

TRANSMITTAL

January 19, 2024

Town of Northfield Planning Board
21 Summer Street
Northfield, New Hampshire 03276

**RE: Major Site Plan Application: 42 FL Northfield PEC – Distribution Warehouse
South Park Avenue, Northfield, NH 03276
Owner: Odilon A. Cormier Revocable Trust
Applicant: 42 Real Estate, LLC**

Item No.	Quantity	Description
1	1	Site Plan Application
2	1	Site Plan Checklist
3	1	Site Plan Fee Check
4	1	Project Narrative
5	1	Abutter List
6	1	Site Photographs
7	1	Site Location Map
8	1	Stormwater Management Plan
9	1	Traffic Memo
10	1	Site Plans (24x36)
11	1	Lighting Plans (24x36)
12	1	Architectural Plans (24x36)

If you have any questions, or require additional information, please contact me at (802) 461-6828.

Very Truly Yours,
WILCOX & BARTON, INC.



David L. Frothingham III, P.E.
Senior Civil Engineer

TOWN OF NORTHFIELD ABUTTER'S LIST FOR SITE PLAN/DESIGN REVIEW APPLICATIONS

An abutter is anyone with property that shares a boundary line or is on the other side of a street from a boundary line. **Include all engineers, surveyors, authorized agent and the applicant.** If applicable, all holders of conservation, preservation or agricultural preservation restrictions must be included in the abutter list.

	NAME	ADDRESS	TAX MAP AND LOT #(s):
1.	Jean and Carol Keyes	90 Shaker Road Northfield NH 03276	R014-0004-05A
2.	Winnepesaukee Commercial Properties	289 Morrill Street Gilford, NH 03249	R014-0004-05B
3.	Northern New England Telephone	2116 South 17th Street Mattoon, IL 61938	R014-0004-05A
4.	140 South Park LLC	PO Box 181 Tilton, NH 03276	R14-0005-002
5.	BT NEWYO, LLC	55 Glenlake Parkway Atlanta, GA 30328	R14-0005-004
6.	Kipco Properties, LLC	270 Tilton Road, Suite 1 Northfield, NH 03276	R14-0008-001
7.	Big Oak Enterprises, LLC	37 Riverside Business Park Northfield, NH 03276	R14-0008-002
8.	Store Master Funding XV, LLC c/o Eptam Plastics	2 Riverside Business Park Northfield, NH 03276	R14-0008-004
9.	Daniel Turner 42 Real Estate, LLC	2030 Main Street, Suite 302 Dallas, TX 75201	Developer
10.	Erin Lambert P.E. Wilcox & Barton, Inc.	2 Home Ave Concord, NH 03301	Engineer
11.	Timothy Bernier T.F. Bernier, Inc.	PO Box 3464 Concord, NH 03302-3464	Surveyor
12.	Derick Woodcock Moltus Building Group	PO Box 47 Hemlock, MI 48626	Construction Manager
13.	Sally Cormier Oldoin Cormier Revocable Trust	5 Leavitt Road Sanbornton, NH 03269	Owner
14.			
15.			

Design Review :	\$100.00
MAJOR Site plan :	
\$300.00 + \$150/living unit or	
\$150/1500 sq. ft. commercial	
MINOR Site Plan:	
\$100.00 + \$150/living unit or	
\$150/1500 sq. ft. commercial	
ABUTTER NOTIFI-	
CATION/ABUTTER	\$10.00

Total # of Abutters X \$10.00	\$130.00
Application Fee	\$600.00
Total Due:	\$730.00
Date Received	_____

**TOWN OF NORTHFIELD
MAJOR SITE PLAN REVIEW CHECKLIST**

Applicant Name:

42 Real Estate LLC.

Date of Application:

01/09/2024

Submittal Requirements: Please check N/A if an item is truly Not Applicable. Otherwise, a waiver request will be required, in writing, for any items not submitted as part of the application. The waiver request must be made at the time the application is made at the Town Offices. This checklist provides guidance regarding minimum requirements for **Major** Site Plan Review. Other information and documentation may be required within the Town of Northfield Site Plan Review Regulations and at the discretion of the Planning Board.

General

- | YES | NO | N/A | |
|-------------------------------------|--------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. On a completed Site Plan Application form completed and endorsed by the property owner(s) and his/her agent. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2. Include an attached statement authorizing the agent, if any, to act on behalf of the property owner. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Include a fee in accordance with the fee schedule in Section 12 of the Regulations. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Include six (6) black or blue-line copies of a site plan as described in Section 6 of the Regulations and six (6) copies of each other required plan. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Include ten (10) sets of reduced pans not larger than eleven by seventeen (11 x 17) inches. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Include the names and addresses of all abutters. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Include all required State and Federal permits or evidence that the permit has been applied for. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. Include a statement describing the development including the use or uses to conducted on the lot, or change of an existing use, or augmentation of an existing use |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. Include an impact statement in narrative form addressing the proposed projects purpose, scope of operation, and impact on the immediate area and the town (see Section 5.3 of the Regulations). |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 10. Include written notification of a building permit denial outlining the reasons for such a denial. This notification is available on a form completed by the Selectmen, or their Authorized Agent (Building Inspector). |

- | YES | NO | N/A | |
|--------------------------|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 11. Include a written request for required waivers. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 12. If the development is to be in stages or phases, include a description of the projects in terms of such stages or phases. |

