
13				--					
				--					
14				--					
				--					
15	S-3	24/18	15-17	9		**S-3:** Dense, brown, fine to coarse SAND, some Silt, trace Gravel, moist		<1	1
				17					
16				17					
				11					
17				--			SAND & SILT		
				--					
18				--		Cuttings: Gravelly between 18-19'			
				--					
19				--					
				--					
20									

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

32' well constructed with 3' standpipe and 29' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-12
Grout	NA
Bentonite: Chips	12-13
Sandpack: # 2 Sand	13-29
Riser	17
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-9	**Well ID:** GEO-1
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 2 of 2
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GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/13/2021	**Date Completed:** 5/13/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/13/2021	19.03	Top of Riser	1 hour
05/23/2021	19.05		10 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
20	S-4	24/24	20-22	5		**S-4:** Medium dense, gray, fine SAND and SILT, trace Clay, wet		<1	1
				6					
21				7					
				6					
22				--					
				--					
23				--					
				--					
24				--					
				--			SAND & SILT		
25	S-5	24/24	25-27	WOH		**S-5:** Medium stiff, gray, fine SILT, trace fine Sand, trace Clay, wet		<1	1
				2					
26				3					
				9		Augered to 29' bgs.			
27				--					
				--					
28				--					
				--		*Boring terminated at 29' bgs.*			
29						*Set monitoring well at 29' bgs*			
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

GRANULAR SOILS Blows/ft.	GRANULAR SOILS Density	COHESIVE SOILS Blows/ft.	COHESIVE SOILS Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

32' well constructed with 3' standpipe and 29' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-12
Grout	NA
Bentonite: Chips	12-13
Sandpack: # 2 Sand	13-29
Riser	17
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight®
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-10	**Well ID:** GEO-2
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00176000 N 70.81164608 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 112.97'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/13/2021	**Date Completed:** 5/13/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/13/2021	16.32	Top of Riser	1 hour
05/23/2021	16.47		10 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
0				--		0-2" - Organic topsoil			
1				--					
				--					
2				--					
				--					
3				--					
				--					
4				--					
				--					
5	S-1	24/12	5-7	9		**S-1:** Dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, damp		<1	1
				12					
6				19					
				13		Cuttings: Gravelly from ~5-6' and grinding at ~8'			
7				--			SAND & GRAVEL		
				--					
8				--					
				--					
9				--					
				--					
10	S-2	24/12	10-12	13		**S-2:** Dense, grayish brown, fine to coarse SAND, soime Gravel, trace Silt, damp		<1	1
				14					
11				18					
				13					
12				--					
				--					
13				--					
				--					
14				--					
				--					
15	S-3	24/18	15-17	12		**S-3:** Medium dense, brown, fine to coarse SAND and GRAVEL, some Silt, wet		<1	1
				13					
16				15					
				9					
17				--					
				--					
18				--					
				--			SAND & SILT		
19				--					
				--					
20	S-4A	12/12	20-21	5		**S-4A:** Medium dense, brown, fine to coarse SAND, trace Silt, wet		<1	1
				6		**S-4B:** Medium dense, grayish brown, fine SAND and SILT, wet			
21	S-4B	12/12	21-22	10				<1	1
				10		*Boring terminated at 22' bgs.*			
22						*Set monitoring well at 22' bgs.*			
23									
24									
25									

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

25' well constructed with 3' standpipe and 22' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-5
Grout	NA
Bentonite: Chips	5-6
Sandpack: # 2 Sand	6-22
Riser	10
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight®
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-11	**Well ID:** GEO-3
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00185871 N 70.81331703 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 111.37'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/13/2021	**Date Completed:** 5/13/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/13/2021	16.96	Top of Riser	1 hour
05/23/2021	17.05		10 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
0				--		0-3" - Organic topsoil			
				--					
1				--					
				--					
2				--					
				--					
3				--					
				--					
4				--					
				--					
5	S-1	24/12	5-7	12		**S-1:** Medium dense, brown, fine to coarse SAND,		<1	1
				17		some Gravel, trace Silt, damp			
6				11					
				9		Cuttings: Gravelly and grinding at ~5'			
7				--					
				--					
8				--					
				--					
9				--					
				--					
10	S-2	24/11	10-12	5		**S-2:** Medium dense, brown, fine to coarse SAND,		<1	1
				12		some Gravel, trace Silt, damp	SAND & GRAVEL		
11				11					
				11					
12				--		Cuttings: Gravelly from 10-15.			
				--					
13				--					
				--					
14				--					
				--					
15	S-3	24/8	15-17	6		**S-3:** Medium dense, brown, fine to coarse SAND and		<1	1
				12		GRAVEL, trace Silt, wet			
16				10					
				7					
17				--					
				--					
18				--					
				--					
19				--					
				--					
20	S-4	24/18	20-22	16		**S-4:** Dense, brown, fine to coarse SAND, some		<1	1
				20		Gravel, some Silt, wet			
21				16					
				16		*Boring terminated at 22' bgs.*			
22						*Set monitoring well at 22' bgs.*			
23									
24									
25									

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

25' well constructed with 3' standpipe and 22' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-5
Grout	NA
Bentonite: Chips	5-6
Sandpack: # 2 Sand	6-22
Riser	10
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-12	**Well ID:** GEO-4
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00250177 N 70.81308876 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 113.91'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/14/2021	**Date Completed:** 5/14/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/14/2021	20.05	Top of Riser	1 hour
05/23/2021	20.14		9 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
0				--		0-3" - Organic topsoil			
				--					
1				--					
				--					
2				--					
				--					
3				--		Grinding from ~3-5' - Gravelly.			
				--					
4				--					
				--					
5	S-1	24/13	5-7	7		S-1: Medium dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, damp		<1	1
				10					
6				9					
				9					
7				--		Cuttings: Gravelly from ~5-7'			
				--					
8				--					
				--					
9				--					
				--					
10	S-2	24/16	10-12	9		S-2: Medium Dense, grayish brown, fine to coarse SAND, trace Silt, trace Gravel, damp	SAND & GRAVEL	<1	1
				8					
11				8					
				8					
12				--		Cuttings: Gravellyl at ~12' bgs.			
				--					
13				--					
				--					
14				--					
				--					
15	S-3	24/2	15-17	8		S-3: Medium dense, brown, fine to coarse SAND, trace Silt, damp		<1	1
				9					
16				7					
				11					
17				--					
				--					
18				--					
				--					
19				--					
				--					
20				--					

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

30' well constructed with 3' standpipe and 27' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-10
Grout	NA
Bentonite: Chips	10-11
Sandpack: # 2 Sand	11-27
Riser	15
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-12	**Well ID:** GEO-4
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00250177 N 70.81308876 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 113.91'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/14/2021	**Date Completed:** 5/14/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/14/2021	20.05	Top of Riser	1 hour
05/23/2021	20.14		9 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
20	S-4	24/15	20-22	5		**S-4:** Medium dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, wet	SAND & GRAVEL	<1	1
				7					
21				11					
				13					
22				--					
				--					
23				--					
				--					
24				--					
				--					
25	S-5	24/6	25-27	10		**S-5:** Medium dense, gray, SILT and fine to coarse SAND, wet	SAND & SILT	<1	1
				10					
26				10					
				11		*Boring terminated at 27' bgs.*			
27				--		*Set monitoring well at 27' bgs*			
				--					
28				--					
				--					
29									
30									
31									
32									
33									
34									
35	S-3	24/	15-17						
36									
37									
38									
39									
40									

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

30' well constructed with 3' standpipe and 27' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-10
Grout	NA
Bentonite: Chips	10-11
Sandpack: # 2 Sand	11-27
Riser	15
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-13	**Well ID:** GEO-5
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00260300 N 70.81252969 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 121.03'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/14/2021	**Date Completed:** 5/14/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/14/2021	27.11	Top of Riser	1 hour
05/23/2021	27.25		9 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
0				--		0-3" - Organic topsoil			
1				--					
				--					
2				--					
				--					
3				--		Cuttings: Grinding at ~2 - Gravelly material			
				--					
4				--					
				--					
5	S-1	24/12	5-7	9		**S-1:** Dense, brown, fine to coarse SAND, trace Silt,		<1	1
				12		trace Gravel, damp - small amount of pulverized rock			
6				20		and roots in sampler.			
				13					
7				--					
				--					
8				--					
				--					
9				--					
				--					
10	S-2	24/13	10-12	5		**S-2:** Medium dense, grayish brown, fine to coarse		<1	1
				9		SAND, trace Silt, trace Gravel, damp			
11				7					
				6					
12				--			SAND		
				--					
13				--					
				--					
14				--					
				--					
15	S-3	24/12	15-17	5		**S-3:** Medium dense, grayish brown, fine to coarse		<1	1
				9		SAND, trace Silt, damp			
16				12					
				12					
17				--					
				--					
18				--					
				--					
19				--					
				--					
20				--					

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

35' well constructed with 3' standpipe and 32' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-15
Grout	NA
Bentonite: Chips	15-16
Sandpack: # 2 Sand	16-32
Riser	17
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-13	**Well ID:** GEO-5
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00260300 N 70.81252969 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 121.03'	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/14/2021	**Date Completed:** 5/14/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/14/2021	27.11	Top of Riser	1 hour
05/23/2021	27.25		9 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
20	S-4	24/3	20-22	15		**S-4:** Dense, brown, fine to coarse SAND, trace Silt, trace Gravel, moist		<1	1
				17					
21				17					
				20					
22				--					
				--					
23				--		Cuttings: Grinding at ~23' bgs.			
				--					
24				--					
				--					
25	S-5	24/10	25-27	11		**S-5:** Medium dense, brownish gray, fine to coarse SAND, some Gravel, trace Silt, wet	SAND & GRAVEL	<1	1
				9					
26				10					
				6					
27				--					
				--					
28				--					
				--					
29				--					
				--					
30	S-6	24/	30-32	16		**S-6:** Medium dense, brownish gray, fine to coarse SAND, some Gravel, trace Silt, wet		<1	1
				14					
31				14					
				20		*Boring terminated at 32' bgs.*			
32						*Set monitoring well at 32' bgs*			
33									
34									
35									
36									
37									
38									
39									
40									

GRANULAR SOILS Blows/ft.	GRANULAR SOILS Density	COHESIVE SOILS Blows/ft.	COHESIVE SOILS Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

35' well constructed with 3' standpipe and 32' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-15
Grout	NA
Bentonite: Chips	15-16
Sandpack: # 2 Sand	16-32
Riser	17
Screen	15

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = Below ground surface; NS = Not surveyed; WOH = Weight of hammer

SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-14	**Well ID:** GEO-6
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00310488 N 70.81242190 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 120.26	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/14/2021	**Date Completed:** 5/14/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/14/2021	24.64	Top of Riser	1 hour
05/23/2021	24.91		9 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
0				--		Switched to sampling every 10' due to time constraints.			
1				--					
				--					
2				--					
				--					
3				--					
				--		Cuttings: Material in cuttings from 0-10' consistent with other borings - Brown fine to coarse SAND, some gravel, damp.			
4				--					
				--					
5				--					
				--					
6				--					
				--					
7				--					
				--					
8				--					
				--					
9				--					
				--					
10	S-1	24/12	10-12	17		**S-1:** Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp	SAND & GRAVEL	<1	1
				13					
11				13					
				12					
12				--					
				--					
13				--					
				--					
14				--					
				--					
15				--					
				--					
16				--					
				--					
17				--					
				--					
18				--					
				--					
19				--					
				--					
20									

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

36' well constructed with 3' standpipe and 33' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-15
Grout	NA
Bentonite: Chips	15-16
Sandpack: # 2 Sand	16-32
Riser	22
Screen	13

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = below ground surface.

SOIL BORING / WELL COMPLETION LOG

GeoInsight®
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	**Boring Identification:** B-14	**Well ID:** GEO-6
Project: Map 10, Lot 1 (former Hector's Motel)		**Sheet:** 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	**Chkd. By:** DLS	**Project Number:** 9212
Drilling Company: GeoSearch, Inc.	**Boring Location:** 43.00310488 N 70.81242190 W	
Foreman: Mike D.	**Top of PVC Riser Elevation:** 120.26	**Datum:** 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	**Top of Protector Elevation:** NS	**Ground Elevation:** NA
	Date Started: 5/14/2021	**Date Completed:** 5/14/2021

DRILLING METHOD	SAMPLER
Vehicle: ATV	**Type:** 2" SS / Auto
Model: CME-850	**Hammer (lb):** 140
Method: Hollow stem auger	**Fall (in):** 30

GROUNDWATER MEASUREMENTS

Date	Depth (ft)	Reference	Stabilization
05/14/2021	24.64	Top of Riser	1 hour
05/23/2021	24.91		9 days

DEPTH (ft)	SAMPLE INFORMATION #	Pen/Rec (in)	Depth (ft)	Blows/6"	WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
20	S-2A	12/9	20-21	18		**S-2A:** Dense, brown, fine to medium SAND, trace Silt, damp	SAND & GRAVEL	<1	1
21				16					
	S-2B	12/9	21-22	15		**S-2B:** Dense, brown, fine SAND and SILT, damp			
22				13					
				--					
				--					
23				--		Cutting: Water at ~25'			
				--					
24				--					
				--					
25	S-3	24/24	25-27	5		**S-3:** Stiff, gray, fine SAND and SILT, some Clay, wet		<1	1
				5					
26				5					
				8			SAND & SILT		
27				--					
				--					
28				--					
				--					
29				--					
				--					
30				--				<1	1
				--					
31				--					
				--					
32				--					
				--					
33						*Boring terminated at 33' bgs.*			
						Set monitoring well at 33' bgs			
34									
35									
36									
37									
38									
39									
40									

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. LOOSE	<2	V. SOFT
5-10	LOOSE	2-4	SOFT
11-30	M. DENSE	5-8	M. STIFF
31-50	DENSE	9-15	STIFF
>50	V. DENSE	16-30	V. STIFF
		>30	HARD

WELL CONSTRUCTION NOTES

36' well constructed with 3' standpipe and 33' bgs.

WELL MATERIALS	INTERVAL (feet bgs)
Concrete	0-0.5
Backfill	0.5-18
Grout	NA
Bentonite: Chips	18-19
Sandpack: # 2 Sand	19-33
Riser	23
Screen	13

LEGEND

NOTES

1. Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
2. bgs = Below ground surface; NS = Not surveyed; WOH = Weight of hammer

ATTACHMENT C

LABORATORY ANALYTICAL REPORT

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

Laboratory Report

Absolute Resource associates
124 Heritage Avenue Portsmouth NH 03801

Darrin Santos
GeoInsight, Inc.
186 Granite Street
3rd Floor, Suite A
Manchester, NH 03103

PO Number: None
Job ID: 57095
Date Received: 5/24/21

Project: Benchmark Rye 9212-006

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below. The reported results apply to the sample(s) in the condition as received at the time the laboratory took custody. This report shall not be reproduced except in full, without written approval of the laboratory. The liability of ARA is limited to the cost of the requested analyses, unless otherwise agreed upon in writing.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

Aaron DeWees
Chief Operating Officer

Date of Approval: 6/1/2021
Total number of pages: 5

Absolute Resource Associates Certifications

New Hampshire	1732	Massachusetts	M-NH902
Maine	NH902		

Project ID: Benchmark Rye 9212-006

Job ID: 57095

Sample#: 57095-001
Sample ID: GEO-1
Matrix: Water
Sampled: 5/23/21 13:10

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Analysis Batch	Analysis Date	Analysis Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101459	5/25/21	9:40	SM4500NH3-D
Chloride	**220**	2.5	mg/L	5	DBV		2101487	5/26/21	14:31	E300.0A
Nitrate-N	< 0.1	0.1	mg/L	1	DBV		2101441	5/24/21	12:37	E300.0A

Sample#: 57095-002
Sample ID: GEO-2
Matrix: Water
Sampled: 5/23/21 13:20

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Analysis Batch	Analysis Date	Analysis Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101459	5/25/21	9:40	SM4500NH3-D
Chloride	**3.9**	0.5	mg/L	1	DBV		2101487	5/26/21	15:20	E300.0A
Nitrate-N	**2.2**	0.1	mg/L	1	DBV		2101441	5/24/21	13:27	E300.0A

Sample#: 57095-003
Sample ID: GEO-3
Matrix: Water
Sampled: 5/23/21 13:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Analysis Batch	Analysis Date	Analysis Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101459	5/25/21	9:40	SM4500NH3-D
Chloride	**200**	2.5	mg/L	5	DBV		2101487	5/26/21	14:47	E300.0A
Nitrate-N	**1.1**	0.1	mg/L	1	DBV		2101441	5/24/21	13:43	E300.0A

Sample#: 57095-004
Sample ID: GEO-4
Matrix: Water
Sampled: 5/23/21 13:40

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Analysis Batch	Analysis Date	Analysis Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101459	5/25/21	9:40	SM4500NH3-D
Chloride	**76**	0.5	mg/L	1	DBV		2101487	5/26/21	15:37	E300.0A
Nitrate-N	**1.4**	0.1	mg/L	1	DBV		2101441	5/24/21	14:00	E300.0A

Sample#: 57095-005
Sample ID: GEO-5
Matrix: Water
Sampled: 5/23/21 13:50

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Analysis Batch	Analysis Date	Analysis Time	Reference
Ammonia as N	**0.9**	0.5	mg/L	1	SFM		2101486	5/27/21	7:25	SM4500NH3-D
Chloride	**12**	0.5	mg/L	1	DBV		2101441	5/24/21	14:16	E300.0A
Nitrate-N	< 0.1	0.1	mg/L	1	DBV		2101441	5/24/21	14:16	E300.0A

Absolute Resource associates

Project ID: Benchmark Rye 9212-006
Job ID: 57095

Sample#: 57095-006
Sample ID: GEO-6
Matrix: Water
Sampled: 5/23/21 14:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101459	5/25/21	9:40	SM4500NH3-D
Chloride	**240**	2.5	mg/L	5	DBV		2101487	5/26/21	15:04	E300.0A
Nitrate-N	**2.9**	0.1	mg/L	1	DBV		2101441	5/24/21	14:33	E300.0A