Site Plan Requirements

- | | | | |
|-------------------------------------|--------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. A completed Site Plan prepared by a licensed land surveyor or certified engineer registered in the State of New Hampshire. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. A completed Site Plan must be drawn to scale of not less than one (1) inch equals fifty (50) feet. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Plan size (margin to margin) shall be a minimum size of 8 ½ x 11 inches, and a maximum size of 22 x 34 inches. Appropriate lines shall be used for plans exceeding the maximum limit. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Include a Title Block which includes: <ul style="list-style-type: none"> a) Title of plan; b) Owner's name and address, and that of any agent; c) Date the plan was prepared and dates of subsequent revisions; d) Scale of the plan; e) Name, address, and seal (if applicable) of the preparer of the plan. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. A North Arrow. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. A Bar Scale. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. An approval block containing the statement "Approved by the Northfield Planning Board," and two lines for the signatures of the Planning Board Chairman and the Secretary, and a blank date line. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. A 2 x 1 ½ inch (approximate) space adjacent to the approval block containing the following statement:
PURSUANT TO THE SITE PLAN REVIEW REGULATIONS OF THE
NORTHFIELD PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED
HEREON EXPIRES ONE YEAR FROM THE DATE OF APPROVAL. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. Boundary lines of the entire parcel showing bearings, distances and monument locations, and be stamped by a licensed land surveyor. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. Distances of all existing buildings and structures from boundary lines and all existing/proposed buildings or structures. |

YES	NO	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Distances of all proposed buildings and structures from boundary lines and all existing/proposed buildings or structures.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Names of all abutting property owners.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. Location and layout of existing and proposed buildings, structures, and signs.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Existing and proposed contours at two (2) foot intervals for the area of work and five (5) foot intervals for the remaining area. Where a change in grade is proposed, existing contours shall be dotted lines and finished elevations solid lines.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Area of entire parcel in acres and square feet.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. Zoning and Special District boundaries.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17. Deed reference and tax map number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18. Location, width, curbing, and paving of access ways, egress ways, and streets within the site.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19. Location and layout of all the on-site parking and loading facilities.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20. Location and size of all municipal and non-municipal utilities appurtenances including: water, sewer, electric, telephone, gas lines and fire alarm connections, indicating whether overhead or underground. The Plan is also to include profiles of water, sewer, and drainage. If not serviced by municipal utilities, the Plan shall show the location of wells and septic system designs.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21. Type and location of solid waste disposal facilities.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22. Location, elevation and layout of catch basins and other surface drainage features.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23. Location of all physical/natural features including water bodies, watercourses, wetlands, vegetation/foilage lines, soil types, railroads, rock outcroppings and stone walls.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	24. Dimensions and area of all property to be dedicated for public use or common ownership.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	25. Location of Flood Hazard boundaries.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	26. Date and permit numbers of all required state and federal permits.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	27. Location of all buildings, wells, and leach fields within one hundred and fifty (15) feet of the parcel.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	28. Dimensions, area and minimum setback requirements of all existing and proposed lots.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	29. Proposed landscaping plan including size and type of plant material.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30. Pedestrian walks providing circulation through the site.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	31. Location and size of proposed signs, walls and fences.

- | YES | NO | N/A | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 32. Location and type of lighting for outdoor activities. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 33. Location, width, description, and purpose of easements or rights-of-way. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 34. If the proposal contains off-site improvements, then the areas of off-site improvements shall be a part of the site plan and all pertinent requirements of the Regulations shall apply. |

Location Plan Requirements

- | | | | |
|--------------------------|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1. Include a location plan at a minimum scale of one (1) inch equals one thousand (1,000) feet, showing the following: |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2. Property lines of the parcel being developed in relation to the surrounding area within a radius of two thousand (2,000) feet with tax map numbers. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 3. Names and locations of existing town streets including the nearest intersection of said streets. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. Names and locations of streets within the proposed development. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 5. Names and locations of watercourses and water bodies on and adjacent to the site. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 6. Nearby community facilities such as any schools, churches, parks, etc. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 7. Condominium subdivisions shall be written at the same scale as the Northfield Tax Map. |

To the best of my knowledge, the information above and that accompanies this request is true and correct. I understand that any approval based on incorrect information and data may be reviewed and withdrawn.

Date: 1/18/2024

Signed: 

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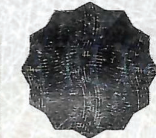
1/12/2024

WILCOX & BARTON, INC. 12/00
PO BOX 1630
DERRY, NH 03038

PAY TO THE ORDER OF Town of Northfield

\$ **730.00

Seven Hundred Thirty and 00/100 ***** PROTECTED AGAINST FRAUD ***** DOLLARS



Town of Northfield

Walter King

MEMO

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Project Narrative

Project: 42 FL Northfield PEC – Distribution Warehouse
Address: South Park Avenue, Northfield, NH 03276
Owner: Odilon A. Cormier Revocable Trust
Applicant: 42 Real Estate, LLC

The 42 Real Estate, LLC has a Purchase & Sale agreement with the Odilon A. Cormier Revocable Trust, to purchase lot 5 of the South Park Drive Subdivision (Map R14, Lot 5-5). 42 Real Estate, LLC proposes to construct an approximately 6,000-square foot distribution facility with associated parking, driveway, utilities, and stormwater management systems. The distribution facility will receive packages by tractor trailers and distribute them to local delivery trucks.

The parcel is in the C/I – Commercial/Industrial zoning district and has a total area of 10.08 acres with a total developable area of approximately 3.54 acres. The existing property is undeveloped, entirely pervious with brush/wooded ground cover, and has wetlands running through the western end of the parcel. The project will not require a Town of Northfield special use permit for development within a wetlands buffer zone, a state wetlands permit for driveway crossings, or an alteration of terrain permit for ground disturbances. The northwestern portion of the project parcel is located within the groundwater protection zone. No construction activity is proposed within the groundwater protection zone.

The project parcel has frontage on both South Park Drive and NH Route 140. Access to the new facility is proposed through one new driveway from South Park Drive. The new driveway will require a NHDOT access permit, which may include a traffic study to assess impacts on surrounding roadways. The previously constructed UPS facility on South Park Drive included the widening of Rte. 140 to provide a right turn lane into the development and widened shoulder on the west bound lane to provide additional space for turning vehicles. The traffic study developed for the UPS project included the future build out of the park and therefore no offsite improvements are anticipated.

Construction activities for the project are proposed to disturb 2.29-acres of land and will create 0.95-acres of new impervious cover. Stormwater runoff from the building, parking lot, loading docks, and portions of the new driveways are proposed to be conveyed overland to a new infiltration basin, which is located north of the new building near the Route 140 right-of-way. The proposed infiltration system is designed to treat and infiltrate all collected runoff from up to the 50-year design rainfall. A portion of the driveway is proposed to be collected in a closed drainage network and conveyed to a dry well and infiltrated into the groundwater. The proposed stormwater systems do not increase the stormwater discharge from the site.

The new distribution warehouse is proposed to be served by municipal sewer and water. Existing sewer and water utilities were designed, approved, and installed in South Park Drive to service the subdivided parcels. Sewer from the new building is proposed to tie into a pressure sewer system at an existing stub in South Park Drive. Similarly, water and natural gas services

for the facility are proposed to also tie into existing stubs in South Park Drive. The building's water service shall supply sufficient domestic water as defined by the New Hampshire building code. No fire suppression system is proposed. Electrical and communication services are proposed to be supplied to the facility by underground ducts from existing services on South Park Drive.

Proposed Project Design Standards and Requirements

The proposed development plans have considered various design aspects in order to protect the public health, safety, and welfare of the Town of Northfield and Lakes Region community and to promote balanced, responsible, and desirable growth within the community. The following outline addresses the project's design standards and development requirements in accordance with Section 8 of the Town of Northfield Site Plan Regulations (SPR).

- 8.1 The proposed facility design and operation shall comply with all applicable statutory provisions, zoning ordinances, subdivision regulations, building codes, the most recent revision of the Master Plan, and the Capital Improvements Program of the Town.
- 8.2 The new building is proposed as a single-story building (20'-6" distribution warehouse) and will therefore comply with the three-story limit. The building construction type and size do not require that a fire suppression system be installed. Fire safety design will meet New Hampshire fire and building codes and NFPA 1. Water supply for the proposed facility shall be confirmed with the Tilton-Northfield Fire District. The facility site design is proposed to provide adequate space for year-round access for the fire department. A new fire hydrant is proposed on the site.
- 8.3 The proposed facility is expected to have minimal public visitation. There are no pedestrian or bicycle designated facilities on NH Rte. 140 or South Park Drive. The proposed facility will receive product packages by tractor trailers. Products will be sorted and loaded on to local delivery trucks for distribution to the area. Pedestrian traffic on-site is proposed to be limited to travel between the parking areas and the building entrances – outside the proposed designated travel paths for tractor trailers and delivery vehicles. No additional pedestrian or bicycle facilities are proposed for the development.
- 8.4 Access to the new facility is proposed through a new driveway from South Park Drive. The driveway is proposed to separate the semi-truck traffic accessing the loading docks from the delivery vehicles and employee traffic. The new driveways will require a NHDOT access permit, which includes a traffic study to assess impacts on surrounding roadways. The accessway to the site is proposed to have a center line radius of greater than 40 feet, a maximum grade of 5%, and a minimum travel width of than 30 feet. The facility is proposed to be equipped with an 8' chain-link fence and gate to prevent unauthorized access to the site.
- 8.5 A noise and visual buffer of natural trees and vegetation is proposed along the majority of the property boundaries at a minimum width of 20-feet-wide. The only gaps in the buffer are located at the drive and where the water line enters the site. Adequate parking and loading areas are proposed for the new facility and designed such that each space is proposed to have safe and uninhibited access and the drainage for the impervious surfaces is proposed to prevent the creation and accumulation of ice in parking areas.

- 8.6 All employee parking spaces are proposed to be 9-feet-wide by 18-feet-long with minimum driveway aisle widths of 24 feet for 2-way traffic, all ADA accessible spaces exceed the minimum dimensional requirements, and all parking/vehicle storage spaces at 90 degrees to the driveway aisles.
- 8.7 The proposed facility does not conform to an existing building use per the Town of Northfield parking standards. The facility parking requirements were provided by the future landowner and occupant (42 Real Estate, LLC) and founded on similar, existing distribution warehouse facilities. The number of proposed parking spaces is based on the size of the proposed distribution facility, the number of employees, and the number of employee shifts.
- The location will receive, and ship packaged products. There will be vehicular parking and traffic 24 hours each day to and from the site. During the night a tractor-trailers will deliver product for each route based at the facility. In the early morning the Route Sales Representative (R.S.R.) comes to the site, pulls their route van out, backs his personal vehicle in the vacated space, moves their van to its pre- assigned dock position, loads their route van and then departs to make their deliveries. The R.S.R. will return to the site when they have completed their deliveries and park in one of the empty parking spaces. The process then begins again that evening. In this way the route van parking doubles as auto parking. Therefore, auto parking will be minimal.
- 8.8 All parking and site facilities comply with the Americans with Disabilities Act (ADA).
- 8.9 It is understood that Town staff may determine the proposed project has the potential for regional impacts. In response, the abutting towns of Tilton and Belmont and the Lakes Region Planning Commission (LRPC) shall be notified of the project. Any additional provisions set forth during the regional impact review shall be adopted to the proposed development.
- 8.10 A Stormwater Management Plan has been prepared for the proposed facility. See the attached Stormwater report.
- 8.11 The facility is anticipated to be provided with sufficient domestic water supply as defined by the New Hampshire building codes. Domestic water will tap off the existing 10-inch main on South Park Drive. A new curb stop will be provided at the edge of the South Park Drive right-of-way. The existing 6-inch stub to the property will be utilized to serve the new fire hydrant on the site. The expected demand for the facility is 150 gallons/day based on Table 3.3 from Metcalf & Eddy/AECOM “Wastewater Engineering Treatment and Resource Recovery,” 5th Edition in accordance with NH Env-Wq 700.
- 8.12 For this type of commercial facility, a 1:1 ratio of water and sewer demand is expected. Sewage for the facility will be gravity fed from the building to a new pump station. The pump station will connect to an existing stub tying into the pressure sewer main in South Park Drive.