Sample#: 57095-007
Sample ID: MW-3
Matrix: Water
Sampled: 5/23/21 14:10

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101459	5/25/21	9:40	SM4500NH3-D
Chloride	**420**	5.0	mg/L	10	DBV		2101487	5/26/21	13:58	E300.0A
Nitrate-N	**1.3**	0.1	mg/L	1	DBV		2101441	5/24/21	14:49	E300.0A

Sample#: 57095-008
Sample ID: MW-6
Matrix: Water
Sampled: 5/23/21 14:20

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Ammonia as N	< 0.5	0.5	mg/L	1	SFM		2101486	5/27/21	7:25	SM4500NH3-D
Chloride	**430**	5.0	mg/L	10	DBV		2101487	5/26/21	14:14	E300.0A
Nitrate-N	**0.9**	0.1	mg/L	1	DBV		2101441	5/24/21	15:05	E300.0A

Absolute Resource associates

Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

57095

Company Name: GeoInsight Inc.
Company Address: 186 Granite St. Manchester, NH
Report To: Dassin Santos
Phone #: (603) 314-0820
Invoice to: Same
Email: DLSANTOS@Geoinc.com
PO #:

Project Name: Benchmark Rye
Project #: 9212-006
Project Location: (NH) MA ME VT
Accreditation Required? N/Y:
Protocol: RCRA SDWA NPDES; MCP NHDES DOD
Reporting Limits: QAPP GW-1 S-1; EPA DW Other
Quote #
☐ NH Reimbursement Pricing

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	NaOH	MeOH	Sampling: DATE	TIME	SAMPLER
S10451-01	GEO-1	2	X					X			5/23/21	13:10	JRB
-02	GEO-2	2	X					X				13:20	
-03	GEO-3	2	X					X				13:30	
-04	GEO-4	2	X					X				13:40	
-05	GEO-5	2	X					X				13:50	
-06	GEO-6	2	X					X				14:00	
-07	MW-3	2	X					X				14:10	
-08	MW-6	2	X					X			↓	14:20	↓

ANALYSIS REQUEST

Lab Sample ID	☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP	☐ VOC 624.1 ☐ VOC BTEX MtBE, only ☐ VOC 8021VT	☐ VPH MADEP ☐ GRO 8015 ☐ 1,4-Dioxane	☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:	☐ TPH 8100 ☐ DRO 8015 ☐ EPH MADEP ☐ TPH Fingerprint	☐ 8270PAH ☐ 8270ABN ☐ 625.1 ☐ EDB	☐ 8082 PCB ☐ 8081 Pesticides ☐ 608.3 Pest/PCB	☐ PFAS 537.1 ☐ PFAS 533 ☐ PFAS isotope dilution	☐ O&G 1664 ☐ Mineral O&G 1664	☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity ☐ Apparent Color	☐ TSS ☐ TDS ☐ TVS ☐ Alkalinity ☐ Acidity	☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness	☐ Total Metals-list:	☐ Dissolved Metals-list:	☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC ☐ Ferrous Iron	☐ T-Phosphorus ☐ Bacteria P/A ☐ Bacteria MPN ☐ Enterococci	☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P ☐ Phenols	☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride	☐ Corrosivity ☐ Ignitibility/FP	☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide	Subcontract: ☐ Grain Size ☐ Herbicides ☐ Asbestos	Nitrate-Nitrogen & Ammonia-Nitrogen	Grab (G) or Composite (C)
S10451-01																				X			X	G
-02																				X			X	G
-03																				X			X	G
-04																				X			X	G
-05																				X			X	G
-06																				X			X	G
-07																				X			X	G
-08																				X			X	G

TAT REQUESTED
Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard (10 Business Days) ☒
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS Short Hold Samples.

REPORTING INSTRUCTIONS ☒ PDF (e-mail address) DLSANTOS@Geoinc.com
☐ HARD COPY REQUIRED ☐ EDD

RECEIVED ON ICE ☒ YES ☐ NO
TEMPERATURE 0 °C

CUSTODY RECORD
QSD-01 Revision 03/09/2020

	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	JRB	5/24/21				
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by:	Date	Time	Received by Laboratory:	Date	Time
					5/24/21	7:51

Sample Receipt Condition Report

Absolute Resource Associates **Job Number:** 57095

Samples Received from: ☐-UPS ☐-FedEx ☐-USPS ☐-Lab Courier ☒-Client Drop-off ☐-_____

Custody Seals - present & intact: ☐-Yes ☐-No ☒-N/A CoC signed: ☒-Yes ☐-No

Receipt Temp: 0 °C Samples on ice? ☒-Yes ☐-No ☐-N/A Sampled < 24 hrs ago? ☒-Yes ☐-No

PFAS-only real ice? ☐-Yes ☐-No ☒-N/A Any signs of freezing? ☐-Yes ☑-No

Comments:_____

Preservation / Analysis	Bottle Size/Type & Quantity										Check pH for ALL applicable* samples and document:
HCl	40mL(G)		250mL(P)		500mL(P)		1L(G)				
HNO_3	125mL(P)		250mL(P)		500mL(P)						
H_2SO_4	40mL(G)		60mL(P)		125mL(P)		250mL(P)	8	500mL(P)		pH<2 SM
NaOH	125mL(P)		250mL(P)								
$(NH_4)_2SO_4$	60mL(P)		125mL(P)		250mL(P)						
ZnAc-NaOH	125mL(P)		250mL(P)								
Trizma	125mL(P)		250mL (P)								*pH ✓by analyst:VOC, PFAS, TOC,O&G
NH_4Ac	125mL(P)		250mL (P)								Residual Cl not present:
NaS_2O_3	40mL(G)		120mL(P)								ABN625____Pest608____
MeOH	20mL(G)		40mL(G)								Bacteria ResCl ✓by analyst
None (solid)	2oz(G)		4oz(G)		8oz(G)		Syringe				PC Dry applicable? Y N
None (water)	40ml (G)		60mL(P)	8	125mL(P)		250mL(P)		500mL(P)		1L(G) 1L (P)
~~Mold~~	Cassette		Bulk		Plate		Tape Lift				
Asbestos	Cassette		Bulk								
Lead	Cassette		~~Bulk~~		Wipe						

Login Review	Yes	No	N/A	Comments
Proper lab sample containers/enough volume/correct preservative?	X			
Analyses marked on COC match bottles received?	X			
VOC &TOC Water-no headspace? VOC Solid-MeOH covers solid, no leaks, Prep Expiration OK?			X	
PFAS: Lab specific bottles? QC received, if required?			X	
Bacteria bottles provided by ARA?			X	
Samples within holding time?	X			
Immediate tests communicated in writing: (NO3) NO_2,o-PO_4, pH, BOD, Coliform/*E. coli* (P/A or MPN), Enterococci, Color Surfactants, Turbidity, Odor, CrVI, Ferrous Iron, Dissolved Oxygen, Unpres 624	X	DBV		
Date, time & ID on samples match CoC?	X			
Rushes communicated to analyst in writing?			X	
Subcontract note on login board?			|	
Pesticides EPA 608 pH5-9?			|	
Compliance samples have no discrepancies/require no flags?			|	(Or must be rejected)
Log-in Supervisor notified immediately of following items:			↓	Discrepancies, compliance samples (NHDES, MADEP, DoD etc.) or uncommon requests.

Inspected and Received By: _____ Date/Time: 5/24/21 8:35

Peer Review Checklist

☐ Client ID/Project Manager	☐ On Ice, Temperature OK?	☐ Sample IDs	☐ Analyses in Correctly
☐ Project Name	☐ PO# (if provided)	☐ Matrix	-references
☐ TAT/rushes communicated	☐ Sub samples sent? Shipping Charge?	☐ Date/Time collected	-wastewater methods
☐ Received Date/Time	☐ Issues noted above communicated?	☐ Short HTs communicated	☐ Notes from CoC in LIMS

Reviewed By: _____ Date: _____

Notes: (continue on back as needed)

	Initials	Date	What was sent?
Uploaded / PDF	_____	_____	Report / Data / EDD / Invoice
Uploaded / PDF	_____	_____	Report / Data / EDD / Invoice
Uploaded / PDF	_____	_____	Report / Data / EDD / Invoice

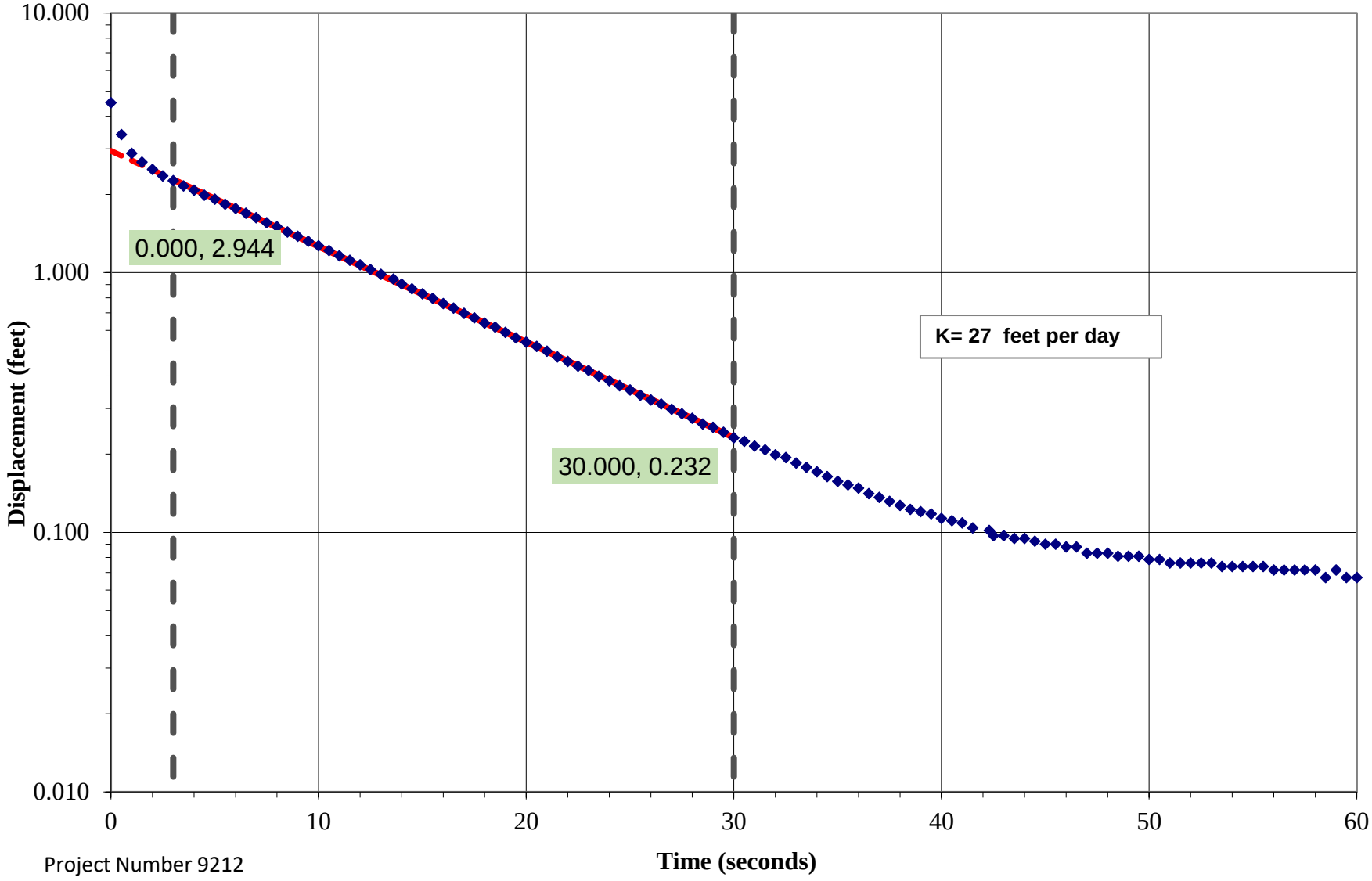
ATTACHMENT D

SLUG TEST DATA AND HYDRAULIC CONDUCTIVITY CALCULATIONS

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

GEO-1 SLUG TEST ANALYSIS (Trial 1)

Benchmark Senior Living Lafayette Road, Rye NH



Project Number 9212

Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note L_w<H

Project Name:	Benchmark Senior Living
Project Address:	Lafayette Road, Rye NH
Project Number:	9212
Test Well:	GEO-1
Trial:	1

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	13.07	feet	
Length of saturated well screen (L_e)	13.07	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_z = K_h$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

1. For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
2. For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
3. For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	152.61	dimensionless	

Parameters from recovery graph

Displacement at t=0 (y_0)	2.944	feet
Arbitrary time on straight line slope (t)	30.000	seconds
Displacement at that arbitrary time (y_t)	0.232	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	5.39	dimensionless
B	0.96	dimensionless

Ln R_e/r_w	3.55014				
Hydraulic Conductivity (K)	**3.09E-04**	ft/sec	**9.42E-03**	cm/sec	**2.67E+01** ft/day

References:

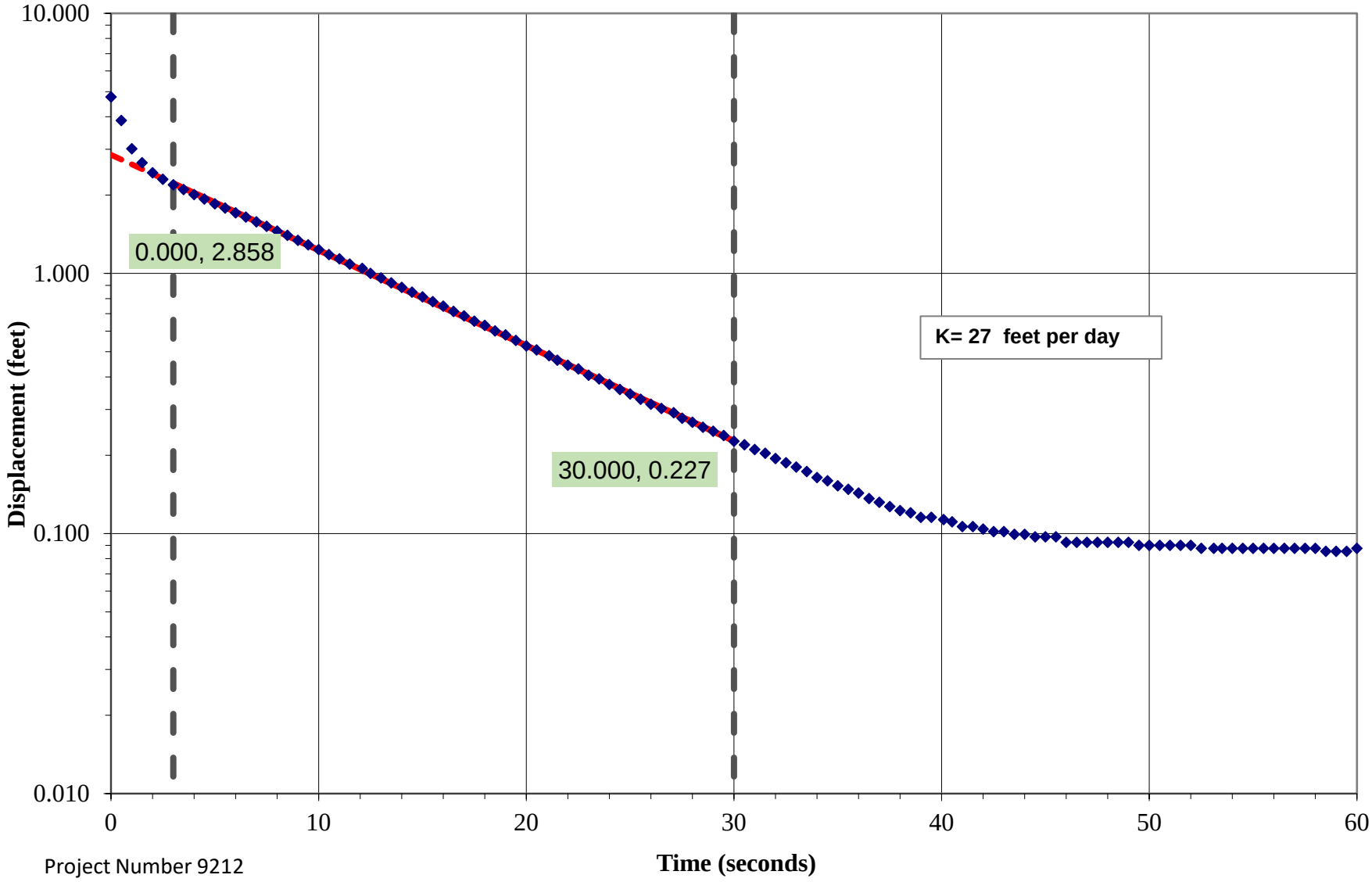
Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12 No. 3, pp. 423-428.

Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. Ground Water, Vol. 27, No. 3, pp. 304-309.

Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. Ground Water, Vol. 32, No. 5, pp. 761-766.