- 8.13 A Salt Minimization Plan has been prepared for the proposed facility. See the attached Stormwater Management Plan for a copy of the plan.
- 8.14 Electrical and communication services are proposed to be supplied to the facility by underground ducts from existing services on South Park Drive. All proposed non-municipal utility specifications and locations shall be coordinated with their respective utility companies.
- 8.15 The property is undeveloped and is wooded and/or wooded with brush. As a result, clearing is required for the project. Post-construction, all remaining disturbed landscape areas shall be reseeded and fully stabilized. A Stormwater Pollution and Prevention Plan (SWPPP) shall be implemented for construction activities to establish erosion and sediment controls for the project. The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area. No results were found in or around the project area. A copy of a results letter from the Natural Heritage Bureau (NHB) is attached to the provided Stormwater Management Plan. The facility is sited on the eastern portion of the property away from the western wetlands on-site. No proposed structures will obstruct the views of natural or historical resources in the area for abutters. The property is zoned as commercial/industrial and matches the character of other commercial/industrial developments on Tilton Road and South Park Drive.
- 8.16 An estimated 99,950 square feet of land disturbances is proposed for the project. However, approximately 70% of the project parcel is proposed to remain undisturbed in its natural state, this includes all the wetlands and associated buffers on the western end of the property. A noise and visual buffer of natural trees and vegetation is proposed along most of the property boundaries at a minimum distance of 20 feet wide.
- 8.17 The building is proposed to be one-story high and approximately 6,000 square feet in area. The appearance is proposed to consist of mostly charcoal and ash gray aluminum siding and roofing to provide a natural hue and sturdy construction for a commercial/industrial building type. Please see included building elevations and color examples.
- 8.18 An outdoor lighting plan has been submitted with the attached plan set. See the attached plan for design details and specifications.
- 8.19 No signs are proposed for the site beyond regulatory and directional traffic signs.
- 8.20 No underground petroleum storage tanks are proposed for the project.
- 8.21 The facility will need a Multi-sector General Permit (MSGP) for stormwater discharges associated with industrial activity; however, the facility qualifies for a Certificate of No Exposure, because there are no industrial processes for the proposed facility, the proposed site does not have any high load areas, and no waste will be exposed to

rainwater. No vehicle maintenance or washing will be performed at the facility. No building point discharges to the air are proposed.

8.22 The project parcel is not identified as a Special Flood Hazard Area.



Impacts to the Town of Northfield

The project has considered potential impacts to the town and the site's surrounding area. The following outlines the aspects of consideration for the project's design and development in accordance with Section 6.3.B-9 SPR.

- a. The proposed facility is a commercial development, which will generate no additional public-school attendance, facility employees are anticipated to be drawn from the local work force. The facility is located in a commercial/industrial area with a direct route to I-93, Exit 20 via NH Route 140 (Tilton Road) and does not impede travel routes in residential areas or public schools in the region.
- b. A traffic study for the proposed facility may be performed if required by NHDOT. A driveway permit from the New Hampshire Department of Transportation (NHDOT) will be required prior to start of construction.
- c. No impacts to the number of local residents are expected, facility employees are anticipated to be drawn from the local work force.
- d. Per the agreement between the Town of Northfield and the Cormier's, the Town will take over South Park Drive when the property value of the parcels in the South Park subdivision reaches a minimum threshold. Thus, it is assumed that this property value represents the tax income necessary to cover the maintenance and upkeep of the road and other town provided service such as fire and police services.
- e. The expected sewer demand for the facility is 150-gallons per day and is based on industry data for vehicle washing and Table 3.3 from Metcalf & Eddy/AECOM "Wastewater Engineering Treatment and Resource Recovery," 5th Edition in accordance with NH Env-Wq 700. For this type of commercial facility, a 1:1 ratio of water and sewer demand is expected. No future development is currently planned for the facility. Proposed design plans have been made to maximize the potential use of the property for the facility development.
- f. No impacts to the public safety are expected from the operation of the proposed facility. Low pedestrian densities on Route 140 help ensures low pedestrian accident risks. Any intersection improvements required as a result of the construction of the new facility will reduce the impact of the new traffic entering and exiting Route 140. Additionally, no industrial processes exist at the facility prevents increases in threats for fire or point pollution.
- g. The current property is undeveloped. Proposed development will increase the value of the property and respectively generate additional tax revenue from the property for the town.
- h. Existing surfaces are entirely pervious with wooded or wooded/brush ground cover; wetlands along the western property; and grade slopes mainly from 0 to 15 percent,

generally running from south to north and south to west with low points along route 140 and at the on-site wetlands. Proposed work will add 0.95-acres of new impervious surfaces with flat slopes of less than 5% around the building area. All stormwater runoff from the building area and surrounding parking lot and portions of the driveway shall be conveyed to the infiltration basin. The remaining driveway area shall be directed to the dry well. The infiltration basin and dry well will treat runoff and remove surface pollutants. Both the peak stormwater flow and discharge volume will be attenuated to value equal to or less than the pre-development conditions for the 2-year, 10-year, 25-year, and 50-year storm events. No significant impacts to site or proposed stormwater systems are expected for the 100-year storm event.

- i. No new wells are proposed for the facility. There shall not be any increases in the consumption of groundwater as a result of operations for the proposed facility. The stormwater system is designed to infiltrate stormwater and cause no reduction in groundwater recharge from the parcel.
- j. The proposed facility functions as a warehouse distribution facility for tenants of 42 Real Estate, LLC. Refuse generation shall increase from existing site use but will not increase beyond a level comparable to other low refuse generating commercial facilities.
- k. The facility is required to apply for coverage under Multi-sector General Permit (MSGP) for stormwater discharges associated with industrial activities. The facility qualifies for a Certificate of No Exposure because no industrial process, vehicle-washing or maintenance will be exposed to rainwater. Waste from maintenance activities will be disposed of in accordance with state and federal regulations, and wash water will be discharged to the municipal sewer.
- l. The property is undeveloped and is wooded and/or wooded with brush. As a result, clearing is required for the project. The site layout and construction disturbances have been concentrated to the eastern portion of the lot leaving, to the maximum extent possible, an undisturbed buffer around the perimeter. Post-construction, all remaining disturbed landscape areas shall be reseeded and fully stabilized. A Stormwater Pollution and Prevention Plan (SWPPP) shall be implemented for construction activities to establish erosion and sediment controls for the project.
- m. The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area. No results were found in or around the project area. A copy of a results letter from the Natural Heritage Bureau (NHB) is included with the attached copy of the Stormwater Management Plan.
- n. The facility is sited on the eastern portion of the property with existing tree lines around the property perimeter. No proposed structures will obstruct the views of natural or historical resources in the area for abutters.
- o. The facility parcel is zoned for commercial/industrial and matches the character of other commercial/industrial development on Tilton Road and South Park Drive. The

surrounding parcels are also zone commercial/ industrial and could be developed in a similar manner.

- p. Existing utilities were designed, approved, and installed in South Park Drive to service the subdivision parcels. New water, sewer, and natural gas services will connect to the western face of the proposed building and tie into existing stubs in South Park Drive. Similarly, facility electric services will connect to the northern face of the proposed building via underground ducts and tie into an existing utility connection on South Park Drive.
- q. The facility is anticipated to be provided with sufficient domestic water supply as defined by the New Hampshire building codes. Domestic water will tap off the existing 10-inch main on South Park Drive. A new curb stop will be provided at the edge of the South Park Drive right-of-way. The existing 6-inch stub to the property will be utilized to serve the new fire hydrant on the site. The expected demand for the facility is 150 gallons/day based on Table 3.3 from Metcalf & Eddy/AECOM “Wastewater Engineering Treatment and Resource Recovery,” 5th Edition in accordance with NH Env-Wq 700.
- r. The facility will be provided with sufficient domestic water as defined by the New Hampshire building codes and NFPA1. Domestic water will be tapped the existing 10-inch main along South Park Drive. A separate water shut off will be installed on the domestic line after tapping off from fire suppression water service line, and a gate valve shall be installed at the water service tap off from the water main in South Park Drive. The expected demand for the facility is 150-gallons per day and is based Table 3.3 from Metcalf & Eddy/AECOM “Wastewater Engineering Treatment and Resource Recovery,” 5th Edition in accordance with NH Env-Wq 700.
- s. For this type of commercial facility, a 1:1 ratio of water and sewer demand is expected. Sewage for the facility will be gravity fed from the building to a new pump station. The pump station is proposed to connect to an existing stub tying into the pressure sewer main in South Park Drive.



00 foot Abutters List Report

Northfield, NH
January 02, 2024

Subject Property:

Parcel Number: R14-0005-005
CAMA Number: R14-0005-005
Property Address: SOUTH PARK DRIVE

Mailing Address: CORMIER, ODILON A. REVOCABLE T
CORMIER, NICOLE M. TRUSTEE
ARENA, SUZANNE C. TRUSTEE 5
LEAVITT ROAD
SANBORNTON, NH 03269

Abutters:

Parcel Number: R14-0004-05A
CAMA Number: R14-0004-05A
Property Address: 90 SHAKER ROAD

Mailing Address: KEYES, CAROL KEYES, JEAN
90 SHAKER ROAD
NORTHFIELD, NH 03276

Parcel Number: R14-0004-05B
CAMA Number: R14-0004-05B
Property Address: 225 TILTON ROAD RT 140

Mailing Address: WINNIPESAUKEE COMMERCIAL PROPE
289 MORRILL STREET
GILFORD, NH 03249

Parcel Number: R14-0004-05A
CAMA Number: R14-0004-5AA
Property Address: SHAKER ROAD

Mailing Address: NORTHERN NE TELEPHONE OPER LLC
C/O TAX DEPT 2116 SOUTH 17TH ST
MATTOON, IL 61938

Parcel Number: R14-0005-002
CAMA Number: R14-0005-002
Property Address: SOUTH PARK DRIVE

Mailing Address: 140 SOUTH PARK LLC
PO BOX 181
TILTON, NH 03276

Parcel Number: R14-0005-004
CAMA Number: R14-0005-004
Property Address: 4 SOUTH PARK DRIVE

Mailing Address: BT NEWYO, LLC
55 GLENLAKE PARKWAY
ATLANTA, GA 30328

Parcel Number: R14-0008-001
CAMA Number: R14-0008-001
Property Address: 250 TILTON ROAD RT 140

Mailing Address: KIPCO PROPERTIES, LLC
270 TILTON ROAD STE 1
NORTHFIELD, NH 03276

Parcel Number: R14-0008-002
CAMA Number: R14-0008-002
Property Address: 37 RIVERSIDE BUS PARK

Mailing Address: BIG OAK ENTERPRISES, LLC
37 RIVERSIDE BUSINESS PARK
NORTHFIELD, NH 03276

Parcel Number: R14-0008-004
CAMA Number: R14-0008-004
Property Address: 2 RIVERSIDE BUS PARK

Mailing Address: STORE MASTER FUNDING XV, LLC
C/O EPTAM PLASTICS, LTD 2 RIVERSIDE
BUSINESS PARK
NORTHFIELD, NH 03276



www.cai-tech.com

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SITE PHOTOS



Figure 1: Aerial view of property (west of South Park Drive).



Figure 2: Southern view at the intersection of South Park Drive and Tilton Road. Project parcel seen on right side of roadway.



Figure 3: Southwestern view along project parcel frontage on Tilton Rd.



Figure 4: Southeastern view along project parcel frontage on Tilton Rd.



Figure 5: On-site view of vegetation (poplar trees with bittersweet). Sourced from Stoney Ridge Environmental LLC Site-Specific Soil Report.



Figure 6: On-site view of vegetated slope. Sourced from Stoney Ridge Environmental LLC Site-Specific Soil Report.



Figure 7: On-site view of wetland area on western portion of the project parcel (outside of proposed development). Sourced from Stoney Ridge Environmental LLC Site-Specific Soil Report.