GEO-1 SLUG TEST ANALYSIS (Trial 2)

Benchmark Senior Living Lafayette Road, Rye NH



Project Number 9212

Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note L_w<H

Project Name:	Benchmark Senior Living
Project Address:	Lafayette Road, Rye NH
Project Number:	9212
Test Well:	GEO-1
Trial:	2

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	13.07	feet	
Length of saturated well screen (L_e)	13.07	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_z = K_h$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

1. For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
2. For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
3. For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	152.61	dimensionless	

Parameters from recovery graph

Displacement at t=0 (y_0)	2.858	feet
Arbitrary time on straight line slope (t)	30.000	seconds
Displacement at that arbitrary time (y_t)	0.227	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	5.39	dimensionless
B	0.96	dimensionless

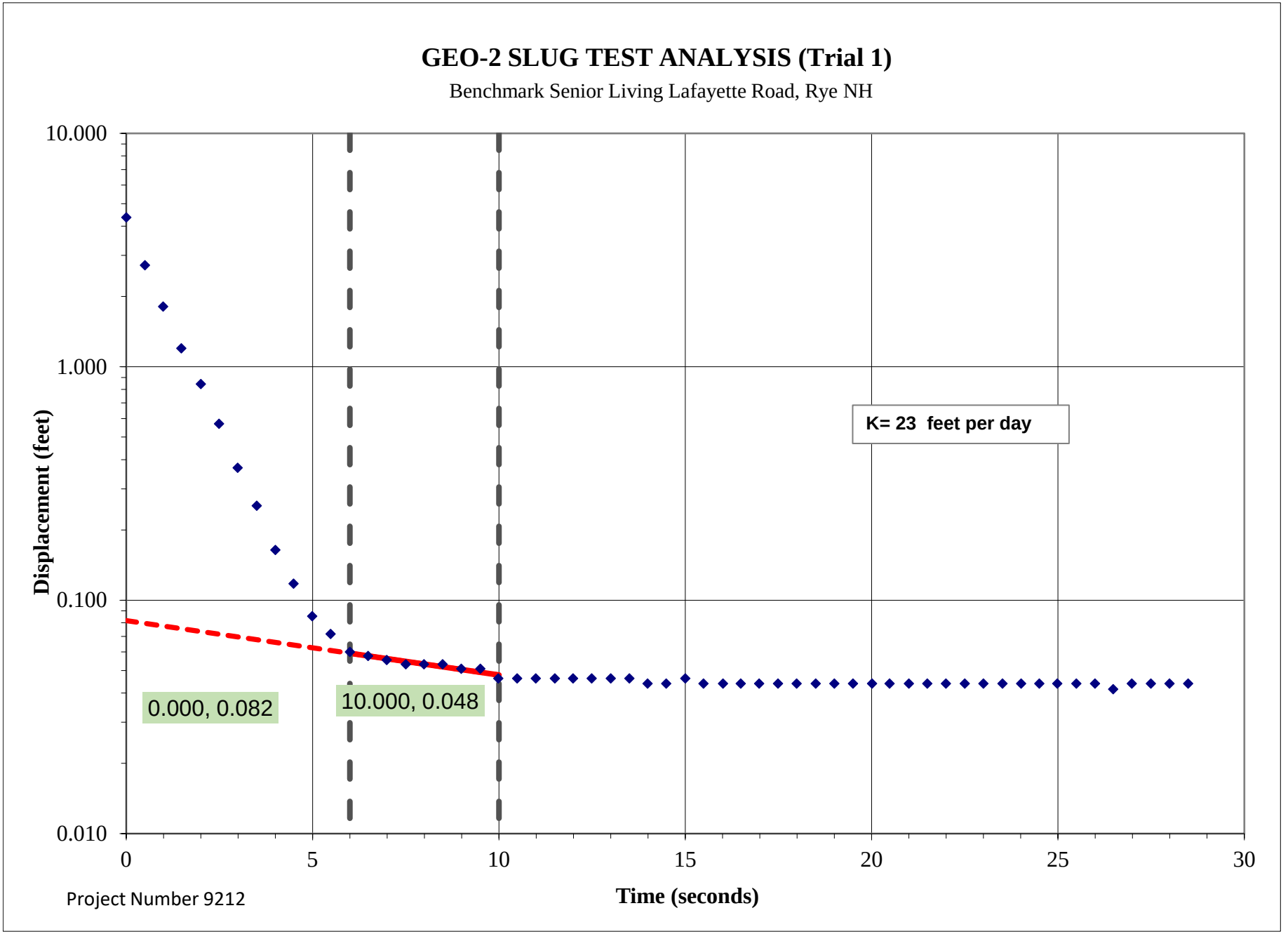
Ln R_e/r_w	3.55014				
Hydraulic Conductivity (K)	**3.08E-04**	ft/sec	**9.39E-03**	cm/sec	**2.66E+01** ft/day

References:

Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12 No. 3, pp. 423-428.

Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. Ground Water, Vol. 27, No. 3, pp. 304-309.

Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. Ground Water, Vol. 32, No. 5, pp. 761-766.


GEO-2 SLUG TEST ANALYSIS (Trial 1)
Benchmark Senior Living Lafayette Road, Rye NH
10.000
1.000
0.100
0.010
Displacement (feet)
K= 23 feet per day
0.000, 0.082
10.000, 0.048
0
5
10
15
20
25
30
Time (seconds)
Project Number 9212

Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note L_w<H

Project Name:	Benchmark Senior Living
Project Address:	Lafayette Road, Rye NH
Project Number:	9212
Test Well:	GEO-2
Trial:	1

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	8.39	feet	
Length of saturated well screen (L_e)	8.39	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_z = K_h$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

1. For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
2. For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
3. For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	97.96	dimensionless	

Parameters from recovery graph

Displacement at t=0 (y_0)	0.082	feet
Arbitrary time on straight line slope (t)	10.000	seconds
Displacement at that arbitrary time (y_t)	0.048	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	4.31	dimensionless
B	0.73	dimensionless

Ln R_e/r_w	3.11975				
Hydraulic Conductivity (K)	**2.68E-04**	ft/sec	**8.17E-03**	cm/sec	**2.32E+01** ft/day

References:

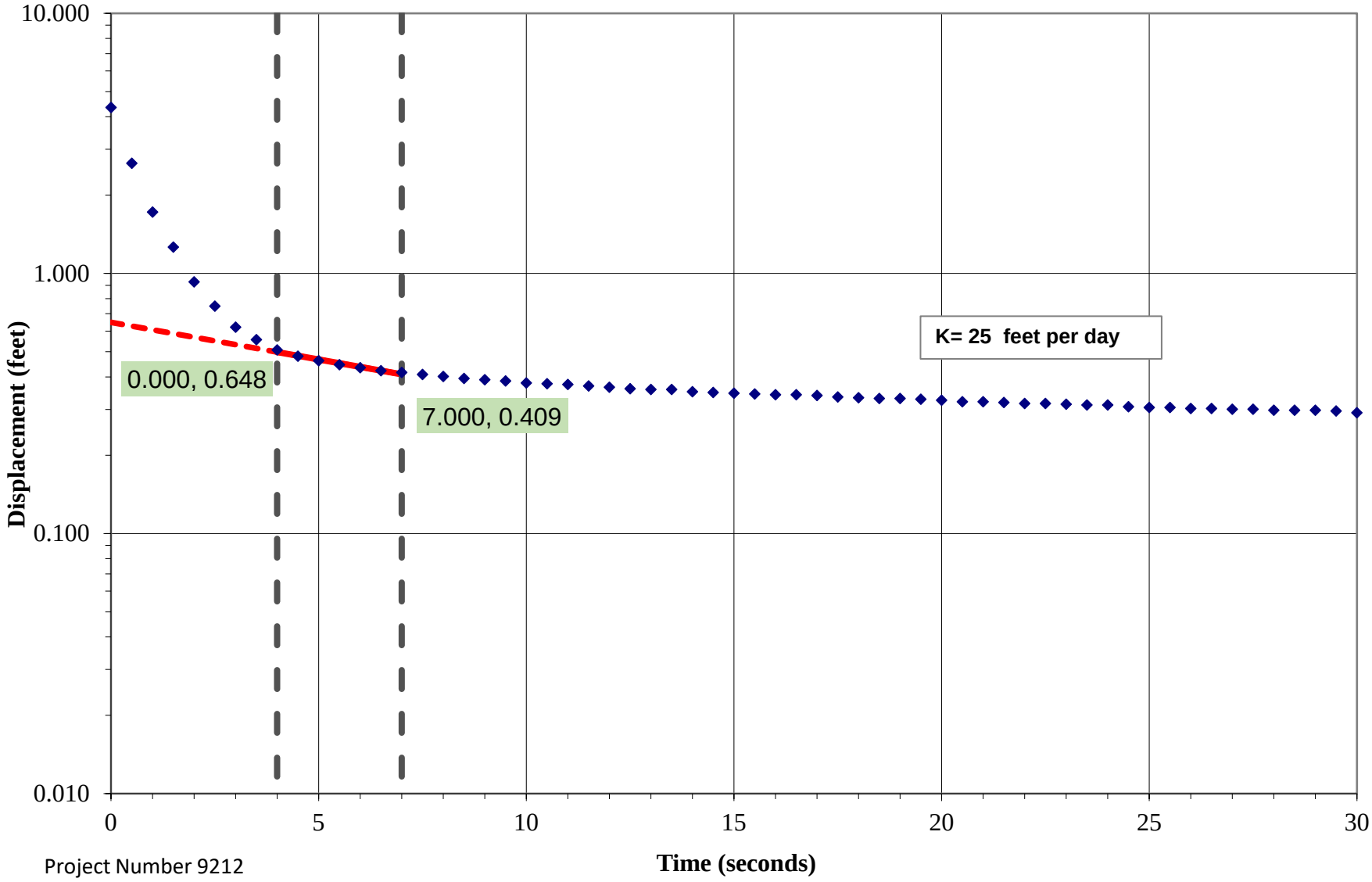
Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12 No. 3, pp. 423-428.

Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. Ground Water, Vol. 27, No. 3, pp. 304-309.

Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. Ground Water, Vol. 32, No. 5, pp. 761-766.

GEO-6 SLUG TEST ANALYSIS (Trial 1)

Benchmark Senior Living Lafayette Road, Rye NH



Project Number 9212

Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note L_w<H

Project Name:	Benchmark Senior Living
Project Address:	Lafayette Road, Rye NH
Project Number:	9212
Test Well:	GEO-6
Trial:	1

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	10.19	feet	
Length of saturated well screen (L_e)	10.19	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_z = K_h$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

1. For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
2. For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
3. For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	118.98	dimensionless	

Parameters from recovery graph

Displacement at t=0 (y_0)	0.648	feet
Arbitrary time on straight line slope (t)	7.000	seconds
Displacement at that arbitrary time (y_t)	0.409	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	4.74	dimensionless
B	0.82	dimensionless

Ln R_e/r_w	3.30422				
Hydraulic Conductivity (K)	**2.86E-04**	ft/sec	**8.72E-03**	cm/sec	**2.47E+01** ft/day

References:

Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12 No. 3, pp. 423-428.

Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. Ground Water, Vol. 27, No. 3, pp. 304-309.

Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. Ground Water, Vol. 32, No. 5, pp. 761-766.

ATTACHMENT E

COAKLEY LANDFILL INFORMATION

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

NOTICE OF GROUNDWATER MANAGEMENT PERMIT
GWP-198712001-N-002
TO BE RECORDED AGAINST:

Coakley Landfill Inc. Bk1340 P254 and Bk1347 P172

NOTICE IS HEREBY GIVEN THAT: The New Hampshire Department of Environmental Services (Department) has issued Groundwater Management Permit #GWP-198712001-N-002 ("Permit") to the Coakley Landfill Group. Pursuant to Env-Or 607.09(a) this notice is recorded for each property located within the groundwater management zone identified in the Permit at the Registry of Deeds in Rockingham County.

The Permit establishes a Groundwater Management Zone ("GMZ"), an area within which groundwater use must be controlled and monitored due to the presence of groundwater contaminants that exceed the State's Ambient Groundwater Quality Standards ("AGQS"). The Permit may include conditions to and restrictions upon the use of the properties within the GMZ, including restrictions on the use of groundwater.

The Permit was originally issued on June 19, 2008 and renewed January 7, 2014 expires on January 6, 2019, unless renewed for subsequent five-year period(s). This Notice will remain in effect until such time as the AGQS are restored within the GMZ and the Department issues a Release of Recordation to the Permittee. The Permit is available for review at the New Hampshire Department of Environmental Services, 29 Hazen Drive, Concord, NH 03301 or can be viewed by searching under our OneStop Data Retrieval Site at http://www2.des.nh.gov/OneStop/ORCB_Query.aspx?Project+CCST .

The following properties are located within the GMZ:

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
6/37	365 Lafayette Road, Rye	SNS LLC	5238/2463
10/11	355 Lafayette Road, Rye	Malcolm E. Smith III	5079/0262
17/72	67 North Road, North Hampton	Joan M Nordstrom	2416/583
17/73	65 North Road, North Hampton	Joseph F and Yolanda Fitzgerald	3007/2807
17/82	160 Lafayette Road, North Hampton	Luck Enterprises, Inc.	2473/1659
17/86	180 Lafayette Road, North Hampton	Christopher C and Louis J Fucci	3319/952
17/87	186 Lafayette Road, North Hampton	Lori A Lessard Trustee	2760/2099
21/8	188 Lafayette Road, North Hampton	Joseph J and Helen M McKittrick	2641/2656
21/10	8A Lafayette Terrace, North Hampton	John J Sr and Dorleena Wylie	4030/2567
21/11	12A Lafayette Terrace, North Hampton	Seth McAlister	5044/102
21/12	16A Lafayette Terrace, North Hampton	William and Christine Adinolfo	2963/1721
21/14	20 Lafayette Terrace, North Hampton	Joseph Hanley	4682/1265
21/14-1	40-42 Lafayette Terrace, North Hampton	James A C Jones	4451/1104
21/15	44 Lafayette Terrace, North Hampton	Joseph B and Bridget S Conner	4183/1638
21/16	46 Lafayette Terrace, North Hampton	Rodney K Booker Trustee	5196/2724
21/17	1 Lafayette Terrace, North Hampton	Judith I and Bernard P Tracey	2450/687

21/18	3 Lafayette Terrace, North Hampton	Erin and Joshua Miller	5029/1768
21/19	5 Lafayette Terrace, North Hampton	Richard P and Kimberly M Bartlett	3824/2799
21/20	9 Lafayette Terrace, North Hampton	Alexis J Perron III	3088/1774
21/21	11 Lafayette Terrace, North Hampton	Kenneth and Tracey Margeson	3121/1606
21/22	15 Lafayette Terrace, North Hampton	Edward and Anita Gabree	3013/2221
21/23	Part of 11 Lafayette Terrace	Kenneth and Tracey Margeson	3121/1606
21/24	43 Lafayette Terrace, North Hampton	William Warman	4374/1365
21/25	45 Lafayette Terrace, North Hampton	ZCCMMXIIVOOOOOIIIII5INH LTD Partnership	2530/1863
21/26	198 Lafayette Road, North Hampton	Gozinta LLC	4275/904
21/27	206 Lafayette Road, North Hampton	206 Lafayette Road LLC	4785/379
21/27-1	200 Lafayette Road, North Hampton	Derek R Burt Trustee	5147/325
21/28	216 Lafayette Road, North Hampton	Stella A Ciborowski Trust	2414/729
21/28-1	216 Lafayette Road, North Hampton	Leo J Crotty Jr	2475/1278
21/29	212 Lafayette Road, North Hampton	S&L Realty Trust	3666/1199
21/31	224 Lafayette Road, North Hampton	SNS LLC	5238/2463
21/32	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/33	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/34	Lafayette Road Rear, North Hampton	James A C Jones	4451/1102

21/35	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/36	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/37	Lafayette Terrace Rear, North Hampton	Town of North Hampton	3415/1661
21/39	North Road Rear, North Hampton	Joan, Breen and Denise Grenier- Winther, Susan Sherr, and Caryn Blake	5142/2979
21/41	North Road Rear, North Hampton	Elmer M Sewall	1340/524
21/46	10 Lafayette Terrace / Part of 8A, North Hampton	John J Sr and Dorleena L Wylie	3219/2588
*R1/13	340 Breakfast Hill Road (Portion Only)	Elmer M Sewall Rev Trust 96	3159/928
R1/9B	560 Breakfast Hill Road	Town of Greenland	3454/1131

Shaded rows indicate newly added lots.

*An expanded portion of the Sewall parcel (Tax Map R1 Lot #13) is included within the GMZ, as shown on the updated plot plan entitled "*Groundwater Monitoring Zone Plan*" prepared by Richard D. Bartlett & Associates, LLC., certified on December 11, 2013, and described as follows:

Commencing at a point on the easterly line of land now or formerly of the Boston and Maine Corporation, said point being a distance of 600.93 feet as measured along a curve to the left, having a central angle of 01°54'46" and a radius of 18,000.00 feet, from a steel pin set on the southerly sideline of Breakfast Hill Road marking the northeasterly most corner of said Boston and Maine land identified on tax map R1 as lot 11, thence by a curve to the left, having a central angle of 00°33'15" and a radius of 18,000.00 feet, a distance of 174.06 feet to a point, thence by a curve to the left, having a central angle of 00°24'32" and a radius of 11,425.51 feet, a distance of 81.56 feet to a point; thence S13°08'30"W a distance of 1,419.54 feet to a point; thence, N76°51'30"W a distance of 99.00 feet to a point at land now or formerly of Elmer M. Sewall Revocable Trust 96, thence, along said Sewall land, N35°09'35"E a distance of 88.02 feet to a point; thence, continuing by said Sewall land, N13°08'30"E a distance of 163.21 feet to a point; thence N76°51'30"W a distance of 434.00 feet, through said Sewall land to a point; thence S17°29'30"W a distance of 1,097.80 feet to a point on the Greenland-North Hampton town line, said point being N79°55'00"W a distance of 18.99 feet from a concrete bound, on said town line, engraved "G" and "N-H", thence, along said town line, N79°55'00"W a distance of 345.00 feet to a point; thence N23°21'55"E a distance of 2,504.63 feet to a point; thence N25°28'15"E a distance of 551.47 feet to a point; thence S72°51'15"E a distance of 221.87 feet to a point; thence S15°37'10"W a distance of 441.43 feet to a point; thence S75°34'35"E a distance of 166.70 feet continuing through said Sewall land and said

Boston and Maine land to the point of beginning.

Containing 1,306,532 square feet or 29.99 acres, of which 27.42 acres is the land of the Elmer M. Sewall Revocable Trust 96 and 2.57 acres is the land of the Boston and Maine Corporation.