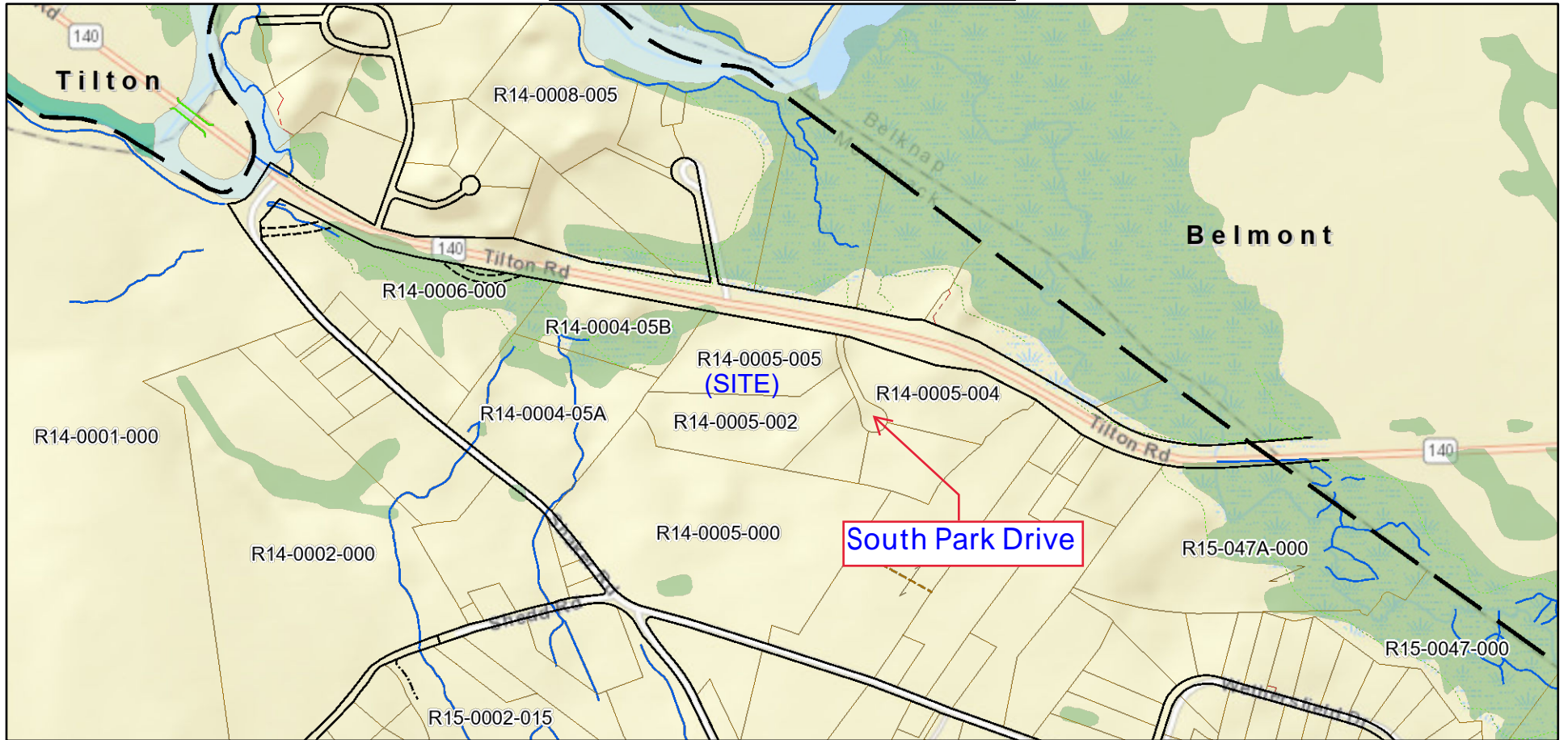
Northfield, NH

1 inch = 1000 Feet



January 18, 2024

www.cai-tech.com



	LACUSTRINE		WaterLines		Tract Line		Property Hook		PWater
	PALUSTRINE		Private Road ROW		Utility		RoadNotPar		Property Line
	RIVERINE		Right of Way		Bridge		Wetland		Public Road

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Wilcox & Barton INC.

CIVIL • ENVIRONMENTAL • GEOTECHNICAL

STORMWATER MANAGEMENT PLAN for

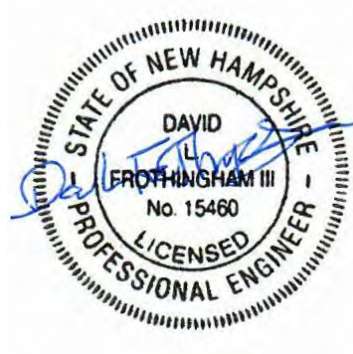
**42 FL Northfield PEC – Distribution Warehouse
South Park Drive
Northfield, NH 03276**

Prepared for:

42 Real Estate, LLC
2030 Main Street, Suite 342
Dallas, TX 75201

Prepared by:

Wilcox & Barton, Inc.
2 Home Avenue
Concord, New Hampshire 03301
Contact: David L. Frothingham III, PE, (802) 461-6828



**Wilcox & Barton, Inc.
Project No.: MLBG0001**

January 19, 2024

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1.0 PROJECT NARRATIVE

1.1 Project Description

The project consists of the development of an existing vacant/undeveloped parcel with one warehouse building and supporting infrastructure. The proposed project infrastructure includes the construction of a driveway, parking lot area, and installation of all necessary utilities to the proposed warehouse building. Stormwater management is provided for the project by the installation of one dry well and one infiltration basin. Work involved includes paving, landscaping, and the installation of stormwater management systems. Currently, the project parcel (Map R14 Lot 5-5) is undeveloped with the majority of the area being wooded with wetlands located on the western portion of the parcel. The project parcel has a total area of 10.81 acres (approximately 470,795 square feet). Construction activities are expected to add approximately 41,900 square feet of new impervious cover to the project property. The construction disturbance is below the regulated 100,000 square feet of disturbance and therefore does not necessitate an Alteration of Terrain Permit. The proposed stormwater management system consists of one dry well and one infiltration basin, which provide water quality treatment, quantity reduction, and rate control to pre-development levels.