/s/Robert Sullivan, Permittee
Coakley Landfill Group

February 26, 2014

Approved pursuant to authorization of Coakley
Executive Committee via electronic communication

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

hereby issues

GROUNDWATER MANAGEMENT PERMIT NO. GWP-198712001-N-002

to the permittee

COAKLEY LANDFILL GROUP

to monitor the past discharge of

Contaminants Of Concern
(as identified in Table 12 of the 1994 Record of Decision and subsequent decision documents)

at

COAKLEY LANDFILL
(480 Breakfast Hill Road)

in NORTH HAMPTON, N.H.

via the groundwater, surface water and sediment monitoring system comprised of

32 monitoring wells, 3 surface water, 2 sediment, and 1 leachate sampling locations and 5 residential drinking water supply wells

as depicted on the Site Plan and tables entitled

Environmental Monitoring Network (site plan);
OU-1 Groundwater Monitoring Wells and Water Supply Wells; and
OU-2 Groundwater Monitoring Wells

dated September 2013 (site plan) and July 2013 Revision 2.0 (tables), prepared by Summit Environmental Consultants

TO: COAKLEY LANDFILL GROUP
1 JUNKINS AVENUE
PORTSMOUTH, NEW HAMPSHIRE 03801

Date of Issuance: January 7, 2014
Date of Expiration: January 6, 2019

(continued)

Pursuant to authority in N.H. RSA 485-C:6-a, the New Hampshire Department of Environmental Services (Department), hereby grants this permit to monitor past discharges to the groundwater at the above described location for five years subject to the following conditions:

STANDARD MANAGEMENT PERMIT CONDITIONS

1. The permittee shall not violate Ambient Groundwater Quality Standards adopted by the Department (N.H. Admin. Rules Env-Or 600) in groundwater outside the boundaries of the Groundwater Management Zone, as shown on the referenced site plan and updated on the plot plan entitled "*Groundwater Monitoring Zone Plan"* prepared by Richard D. Bartlett & Associates, LLC., certified on December 11, 2013.

2. The permittee shall not cause groundwater degradation that results in a violation of surface water quality standards (N.H. Admin. Rules Env-Ws 1700) in any surface water body.

3. The permittee shall allow any authorized staff of the Department, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting samples, or undertaking other action associated with this permit.

4. The permittee shall apply for the renewal of this permit at least 90 days prior to its expiration date.

5. This permit is transferable only upon written request to, and approval of, the Department. Compliance with the existing Permit shall be established prior to permit transfer. Transfer requests shall include the name and address of the person to whom the permit transfer is requested, signature of the current and future permittee, and a summary of all monitoring results to date.

6. The Department reserves the right, under N.H. Admin. Rules Env-Or 600, to require additional hydrogeologic studies and/or remedial measures if the Department receives information indicating the need for such work.

7. The permittee shall maintain a water quality monitoring program and submit monitoring results to the Department's Waste Management Division no later than 45 days after sampling. Samples shall be taken from site monitoring wells, surface water and sediment sampling points as shown and labeled on the referenced site plan in accordance with the schedule outlined herein:

Monitoring Locations	**Sampling Frequency**	**Parameters**
FPC-4B, AE-4B	August each year	Bedrock well - field parameters, TAL metals (**total, unless highly turbid**), NHDES Waste Management Division full list of analytes for volatile organics (full list VOCs).
FPC-5A, MW-4, MW-9, OP-2	August each year	Overburden wells – field parameters, TAL metals (**dissolved**), 1,4-dioxane.
FPC-6B, FPC-8B, GZ-105, AE-2B, AE-3B, MW-5S, MW-5D, MW-6, MW-8, MW-11	August each year	Bedrock wells – field parameters, TAL metals (t**otal, unless highly turbid**), full list VOCs, 1,4-dioxane.
FPC-7A, FPC-9A, FPC-11A, AE-1A, MW-10, OP-5	August each year	Overburden wells – field parameters, TAL metals (**dissolved**)

- 3 -**Monitoring Locations**	**Sampling Frequency**	**Parameters**
FPC-5B, BP-4	August each year	Bedrock well – field parameters, TAL metals (**total, unless highly turbid**), 1,4-dioxane.
FPC-6A, FPC-8A, AE-2A, AE-3A	August each year	Overburden wells – field parameters, TAL metals (**dissolved**), full list VOCs, 1,4-dioxane.
AE-4A	August each year	Overburden well – field parameters, TAL metals (**dissolved**), full list VOCs.
FPC-7B, FPC-11B, AE-1B	August each year	Bedrock wells – field parameters, TAL metals (**total, unless highly turbid**).
Residential, Surface Water, Sediment & Leachate		
368BHR (R-3), 339BHR	August & February each year	Bedrock drinking water well – Field parameters, arsenic & manganese (**total**), VOCs full list (EPA Method 524), 1,4-dioxane.
399BHR (R-5), 346BHR, 415BHR	August each year	Field parameters, arsenic & manganese (**total**), NHDES full list (EPA Method 524), 1,4-dioxane.
SW-4, SW-5, SW-103	August each year	Field parameters, ammonia, TAL metals (**dissolved**), full list VOCs.
SED-4, SED-5	August each year	Metals (total).
L-1	August each year	Field parameters, COD, ammonia, TAL metals (**dissolved**).

Sampling shall be performed in accordance with the documents listed in Env-Or 610.02 (e) and the approved Environmental Monitoring Plan. Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services pursuant to Env-C 300. All overburden groundwater samples collected for metal analyses shall be analyzed for dissolved metals; and thus must be field filtered (with a 0.45-micron filter) and acidified after filtration in the field. Surface water samples and samples collected from bedrock or water supply wells shall be analyzed for total metals, and shall not be filtered. As referred to herein, the term "TAL Metals" refers to aluminum, arsenic, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, mercury, nickel, potassium, selenium, silver, sodium, thallium, zinc, cobalt, beryllium, manganese, antimony, and vanadium.

Summaries of water quality shall be submitted annually to the Department's Waste Management Division, in the month of February, using a format acceptable to the Department. The Summary Report shall include the information listed in Env-Or 607.04 (a), as applicable.

The Annual Summary Report shall be prepared and stamped by a professional engineer or professional geologist licensed in the State of New Hampshire.

8. Issuance of this permit is based on the Groundwater Management Permit Application dated October 3, 2013 and the historical documents found in the Department file DES #198712001. The Department may require additional hydrogeologic studies and/or remedial measures if invalid or inaccurate data are submitted.

9. Within 15 days of the date of Department approval of this Groundwater Management Permit, the permittee shall provide notice of the permit by certified mail, return receipt requested, to all owners of **newly added lots** of record (i.e., not noticed under original permit) within the Groundwater Management Zone (see shaded lots in Special Condition #12). The permittee shall submit documentation of this notification to the Department within 45 days of permit issuance.

10. Within 60 days of the date of Department approval of this Groundwater Management Permit, the permit holder shall record notice of the permit in the registry of deeds in the chain of title for each **newly added lot** within the Groundwater Management Zone (see shaded lots in Special Condition #12). The original notice on Lot 13 Map R1 shall be amended to reflect the expanded GMZ within this lot. **Recordation requires that the registry be provided with the name of current property owner and associated book and page numbers for the deed of each lot encumbered by this permit. Portions of State/Town/City roadways and associated right-of-way properties within the Groundwater Management Zone do not require recordation.** A copy of each recorded notice shall be submitted to the Department and to the governing body of each municipality in which the site or any lot within the GMZ is located within 30 days of recordation.

11. Within 30 days of discovery of a violation of an ambient groundwater quality standard at or beyond the Groundwater Management Zone boundary, the permittee shall notify the Department in writing. Within 60 days of discovery, the permittee shall submit recommendations to correct the violation. The Department shall approve the recommendations if the Department determines that they will correct the violation.

SPECIAL CONDITIONS FOR THIS PERMIT

12. Recorded property within the Groundwater Management Zone shall include the lots, or portions thereof, as listed and described in the following table:

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
6/37	365 Lafayette Road, Rye	SNS LLC	5238/2463
10/11	355 Lafayette Road, Rye	Malcolm E. Smith III	5079/0262
17/72	67 North Road, North Hampton	Joan M Nordstrom	2416/583
17/73	65 North Road, North Hampton	Joseph F and Yolanda Fitzgerald	3007/2807
17/82	160 Lafayette Road, North Hampton	Luck Enterprises, Inc.	2473/1659
17/86	180 Lafayette Road, North Hampton	Christopher C and Louis J Fucci	3319/952
17/87	186 Lafayette Road, North Hampton	Lori A Lessard Trustee	2760/2099
21/8	188 Lafayette Road, North Hampton	Joseph J and Helen M McKittrick	2641/2656
21/10	8A Lafayette Terrace, North Hampton	John J Sr and Dorleena Wylie	4030/2567
21/11	12A Lafayette Terrace, North Hampton	Seth McAlister	5044/102
21/12	16A Lafayette Terrace, North Hampton	William and Christine Adinolfo	2963/1721
21/14	20 Lafayette Terrace, North Hampton	Joseph Hanley	4682/1265
21/14-1	40-42 Lafayette Terrace, North Hampton	James A C Jones	4451/1104
21/15	44 Lafayette Terrace, North Hampton	Joseph B and Bridget S Conner	4183/1638
21/16	46 Lafayette Terrace, North Hampton	Rodney K Booker Trustee	5196/2724

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
21/17	1 Lafayette Terrace, North Hampton	Judith I and Bernard P Tracey	2450/687
21/18	3 Lafayette Terrace, North Hampton	Erin and Joshua Miller	5029/1768
21/19	5 Lafayette Terrace, North Hampton	Richard P and Kimberly M Bartlett	3824/2799
21/20	9 Lafayette Terrace, North Hampton	Alexis J Perron III	3088/1774
21/21	11 Lafayette Terrace, North Hampton	Kenneth and Tracey Margeson	3121/1606
21/22	15 Lafayette Terrace, North Hampton	Edward and Anita Gabree	3013/2221
21/23	Part of 11 Lafayette Terrace	Kenneth and Tracey Margeson	3121/1606
21/24	43 Lafayette Terrace, North Hampton	William Warman	4374/1365
21/25	45 Lafayette Terrace, North Hampton	ZCCMMXIIVOOOOOIIIII5INH LTD Partnership	2530/1863
21/26	198 Lafayette Road, North Hampton	Gozinta LLC	4275/904
21/27	206 Lafayette Road, North Hampton	206 Lafayette Road LLC	4785/379
21/27-1	200 Lafayette Road, North Hampton	Derek R Burt Trustee	5147/325
21/28	216 Lafayette Road, North Hampton	Stella A Ciborowski Trust	2414/729
21/28-1	216 Lafayette Road, North Hampton	Leo J Crotty Jr	2475/1278
21/29	212 Lafayette Road, North Hampton	S&L Realty Trust	3666/1199
21/31	224 Lafayette Road, North Hampton	SNS LLC	5238/2463
21/32	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/33	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/34	Lafayette Road Rear, North Hampton	James A C Jones	4451/1102
21/35	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/36	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/37	Lafayette Terrace Rear, North Hampton	Town of North Hampton	3415/1661
21/39	North Road Rear, North Hampton	Joan, Breen and Denise Grenier- Winther, Susan Sherr, and Caryn Blake	5142/2979
21/41	North Road Rear, North Hampton	Elmer M Sewall	1340/524
21/46	10 Lafayette Terrace / Part of 8A, North Hampton	John J Sr and Dorleena L Wylie	3219/2588

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
*R1/13	340 Breakfast Hill Road (Portion Only)	Elmer M Sewall Rev Trust 96	3159/928
R1/9B	560 Breakfast Hill Road	Town of Greenland	3454/1131

Shaded rows indicate newly added lots that require notice per Standard Permit Conditions #9 and #10. The original notice on Lot 13 Map R1 should be amended and recorded to reflect the expanded GMZ within this lot.

*An expanded portion of the Sewall parcel (Tax Map R1 Lot #13) is included within the GMZ, as shown on the updated plot plan entitled "*Groundwater Monitoring Zone Plan"* prepared by Richard D. Bartlett & Associates, LLC., certified on December 11, 2013, and described as follows:

Commencing at a point on the easterly line of land now or formerly of the Boston and Maine Corporation, said point being a distance of 600.93 feet as measured along a curve to the left, having a central angle of 01º54'46" and a radius of 18,000.00 feet, from a steel pin set on the southerly sideline of Breakfast Hill Road marking the northeasterly most corner of said Boston and Maine land identified on tax map R1 as lot 11, thence by a curve to the left, having a central angle of 00º33'15" and a radius of 18,000.00 feet, a distance of 174.06 feet to a point, thence by a curve to the left, having a central angle of 00º24'32" and a radius of 11,425.51 feet, a distance of 81.56 feet to a point; thence S13º08'30"W a distance of 1,419.54 feet to a point; thence, N76º51'30"W a distance of 99.00 feet to a point at land now or formerly of Elmer M. Sewall Revocable Trust 96, thence, along said Sewall land, N35º09'35"E a distance of 88.02 feet to a point; thence, continuing by said Sewall land, N13º08'30"E a distance of 163.21 feet to a point; thence N76º51'30"W a distance of 434.00 feet, through said Sewall land to a point; thence S17º29'30"W a distance of 1,097.80 feet to a point on the Greenland-North Hampton town line, said point being N79º55'00"W a distance of 18.99 feet from a concrete bound, on said town line, engraved "G" and "N-H", thence, along said town line, N79º55'00"W a distance of 345.00 feet to a point; thence N23º21'55"E a distance of 2,504.63 feet to a point; thence N25º28'15"E a distance of 551.47 feet to a point; thence S72º51'15"E a distance of 221.87 feet to a point; thence S15º37'10"W a distance of 441.43 feet to a point; thence S75º34'35"E a distance of 166.70 feet continuing through said Sewall land and said Boston and Maine land to the point of beginning.

Containing 1,306,532 square feet or 29.99 acres, of which 27.42 acres is the land of the Elmer M. Sewall Revocable Trust 96 and 2.57 acres is the land of the Boston and Maine Corporation.

13. INSTALLATION OF NEW GMZ COMPLIANCE WELLS

Two well couplets (overburden and bedrock) shall be installed near the revised GMZ boundary. Locations to be confirmed with EPA & DES prior to construction. Wells shall be installed and sampled as part of the regular scheduled 2014 sampling program.

14. UNDEVELOPED LOTS WITHIN THE GROUNDWATER MANAGEMENT ZONE:
Consistent with Env-Or 607.06(d), for each undeveloped lot, or portion thereof, which is within the Groundwater Management Zone and lacks access to a public water supply, the permittee shall contact the property owner annually to determine if a water supply well has been installed. The permittee shall include a report on this inquiry in the Annual Summary Report required in Standard Permit Condition #7. The results of these inquiries shall be documented in each Annual Summary Report.

Upon discovery of a new drinking water supply well within the Groundwater Management Zone, the permittee shall provide written notification to the Department and, to ensure compliance with Env-Or 607.06(a), submit a contingency plan to provide potable drinking water in the event the well is or becomes contaminated above the ambient groundwater quality standards. The potable water supply shall meet applicable federal and state water quality criteria. This plan shall be submitted to the Department for approval within 15 days of the date of discovery.

The permittee shall sample the new supply well within 30 days of discovery. The well shall be sampled for all the analytical parameters included in Standard Condition # 7, unless otherwise specified in writing by the Department. The permittee shall forward all analytical results to the Department's Waste Management Division, the Department's Environmental Health Program, and the owner of the drinking water supply well within 7 days of receipt of the results.

If the results for the new well meet the ambient groundwater quality standards, the permittee shall continue to sample the new wells annually as part of the permit. If the results for the new well indicate a violation of the ambient groundwater quality standards, the permittee shall notify the owner immediately and conduct confirmatory sampling within 14 days of receiving the original results.

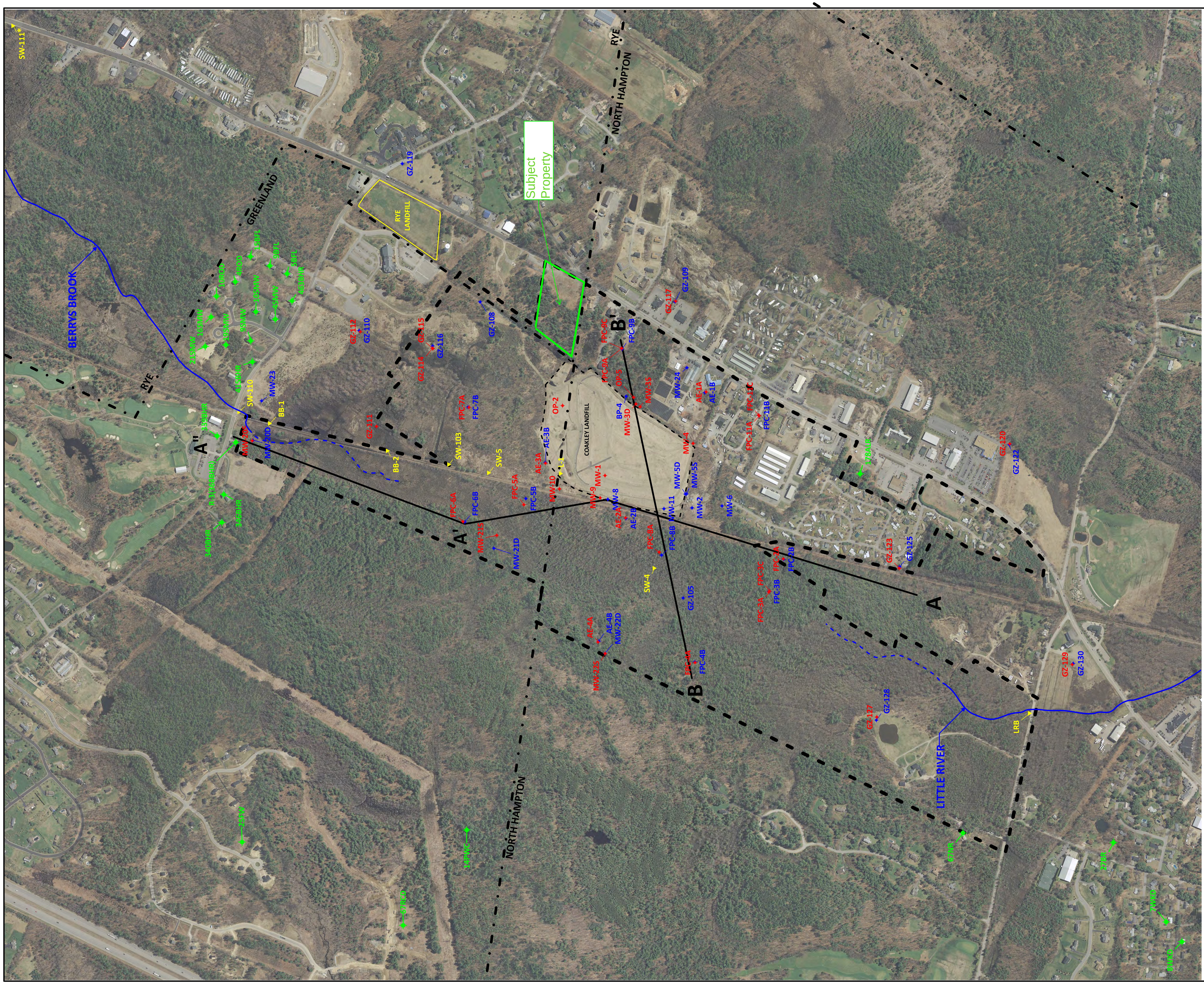
Upon confirmation of a violation of the ambient groundwater quality standards in a new drinking water well, the permittee shall immediately implement the contingency plan to provide a potable drinking water supply that meets applicable federal and state water quality criteria.