1.2 Site Soils

On-site soils consist of Champlain loamy fine sand within the project area, which is hydrologic soil group A and is excessively well drained. The Champlain loamy fine sand has an infiltration rate measured at 6.0-20.0 inches/hour within the B Horizon. As a result, the site soils were modeled with an infiltration rate of 3.0 inches/hour, after a factor of safety of 2 was applied to the maximum infiltration rate of 6.0 inches/hour within the B Horizon for the soil. The Site-Specific Soil Survey Report is enclosed. Refer to the Site-Specific Soil Survey Report for more information.

1.3 Pre-Development Watershed

The pre-development watershed consists of the entire project area, which includes the eastern portion of the parcel with an extent to the eastern and southern property boundary. The existing lot is undeveloped and is fully wooded or wood/brush combination with wetlands located on the western portion of the parcel.

The project area slopes and/or directs flow in two general directions: to the north and to the west. The majority of the project area directs flow via overland flow to the northern property boundary and to the existing culvert located at Tilton Road. The culvert conveys flow to the north to the other side of the roadway. The remaining portion of the project area flows towards the west and to the on-site wetland.

As a result, the pre-development watershed has been modeled to two points of interest (POI). POI #1 includes the northern portion of the project area, which directs flow to the northern property boundary line and to the existing culvert and ultimately to the north of Tilton Road.

POI #2 includes the remaining portion of the project area which directs flow to the west to the on-site wetland. See the pre-development stormwater plan for sub-watershed boundaries and POI locations.

1.4 Post-Development Watershed

The post-development watershed consists of the same area as the pre-development watershed. Post-development cover will consist of driveways, sidewalks, the building rooftop, landscaped areas, and naturally vegetated areas. Construction of the project will not change the locations of the POI(s), though the drainage areas to each will change.

The project proposes stormwater management systems that will treat stormwater runoff to remove pollutants and detain peak flows to levels at or below the pre-development watershed conditions. To the maximum extent feasible, all runoff from the new impervious areas will be collected in the dry well and infiltration basin. Pre-treatment for the infiltration basin is provided through a sediment forebay and pre-treatment for the dry well is provided through the deep sump catch basin.

POI #1: The POI#1 post-development watershed will include the majority of the project area including: the warehouse building, the driveway access, the parking lot area, the affiliated stormwater systems, and the existing grass and woodland areas. The stormwater treatment practices in POI #1 will include one dry well at the driveway entrance and one infiltration basin on-site to adequately handle the runoff from the proposed impervious cover. All treatment systems effectively direct runoff to the northern property boundary line and to the existing culvert that ultimately discharges runoff across Tilton Road, which is where POI#1 is located and where the existing runoff is directed to.

POI #2: The POI#2 post-development watershed will include a minor portion of the project area where the proposed graded slope directs runoff to the western portion of the property and ultimately to the on-site wetland.

The infiltration basin is sized to treat the water quality volume – WQV through the pond’s storage capacity. The infiltration basin also has been designed to infiltrate the 50-year storm event and to confirm it does not overtop during the 50-year storm event and 100-year storm event. The drainage systems reflect the on-site soil conditions and affiliated estimated seasonal high-water table in the area of the respective system.

1.5 Schedule

Construction is planned to commence in Spring 2024 following the receipt of all local permits.

1.6 Points of Interest

There are two points of interest in the hydraulic model. Please see the pre-development and post-development watershed section for descriptions of the points of interest.

1.7 Erosion Sediment Control/Site Stabilization

The methods to be used to control sediment migration and erosion of the site include use of tracking control pads, temporary sedimentation basins, silt fence, check dams, landscaping, hydro-seeding, erosion control matting, and stone inlet protection at catch basins in accordance with best management practices.

The contractor will be responsible for all temporary erosion and sediment control measures during construction, while the property owner will be ultimately responsible for maintaining all permanent erosion and sediment control measures as may be required.

1.8 Water Quality

During construction activities, silt fence, stone inlet protection at catch basins, erosion control matting, and temporary seeding and mulching will maintain the quality of storm water leaving the site. Runoff from disturbed areas shall be directed to depressions to infiltrate into the groundwater and allow for settling of sediment/pollutants. After construction is completed and the site is stabilized, stormwater quality will be maintained by infiltration. Pretreatment is provided in the infiltration basin's sediment forebay and the dry well's deep sump catch basin before entering the respective treatment systems.

1.9 Summary of Results

POI		Peak Discharge					
		2-yr		10-yr		25-yr	50-yr
		Peak Q	Discharged Volume	Peak Q	Discharged Volume	Peak Q	Peak Q
#1	Pre	0.66 cfs	0.044 ac-ft	0.99 cfs	0.070 ac-ft	1.26 cfs	1.62 cfs
	Post	0.68 cfs	0.045 ac-ft	1.03 cfs	0.071 ac-ft	1.30 cfs	1.67 cfs
#2	Pre	0.00 cfs	0.000 ac-ft	0.00 cfs	0.000 ac-ft	0.00 cfs	0.00 cfs
	Post	0.00 cfs	0.000 ac-ft	0.00 cfs	0.000 ac-ft	0.00 cfs	0.00 cfs

1.10 Conclusions

The preceding table and following calculations indicate that the post-development peak flow rates of the property will be attenuated to a value approximately equivalent to/below the pre-development peak flow in the 2-year, 10-year, 25-year, and 50-year storm events within the accuracies of the model. Stormwater is collected in the proposed infiltration systems and treated by means of infiltration to the native materials prior to entering the groundwater table.

The proposed design meets the Env-Wq 1507.05 Channel Protection Requirement for peak flow rates. The 2-year, 24-hour post-development peak flow rates at all points of interest are equivalent to/less than the 2-year, 24-hour pre-development peak flow rates and the discharged volume has not increased over the pre-development volume by more than 0.1 acre-feet.

The proposed infiltration systems have been checked for the 100-year storm event to confirm that no overtopping occurs. The infiltration basin includes an outlet control structure and the dry well includes an outlet pipe that both allow for the runoff from the 100-year storm event to be metered out of the proposed systems without overtopping.