15. All monitoring wells at the site shall be properly maintained and secured from unauthorized access or surface water infiltration.

16. The permittee shall update ownership information required by Env-Or 607.03(a)(20) for all properties within the Groundwater Management Zone prior to renewal of the permit or upon a recommendation for site closure.

Carl W. Baxter, P.E., Administrator
Hazardous Waste Remediation Bureau
Waste Management Division

Under RSA 21-0:14 and 21-0:9-V, any person aggrieved by any terms or conditions of this permit may appeal to the Waste Management Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WMC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman of the Waste Management Council, c/o Appeals Clerk, Department of Environmental Services Legal Unit, 29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095.



LEGEND

- 67RCD RESIDENTIAL WATER SUPPLY WELL LOCATION
- GZ-117 OVERBURDEN GROUNDWATER MONITORING WELL
- GZ-108 BEDROCK GROUNDWATER MONITORING WELL
- SW-103 SURFACE WATER SAMPLING LOCATION
- GROUNDWATER MANAGEMENT ZONE BOUNDARY
- TOWN LINE

NOTES

1. THIS SITE PLAN IS BASED ON EXISTING SAMPLING LOCATIONS AS PER THE COAKLEY LANDFILL SUPERFUND SITE REVISED SAMPLING AND ANALYSIS PLAN DATED JULY 18, 2018.
2. GMZ BOUNDARY IS BASED UPON "GMZ BOUNDARY PLAN" DATED MAY 9, 2008 INCLUDED IN THE 2008 GMP APPLICATION PREPARED BY HANCOCK ASSOCIATES AND 2013 GMZ EXPANSION AREA ESTABLISHED BY THE 2013 GMP DATED JANUARY 7, 2014.
3. GIS DATA CURTESY OF NEW HAPSHIRE ONLINE GRANIT DATABASE.
4. MAP IS PROJECTED USING THE NEW HAMPSHIRE STATE PLANE PROJECTION, US FEET AND REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1983.
5. SURFACE WATER SAMPLE LOCATION SW-111 IS LOCATED APPROXIMATELY 220 FEET NORTH OF MAPPED AREA ADJACENT TO THE SOUTH OF 3660 LAFAYETTE ROAD.

COAKLEY LANDFILL SUPERFUND SITE
NEW HAMPSHIRE

GRAPHIC SCALE

0 FT 400 FT 800 FT 1200 FT 1600 FT

CES INC
Engineers • Environmental Scientists • Surveyors

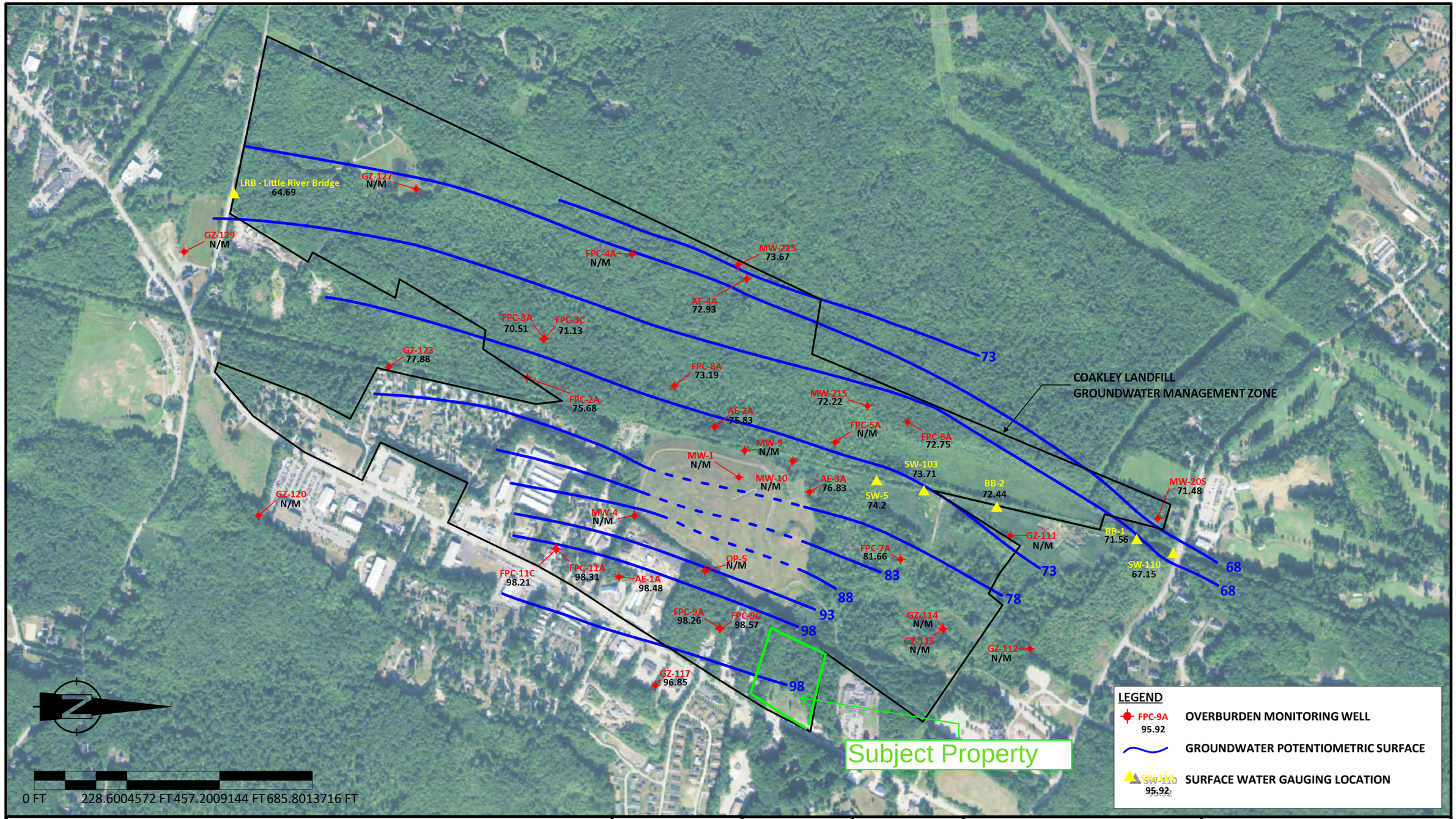
PROJECT TITLE
COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON AND GREENLAND, NEW HAMPSHIRE

SHEET TITLE
GROUNDWATER MONITORING WELL NETWORK
OVERBURDEN AND BEDROCK MONITORING WELLS

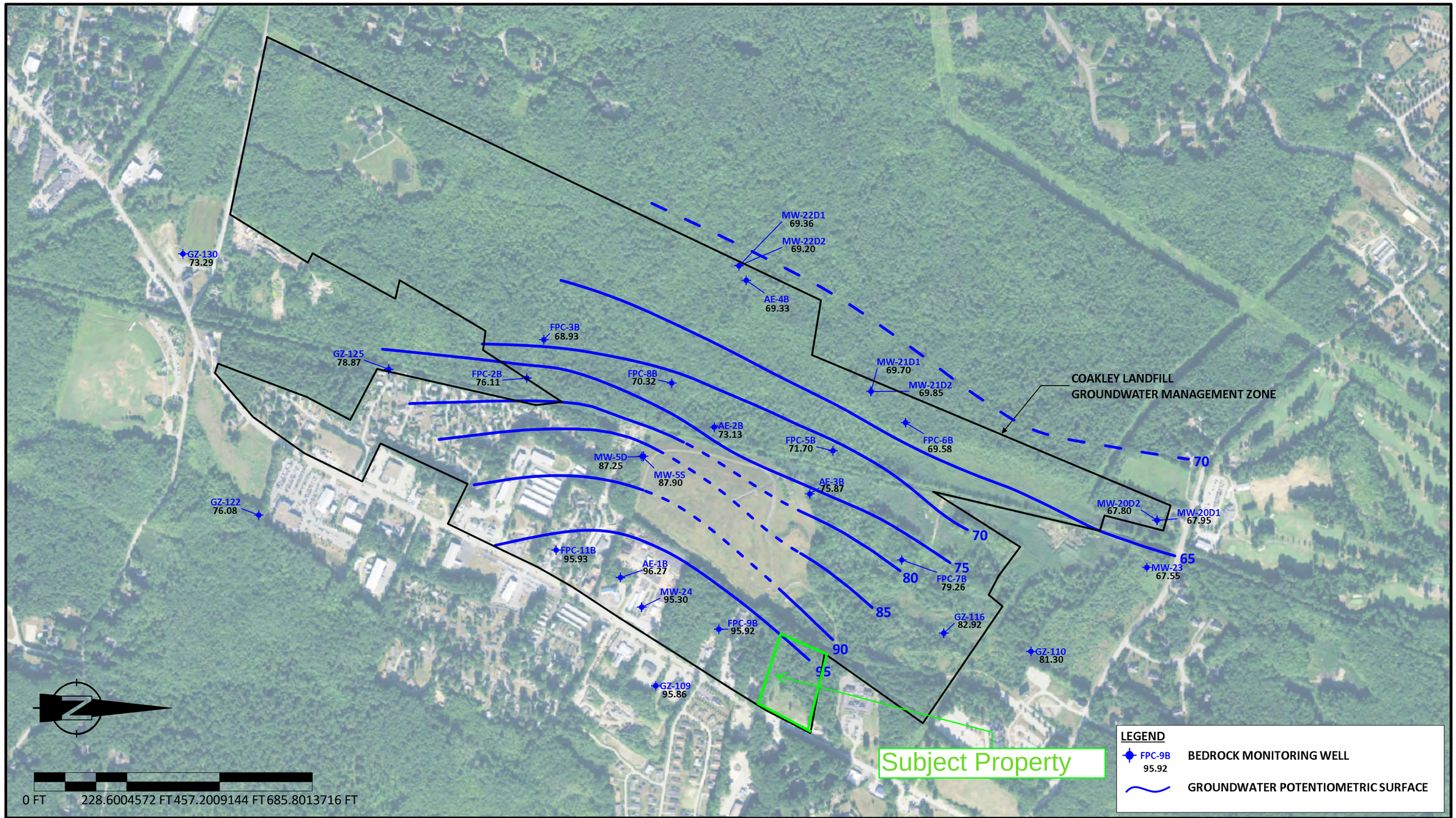
REV.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY
R7				
R6				
R5				
R4				
R3				
R2				
R1				

ISSUE STATUS
FOR DISCUSSION PURPOSES ONLY

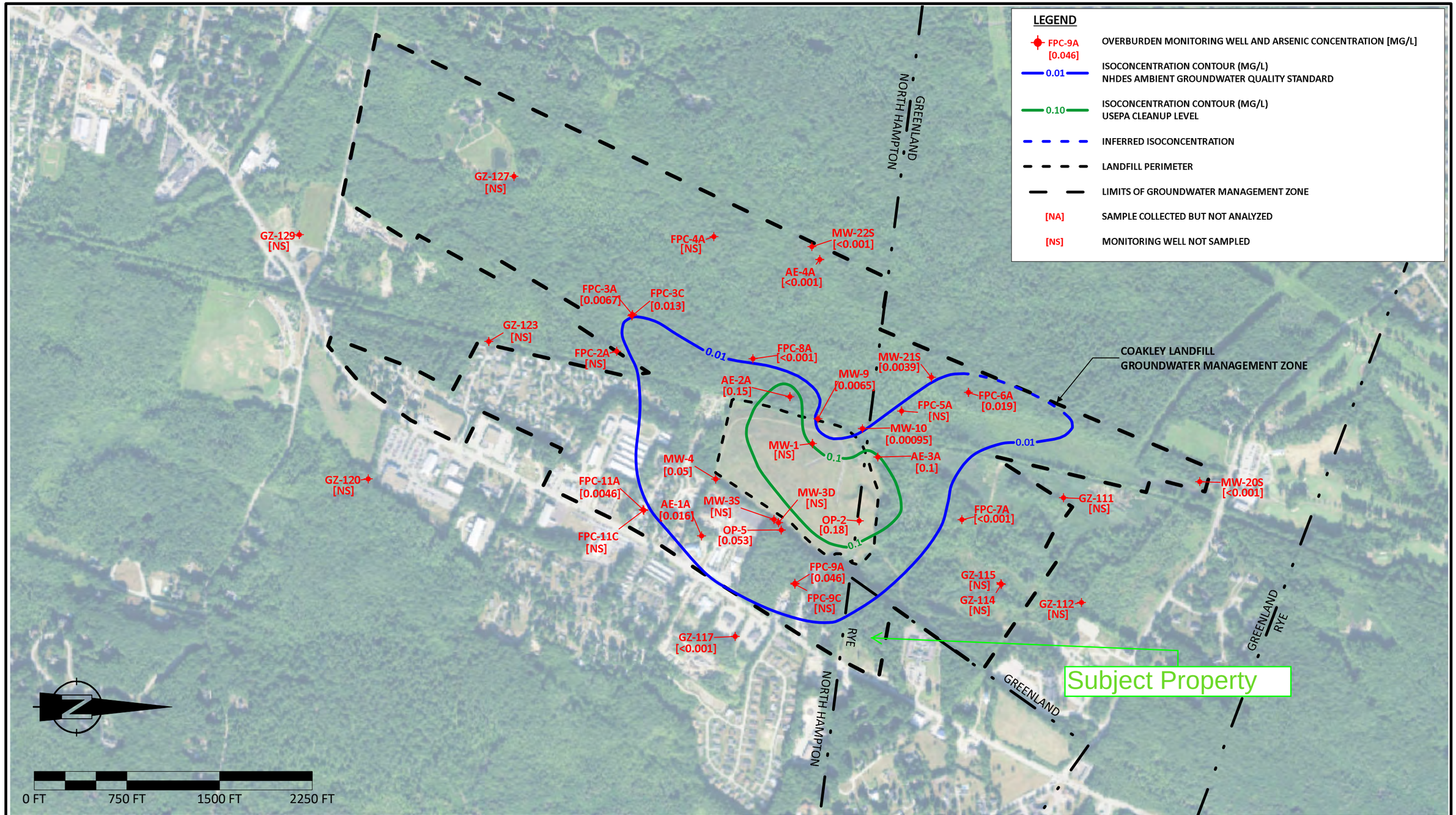
SCALE	1:4,800
DATE	2019-11-06
DRAWN BY	CFB
CHECKED BY	MAD
DESIGNED BY	CFB
APPROVED BY	
JOB NUMBER	10424.016
DRAWING NUMBER	FIGURE 2



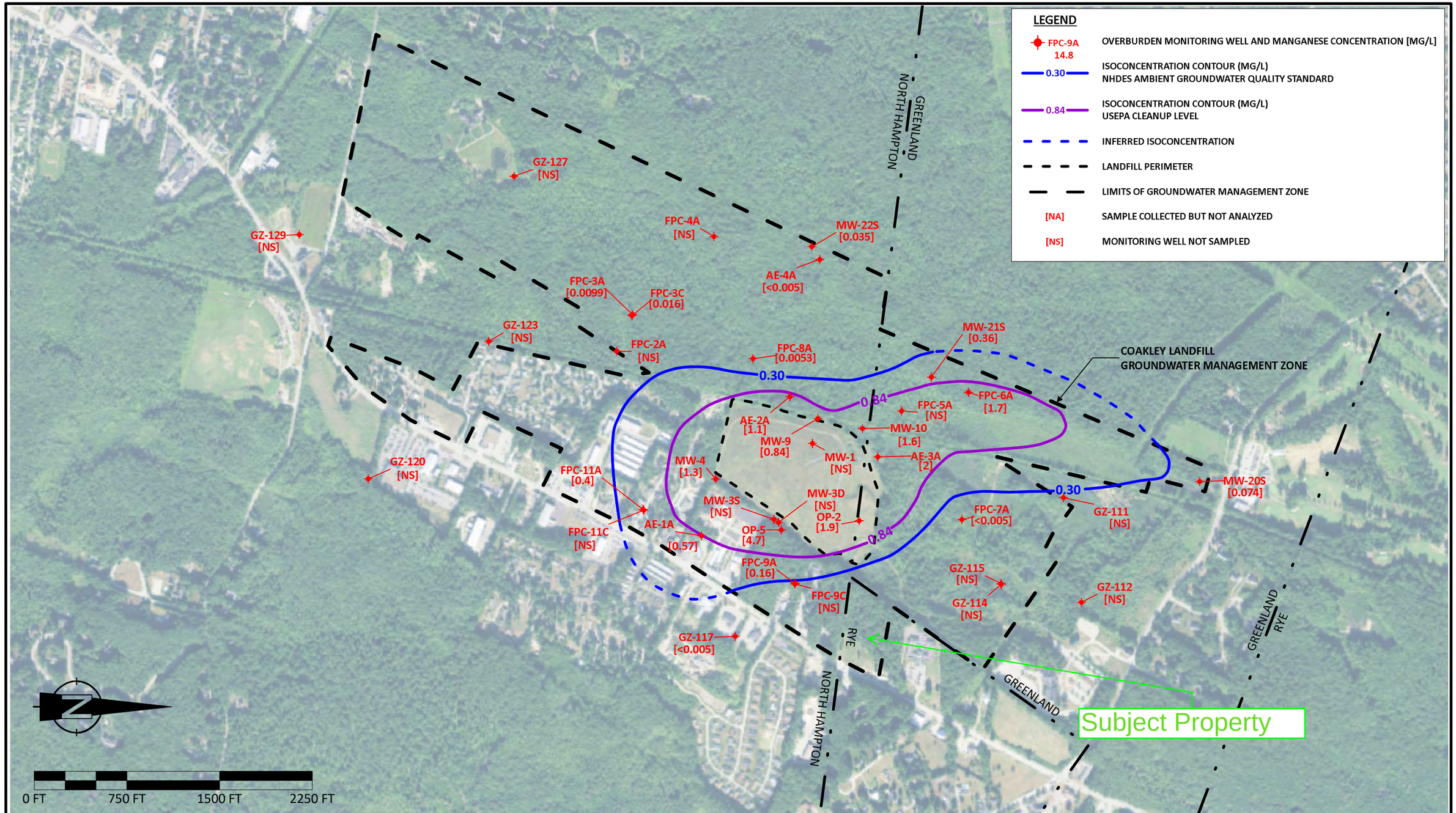
PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 3	BY: CFB	REV:	NOTE: N/M - NOT MEASURED N/A - NOT INSTALLED AT TIME OF GAUGING OR HAD BLOCKAGE	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: SPRING 2019 OVERBURDEN GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR MAP	JN: 10424.024	DATE: 2020-05-28	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: MAD	ISSUE:		
		CHECKED BY: CFB	ISSUE DATE:		



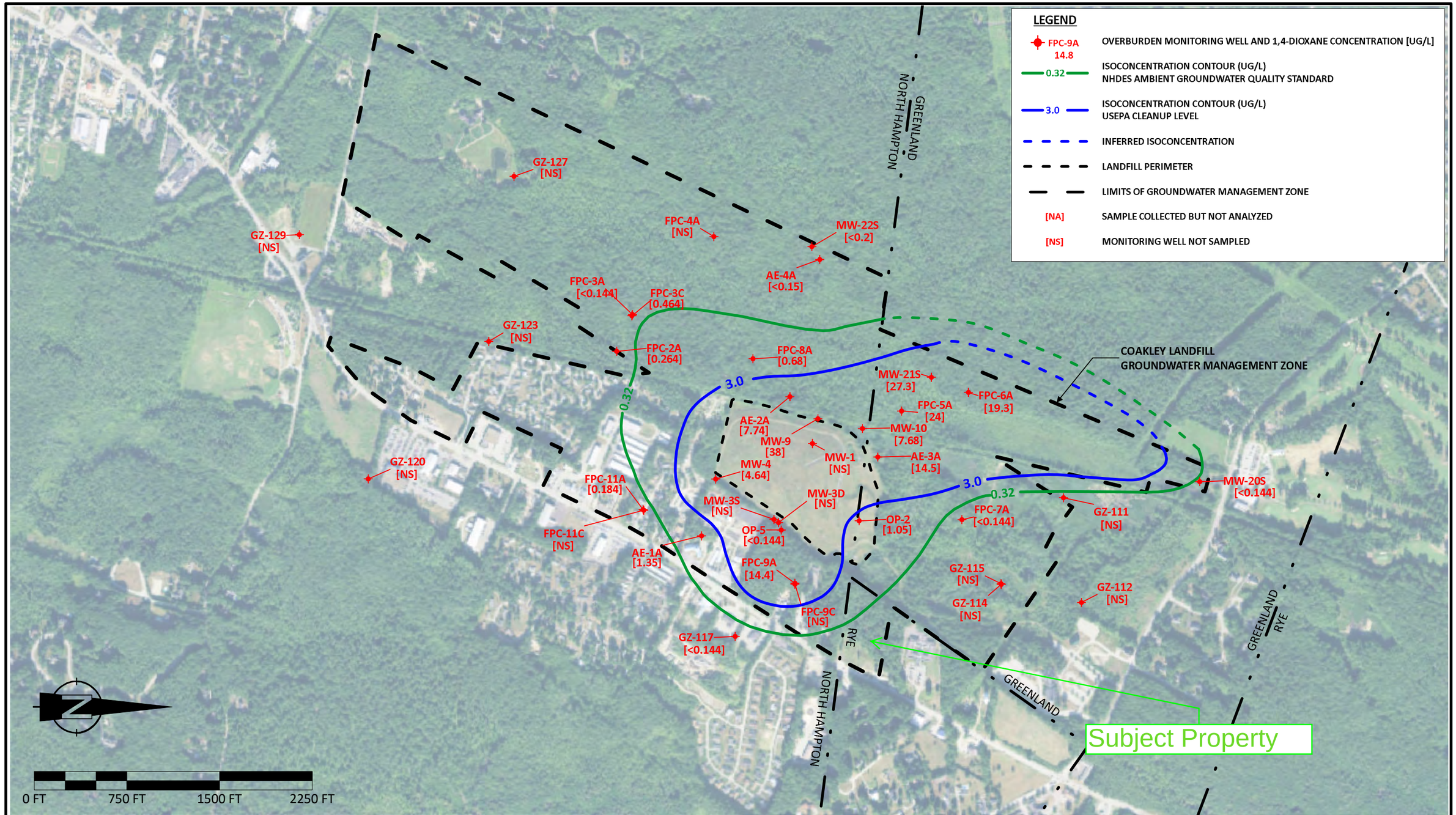
PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 4	BY: CFB	REV:	NOTE: N/M - NOT MEASURED FROZ - FROZEN N/A - NOT INSTALLED AT TIME OF GAUGING OR HAD BLOCKAGE	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: FALL 2019 BEDROCK GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR MAP	JN: 10424.016	DATE: 2020-06-22	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: SLY	ISSUE:		
		CHECKED BY: CFB	ISSUE DATE:		



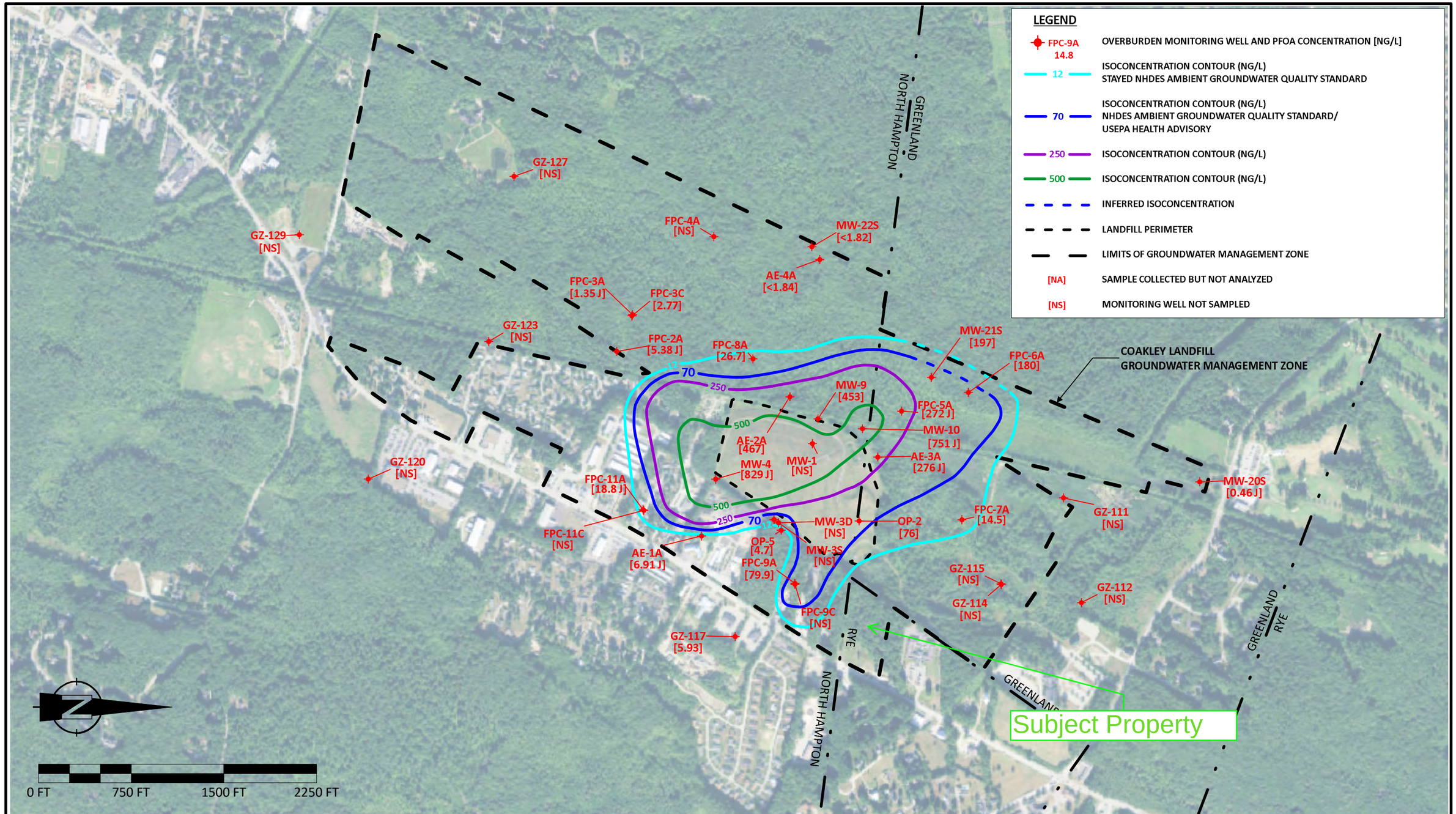
PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 5	BY: KWD	REV:	NOTE:	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: SPRING 2019 LATERAL DISTRIBUTION OF DISSOLVED ARSENIC IN OVERBURDEN GROUNDWATER	JN: 10424.024	DATE: 2020-05-12	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



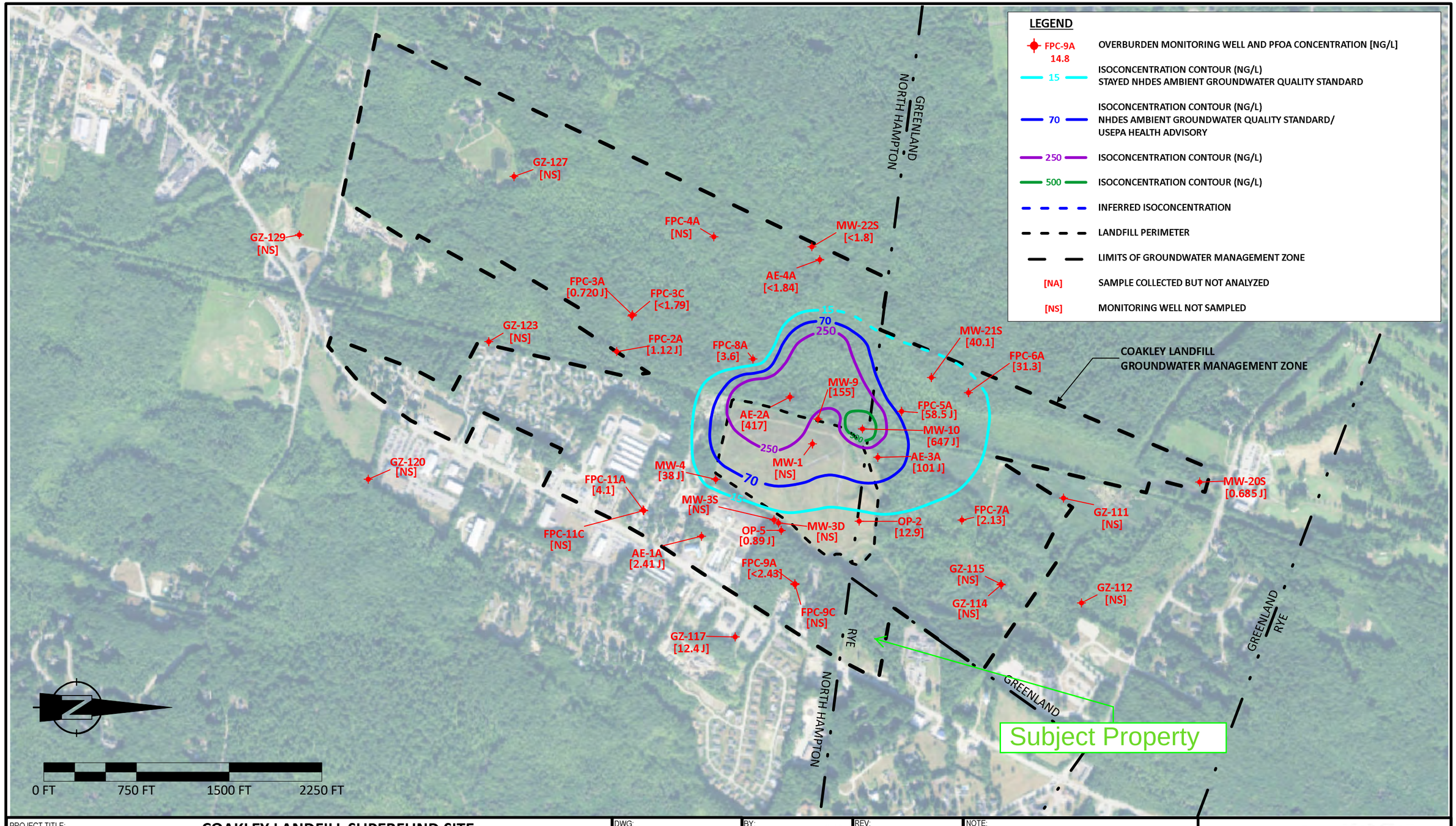
PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**	DWG: **FIGURE 6**	BY: KWD	REV:	NOTE:	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: **SPRING 2019 LATERAL DISTRIBUTION OF DISSOLVED MANGANESE IN OVERBURDEN GROUNDWATER**	JN: 10424.024	DATE: 2020-05-12	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



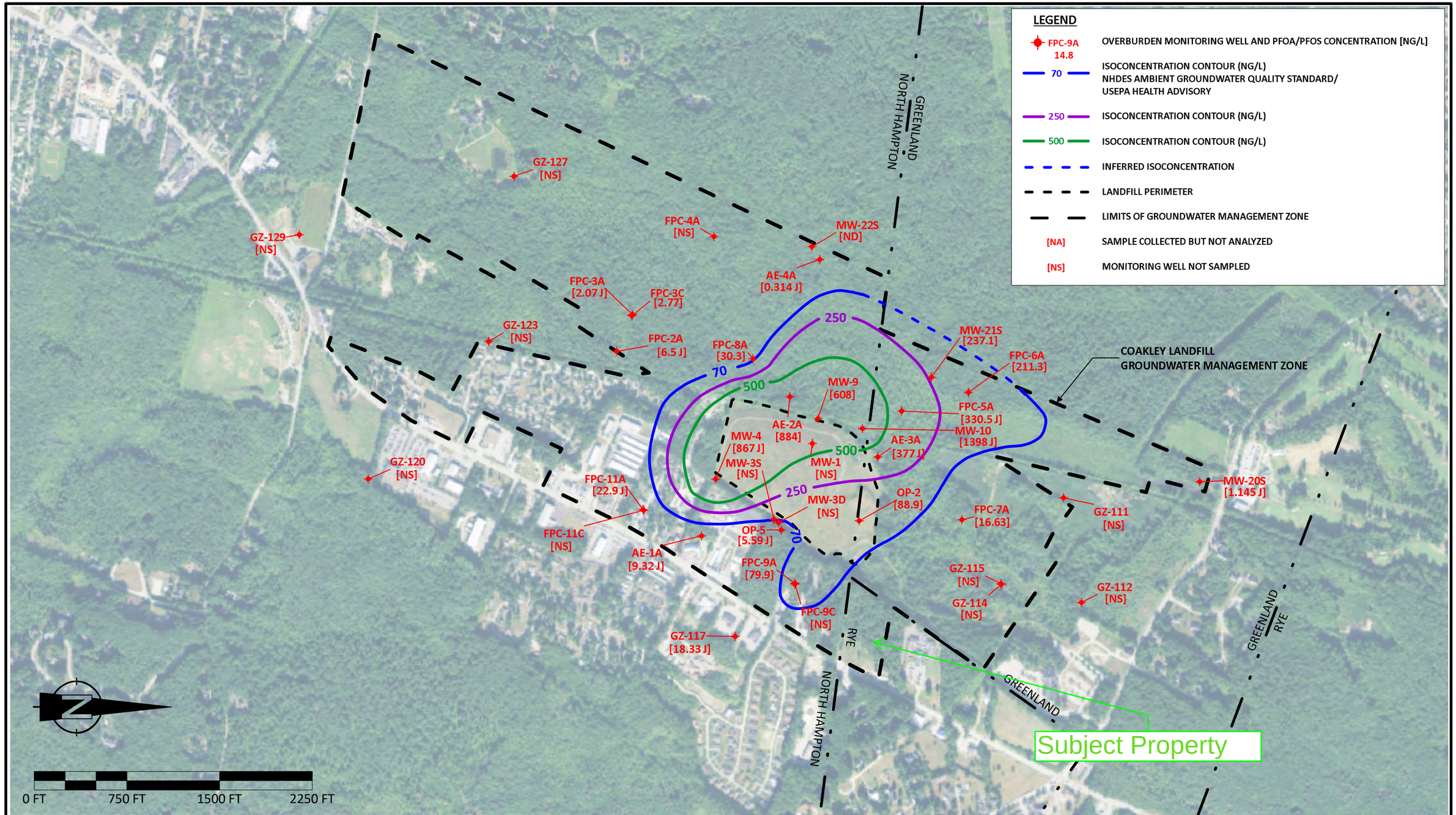
PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 7	BY: KWD	REV:	NOTE:	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: FALL 2019 LATERAL DISTRIBUTION OF 1,4-DIOXANE IN OVERBURDEN GROUNDWATER	JN: 10424.024	DATE: 2020-05-12	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



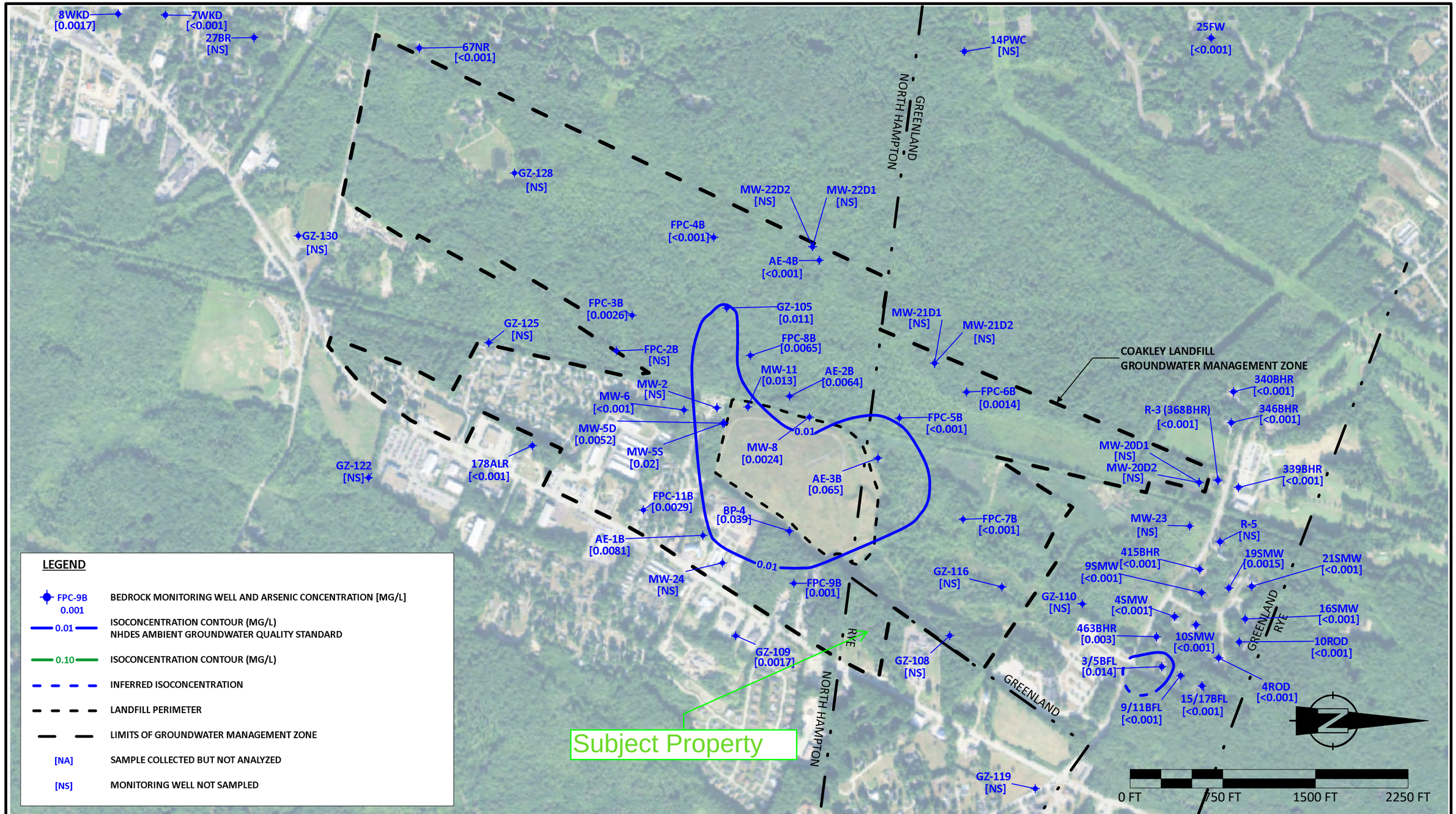
PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 8	BY: CFB	REV:	NOTE: On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: FALL 2019 LATERAL DISTRIBUTION OF PFOA IN OVERBURDEN GROUNDWATER	JN: 10424.024	DATE: 2020-06-25	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 9	BY: KWD	REV:	NOTE: On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: FALL 2019 LATERAL DISTRIBUTION OF PFOS IN OVERBURDEN GROUNDWATER	JN: 10424.024	DATE: 2020-06-25	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



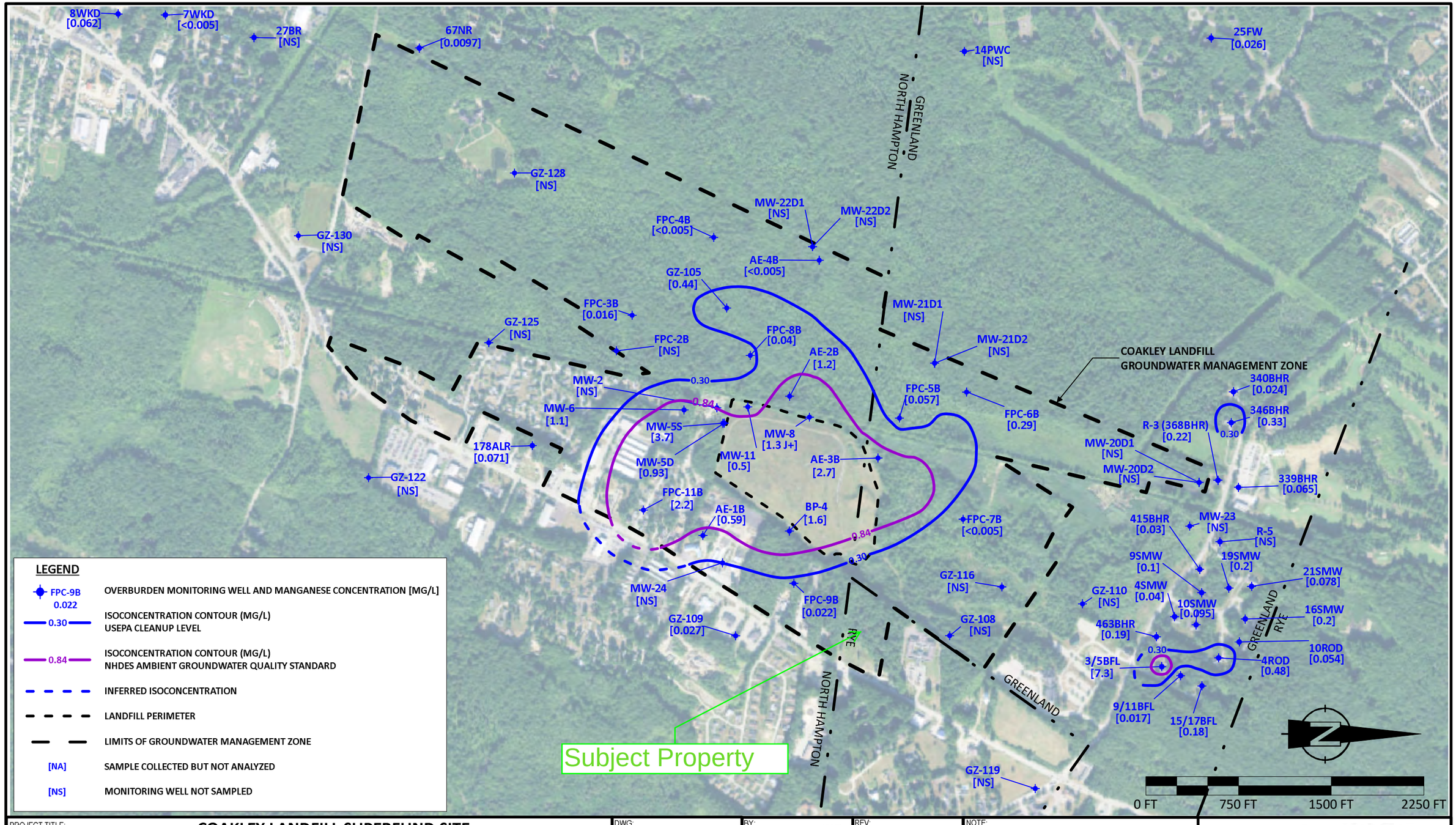
PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 10	BY: KWD	REV:	NOTE:	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: FALL 2019 LATERAL DISTRIBUTION OF PFOA + PFOS IN OVERBURDEN GROUNDWATER	JN: 10424.024	DATE: 2020-05-12	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



LEGEND

FPC-9B 0.001	BEDROCK MONITORING WELL AND ARSENIC CONCENTRATION [MG/L]
0.01	ISOCONCENTRATION CONTOUR (MG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD
0.10	ISOCONCENTRATION CONTOUR (MG/L)
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 11	BY: KWD	REV:	NOTE:	CES INC Engineers • Environmental Scientists • Surveyors
		DATE: 2020-05-12	REV DATE:		
SHEET TITLE: SPRING 2019 LATERAL DISTRIBUTION OF TOTAL ARSENIC IN BEDROCK GROUNDWATER	JN: 10424.024	APPROVED BY: CFB	ISSUE:		
	SCALE: AS SHOWN	CHECKED BY: SLY	ISSUE DATE:		



LEGEND

FPC-9B 0.022	OVERBURDEN MONITORING WELL AND MANGANESE CONCENTRATION [MG/L]
0.30	ISOCONCENTRATION CONTOUR (MG/L) USEPA CLEANUP LEVEL
0.84	ISOCONCENTRATION CONTOUR (MG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE**
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE

SHEET TITLE: **SPRING 2019 LATERAL DISTRIBUTION OF TOTAL MANGANESE IN BEDROCK GROUNDWATER**

DWG: **FIGURE 12**

JN: 10424.024

SCALE: AS SHOWN

BY:	KWD	REV:	
DATE:	2020-05-12	REV DATE:	
APPROVED BY:	CFB	ISSUE:	
CHECKED BY:	SLY	ISSUE DATE:	

NOTE:

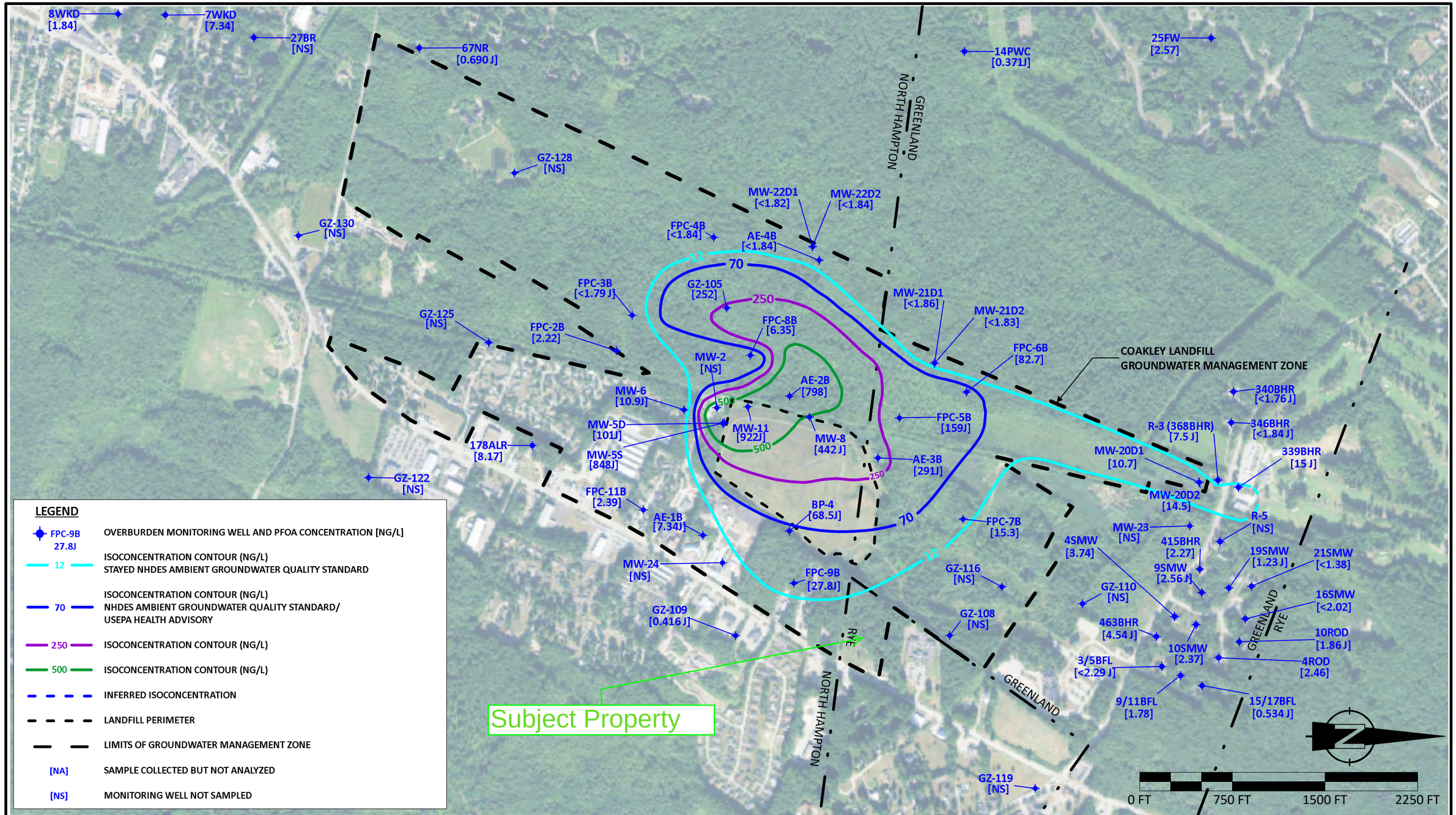
CES INC
Engineers • Environmental Scientists • Surveyors

8WKD [<0.132R]
7WKD [<0.147R]
27BR [NS]
67NR [<0.153R]
14PWC [0.136R]
25FW [<0.144R]
GREENLAND
NORTH HAMPTON
GZ-128 [NS]
GZ-130 [NS]
MW-22D1 [<0.15]
MW-22D2 [<0.139]
FPC-4B [<0.15]
0.32
AE-4B [<0.139]
FPC-3B [<0.15]
GZ-105 [49.9]
MW-21D1 [<0.15]
GZ-125 [NS]
FPC-2B [<0.15]
3.0
FPC-8B [0.51]
MW-21D2 [<0.15]
MW-2 [NS]
AE-2B [56.9]
COAKLEY LANDFILL
GROUNDWATER MANAGEMENT ZONE
MW-6 [<0.139]
FPC-6B [9]
340BHR [<0.129R]
MW-8 [146]
346BHR [<0.144R]
MW-5S [32.9]
FPC-5B [42.3]
178ALR [0.182J-]
MW-11 [35.1]
MW-5D [132]
MW-20D1 [0.412]
AE-3B [16.4]
MW-20D2 [0.613]
R-3 (368BHR) [0.377J-]
GZ-122 [NS]
3.0
339BHR [0.385J-]
FPC-11B [<0.15]
FPC-7B [0.178]
MW-23 [NS]
BP-4 [7.14]
415BHR [<0.142R]
R-5 [NS]
AE-1B [1.22]
19SMW [<0.136R]
21SMW [<0.136R]
GZ-116 [NS]
9SMW [<0.147R]
MW-24 [NS]
FPC-9B [5.53]
4SMW [<0.144R]
GZ-110 [NS]
16SMW [<0.139R]
GZ-109 [<0.144]
0.32
GZ-108 [NS]
GREENLAND
RYE
463BHR [<0.136R]
10SMW [<0.139R]
10ROD [<0.136R]
3/5BFL [<0.147R]
4ROD [<0.132R]
RYE
NORTH HAMPTON
GREENLAND
9/11BFL [<0.132R]
15/17BFL [<0.139R]
Subject Property
GZ-119 [NS]
N
0 FT
750 FT
1500 FT
2250 FT

LEGEND

- FPC-9B 5.53 — OVERBURDEN MONITORING WELL AND 1,4-DIOXANE CONCENTRATION [UG/L]
- 0.32 — ISOCONCENTRATION CONTOUR (UG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD
- 3.0 — ISOCONCENTRATION CONTOUR (UG/L) USEPA CLEANUP LEVEL
- INFERRED ISOCONCENTRATION
- LANDFILL PERIMETER
- LIMITS OF GROUNDWATER MANAGEMENT ZONE
- [NA] — SAMPLE COLLECTED BUT NOT ANALYZED
- [NS] — MONITORING WELL NOT SAMPLED

PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 13	BY: KWD	REV:	NOTE:	CES INC Engineers • Environmental Scientists • Surveyors
SHEET TITLE: FALL 2019 LATERAL DISTRIBUTION OF 1,4-DIOXANE IN BEDROCK GROUNDWATER	JN: 10424.024	DATE: 2020-05-12	REV DATE:		
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:		
		CHECKED BY: SLY	ISSUE DATE:		



LEGEND

FPC-9B 27.8J	OVERBURDEN MONITORING WELL AND PFOA CONCENTRATION [NG/L]
12	ISOCONCENTRATION CONTOUR (NG/L) STAYED NHDES AMBIENT GROUNDWATER QUALITY STANDARD
70	ISOCONCENTRATION CONTOUR (NG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD/ USEPA HEALTH ADVISORY
250	ISOCONCENTRATION CONTOUR (NG/L)
500	ISOCONCENTRATION CONTOUR (NG/L)
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE**
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF PFOA IN BEDROCK GROUNDWATER**

DWG: **FIGURE 14**

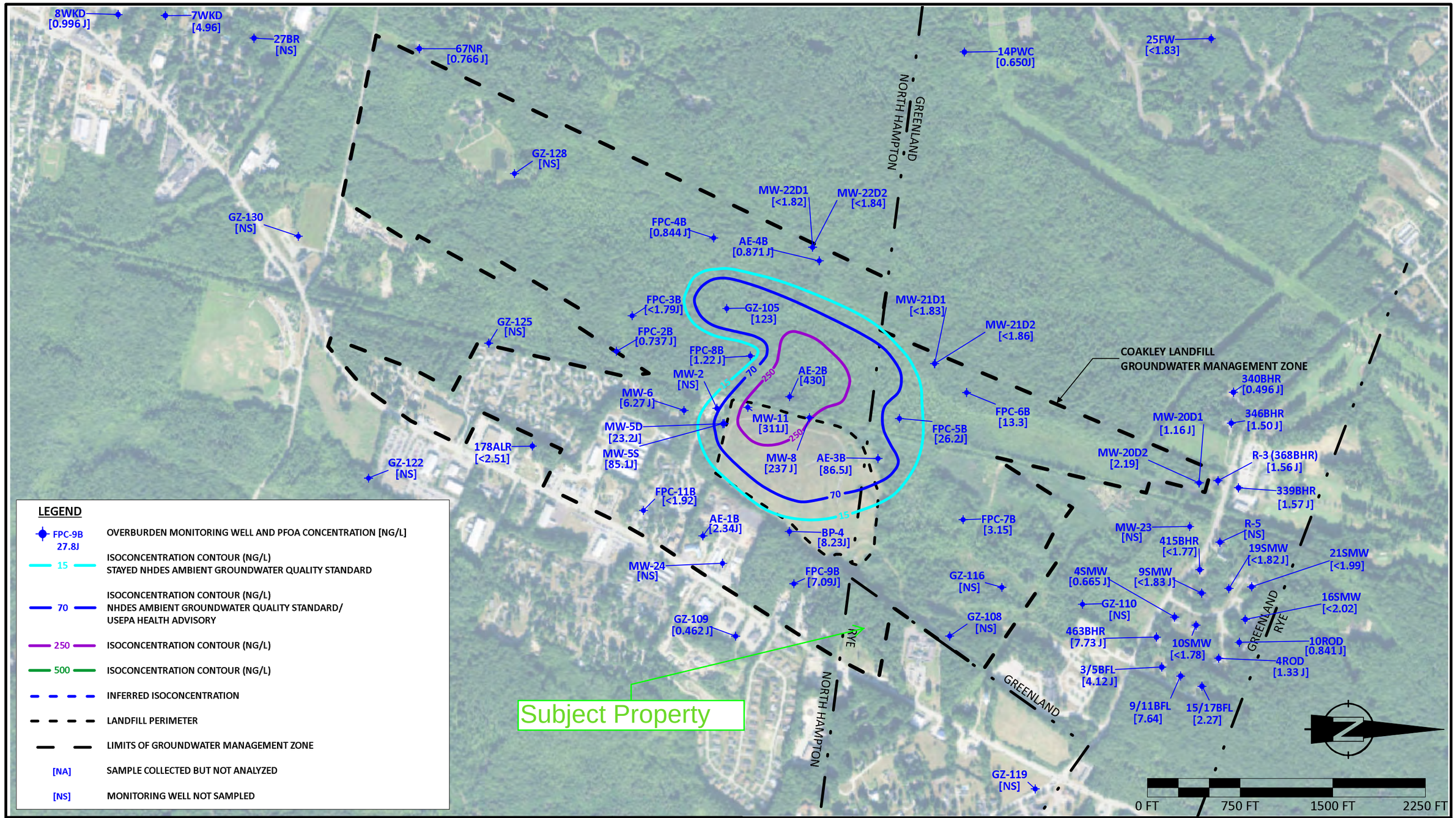
JN: 10424.024

SCALE: AS SHOWN

BY:	CFB	REV:	
DATE:	2020-06-24	REV DATE:	
APPROVED BY:	CFB	ISSUE:	
CHECKED BY:	SLY	ISSUE DATE:	

NOTE:
On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.

CES INC
Engineers • Environmental Scientists • Surveyors



LEGEND

FPC-9B 27.8J	OVERBURDEN MONITORING WELL AND PFOA CONCENTRATION [NG/L]
15	ISOCONCENTRATION CONTOUR (NG/L) STAYED NHDES AMBIENT GROUNDWATER QUALITY STANDARD
70	ISOCONCENTRATION CONTOUR (NG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD/ USEPA HEALTH ADVISORY
250	ISOCONCENTRATION CONTOUR (NG/L)
500	ISOCONCENTRATION CONTOUR (NG/L)
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE**
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF PFOS IN BEDROCK GROUNDWATER**

DWG: **FIGURE 15**

JN: 10424.024

SCALE: AS SHOWN

BY:	KWD	REV:	
DATE:	2020-06-25	REV DATE:	
APPROVED BY:	CFB	ISSUE:	
CHECKED BY:	SLY	ISSUE DATE:	

NOTE:
On September 30, 2019, the AGQS for PFAS compounds perfluoroctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.

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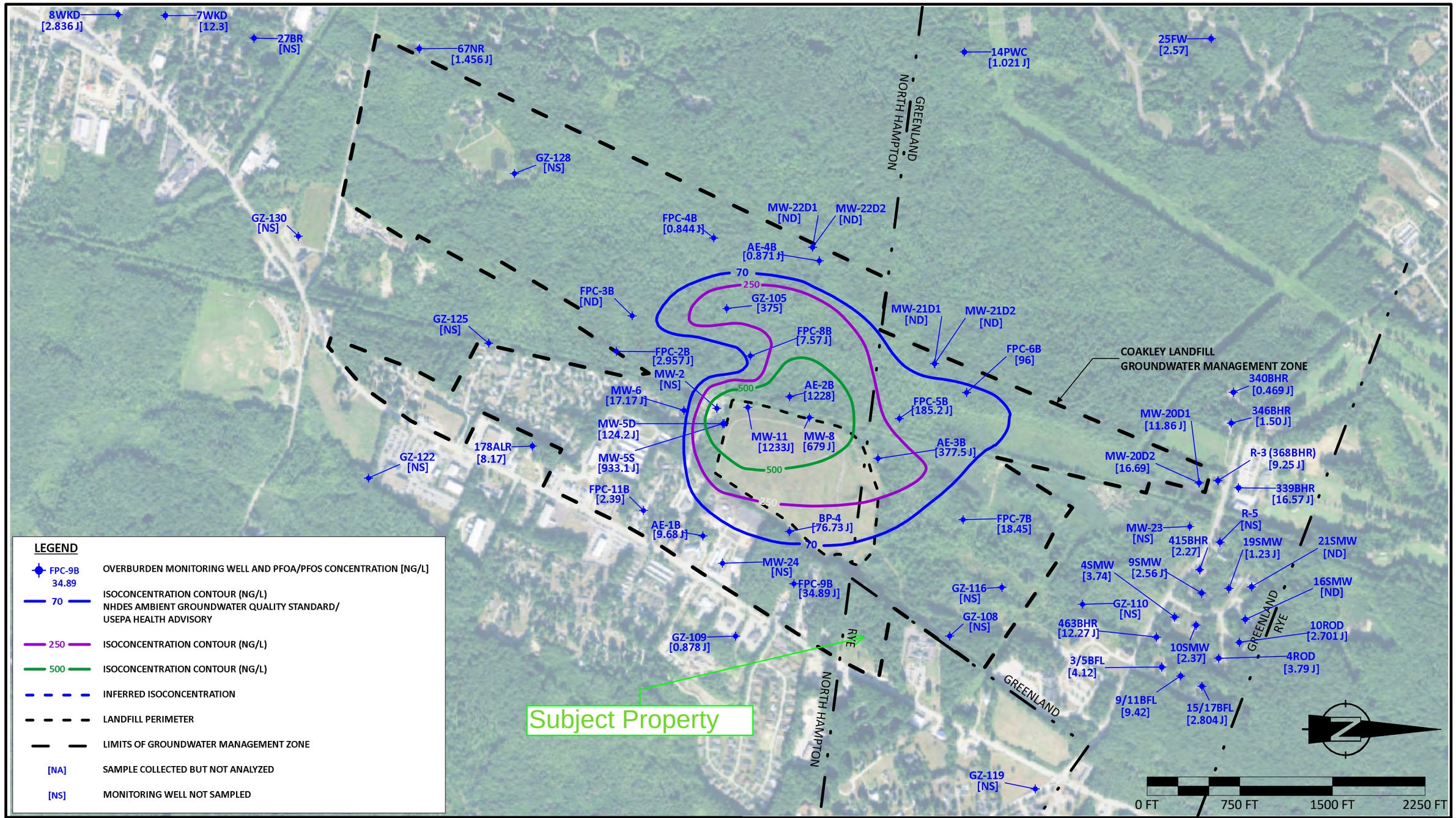

LEGEND

FPC-9B 34.89	OVERBURDEN MONITORING WELL AND PFOA/PFOS CONCENTRATION [NG/L]
70	ISOCONCENTRATION CONTOUR (NG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD/ USEPA HEALTH ADVISORY
250	ISOCONCENTRATION CONTOUR (NG/L)
500	ISOCONCENTRATION CONTOUR (NG/L)
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE**
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF PFOA + PFOS IN BEDROCK GROUNDWATER**

DWG: **FIGURE 16**

JN:	10424.024		
SCALE:	AS SHOWN		
BY:	KWD	REV:	
DATE:	2020-05-12	REV DATE:	
APPROVED BY:	CFB	ISSUE:	
CHECKED BY:	SLY	ISSUE DATE:	

NOTE:

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ATTACHMENT F

GROUNDWATER MOUNDING AND NITRATE LOADING/MASS BALANCE SPREADSHEETS

NEW HAMPSHIRE | MASSACHUSETTS | CONNECTICUT | MAINE
GEOINSIGHT.COM | INFO@GEOINSIGHT.COM | 800.271.1953

Maximum groundwater mound height in response to uniform percolation given by Hantush (1967) is:

$h_m^2-h_i^2=(2\omega/K)\nu t S^*(\alpha,\beta)$

Where:

h_m = maximum saturated thickness as a result of loading (ft)

h_i = initial saturated thickness (ft)

ω = loading rate (cubic feet per day)
or $(Q/7.4805)/(2l^* 2\alpha)$
Q= loading rate (GPD)
l= half length of loading area (ft)
α= half width of loading area (ft)

K = hydraulic conductivity (ft/day)

ν = Kb/ε
b= $\frac{1}{2}(h_i+h_m) \approx h_i$ since $(h_i-h_m) \ll h_i$
ε= porosity (dimensionless)

t = duration of loading (days)

$S^*(\alpha,\beta)$= an integral error function determined from tables
$\alpha = l/(4\nu t)^{1/2}$
$\beta = \alpha/(4\nu t)^{1/2}$

Given:

h_i =	10	ft
K =	23	ft/day
ε =	0.2	
$2l$ =	42	ft
2α =	16.5	ft
Q =	960	GPD
t =	30.0	days

Solution:

ω = (960 / 7.4805) / (42 * 16.5) = 0.19

ν = (23 * 10) / 0.2 = 1150.00

α = (21 / (4 * 1150 * 30.0)$^{1/2}$ = 0.057

β = (8.25 / (4 * 1150 * 30.0)$^{1/2}$ = 0.022

$S^*(\alpha,\beta)$ = 0.0101 (from table)

$h_m^2-h_i^2$= (2 * 0.19 / 23) * 1150.0 * 30.00 * 0.0101 = 5.61

h_m= (5.61 + 10 ^{2})$^{1/2}$ = 10.28

Mound Height = 10.28 - h_i = 0.3 feet

Maximum groundwater mound height in response to uniform percolation given by Hantush (1967) is:

$h_m^2-h_i^2=(2\omega/K)\nu t S^*(\alpha,\beta)$

Where:

h_m = maximum saturated thickness as a result of loading (ft)

h_i = initial saturated thickness (ft)

ω = loading rate (cubic feet per day)
or $(Q/7.4805)/(2l^* 2\alpha)$
Q= loading rate (GPD)
l= half length of loading area (ft)
α= half width of loading area (ft)

K = hydraulic conductivity (ft/day)

ν = Kb/ε
b= $\frac{1}{2}(h_i+h_m) \approx h_i$ since $(h_i-h_m) \ll h_i$
ε= porosity (dimensionless)

t = duration of loading (days)

$S^*(\alpha,\beta)$= an integral error function determined from tables
$\alpha = l/(4\nu t)^{1/2}$
$\beta = \alpha/(4\nu t)^{1/2}$

Given:

h_i =	10	ft
K =	23	ft/day
ε =	0.2	
$2l$ =	42	ft
2α =	16.5	ft
Q =	960	GPD
t =	180.0	days

Solution:

$\omega = ($ 960 / 7.4805 $) / ($ 42 * 16.5 $) =$ 0.19

$\nu = ($ 23 * 10 $) /$ 0.2 $=$ 1150.00

$\alpha = ($ 21 / (4 * 1150 * 180.0 $)^{1/2} =$ 0.023

$\beta = ($ 8.25 / (4 * 1150 * 180.0 $)^{1/2} =$ 0.009

$S^*(\alpha,\beta) =$ 0.0041 (from table)

$h_m^2-h_i^2 = ($ 2 * 0.19 / 23 $) *$ 1150.0 * 180.00 * 0.0041 $=$ 13.67

$h_m = ($ 13.67 + 10 $^2)^{1/2} =$ 10.66

Mound Height = 10.66 - h_i = 0.7 feet

Maximum groundwater mound height in response to uniform percolation given by Hantush (1967) is:

$h_m^2 - h_i^2 = (2\omega/K)\nu t S^*(\alpha,\beta)$

Where:

h_m = maximum saturated thickness as a result of loading (ft)

h_i = initial saturated thickness (ft)

ω = loading rate (cubic feet per day)
or $(Q/7.4805)/(2l^* 2\alpha)$
Q= loading rate (GPD)
l= half length of loading area (ft)
α= half width of loading area (ft)

K = hydraulic conductivity (ft/day)

$\nu = Kb/\varepsilon$
b= $\frac{1}{2}(h_i+h_m) \approx h_i$ since $(h_i-h_m) \ll h_i$
ε= porosity (dimensionless)

t = duration of loading (days)

$S^*(\alpha,\beta)$= an integral error function determined from tables
$\alpha = l/(4\nu t)^{1/2}$
$\beta = \alpha/(4\nu t)^{1/2}$

Given:

h_i =	10	ft
K =	23	ft/day
ε =	0.2	
$2l$ =	42	ft
2α =	16.5	ft
Q =	960	GPD
t =	365.0	days

Solution:

$\omega = (960 / 7.4805) / (42 * 16.5) = 0.19$

$\nu = (23 * 10) / 0.2 = 1150.00$

$\alpha = (21 / (4 * 1150 * 365.0)^{1/2} = 0.016$

$\beta = (8.25 / (4 * 1150 * 365.0)^{1/2} = 0.006$

$S^*(\alpha,\beta) = 0.0041$ (from table)

$h_m^2 - h_i^2 = (2 * 0.19 / 23) * 1150.0 * 365.00 * 0.0041 = 27.71$

$h_m = (27.71 + 10^2)^{1/2} = 11.30$

Mound Height = 11.30 - h_i = 1.3 feet

NITROGEN LOADING CALCULATION

I Nitrogen Load

A. Septic

wastewater volume (gallons/day)			septic nitrogen (mg/yr)
9600	x	40 mg/L (given -- 85% reduction) =	79,470,720

B. Fertilizer

lawn area (sq ft)			fertilizer nitrogen (lbs/yr)		fertilizer nitrogen (mg/yr)
43,560 ESTIMATE	x	3 lbs/ 1000 sq ft / yr (given -- 25% leached) =	33	or	14,818,851

Total Nitrogen = 94,289,571 mg/yr

II Recharge Volume

A. Precipitation

recharge area (ac)		imperv. area (ac)		recharge area (sq ft)
3.53	-	1.72	=	78,869

average precip (in/yr)		% infiltrate		recharge rate (ft/day)
50	x	50	=	0.0057

recharge area (sq ft)		recharge rate (ft/day)		precipitation recharge (gal/day)
78,869	x	0.0057	=	3,363

B. Septic (not included if water supply is from a well on the site)

septic recharge (gal/day)
9,600

Total Recharge = 4,731,495 gal/yr or 17,908,709 L/yr

III Concentration

Nitrogen Load (mg/yr) / Recharge Volume (L/yr) = 5.3 mg/L

NITROGEN LOADING CALCULATION

I Nitrogen Load

A. Septic

wastewater volume (gallons/day)				septic nitrogen (mg/yr)
9600	x	40 mg/L (no reduction)	=	529,804,800

B. Fertilizer

lawn area (sq ft)				fertilizer nitrogen (lbs/yr)		fertilizer nitrogen (mg/yr)
43,560 ESTIMATE	x	3 lbs/ 1000 sq ft / yr (given -- 25% leached)	=	33	or	14,818,851

Total Nitrogen = 544,623,651 mg/yr

II Recharge Volume

A. Precipitation

recharge area (ac)		imperv. area (ac)		recharge area (sq ft)
3.53	-	1.72	=	78,869

average precip (in/yr)		% infiltrate		recharge rate (ft/day)
50	x	50	=	0.0057

recharge area (sq ft)		recharge rate (ft/day)		precipitation recharge (gal/day)
78,869	x	0.0057	=	3,363

B. Septic (not included if water supply is from a well on the site)

septic recharge (gal/day)
9,600

Total Recharge = 4,731,495 gal/yr or 17,908,709 L/yr

III Concentration

Nitrogen Load (mg/yr) / Recharge Volume (L/yr) = 30.4 mg/L