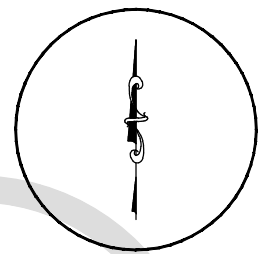
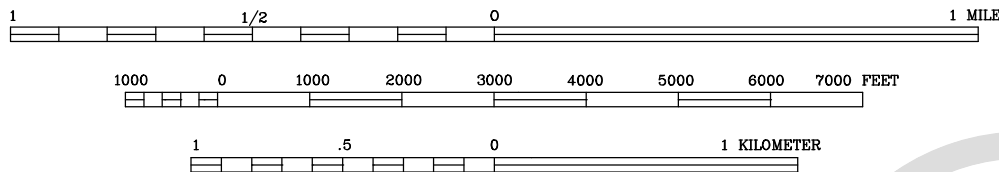
Calculations are included for the 2-year, 10-year, 25-year, and 50-year events.

2.0 WEB GIS INFORMATION

- 2.1 USGS Location Map
- 2.2 NHDES Screening Layers Map



SCALE: 1: 24,000



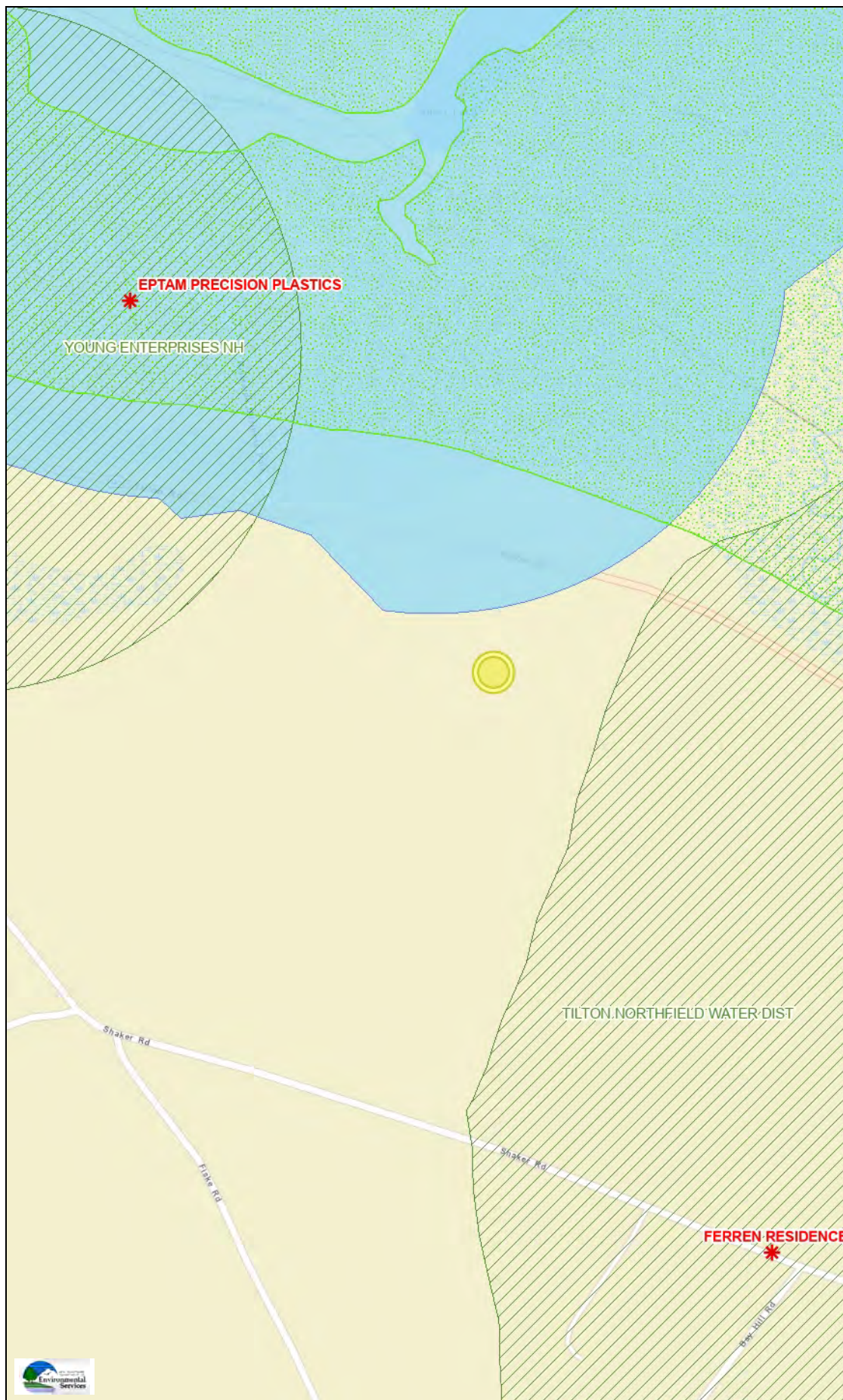
CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

DATE 01/03/2024	SCALE AS SHOWN	FILE MLBG0001-LOCATION MAP
APPROVED BY DLF	DRAWN BY JMJ	REVISED
OWNER NAME FRITO-LAY	JOB NUMBER MLBG0001	
LOCATION FRITO-LAY SOUTH PARK DRIVE NORTHFIELD, NH MAP R14, LOT 5-5	MAP SOURCE NORTHFIELD, NH USGS QUAD 2021	

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SITE LOCATION MAP

AoT Screening Layers



Legend

- Remediation Sites
- Coastal and Great Bay Regional Communities
- Designated Rivers Quarterly Buffer
- Public Water Supply Wells
- Groundwater Classification / GA1
- Groundwater Classification / GA2
- Water Supply Intake Protection Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarterly Buffer
- Class A - All Features
- All Lakes, with a Quarter Mile Buffer
- Outstanding Resource Water Watersheds
- Surface Waters with Impairment with Quarter Mile Buffer
- Watersheds with Chloride Impairments

Map Scale

1: 6,494

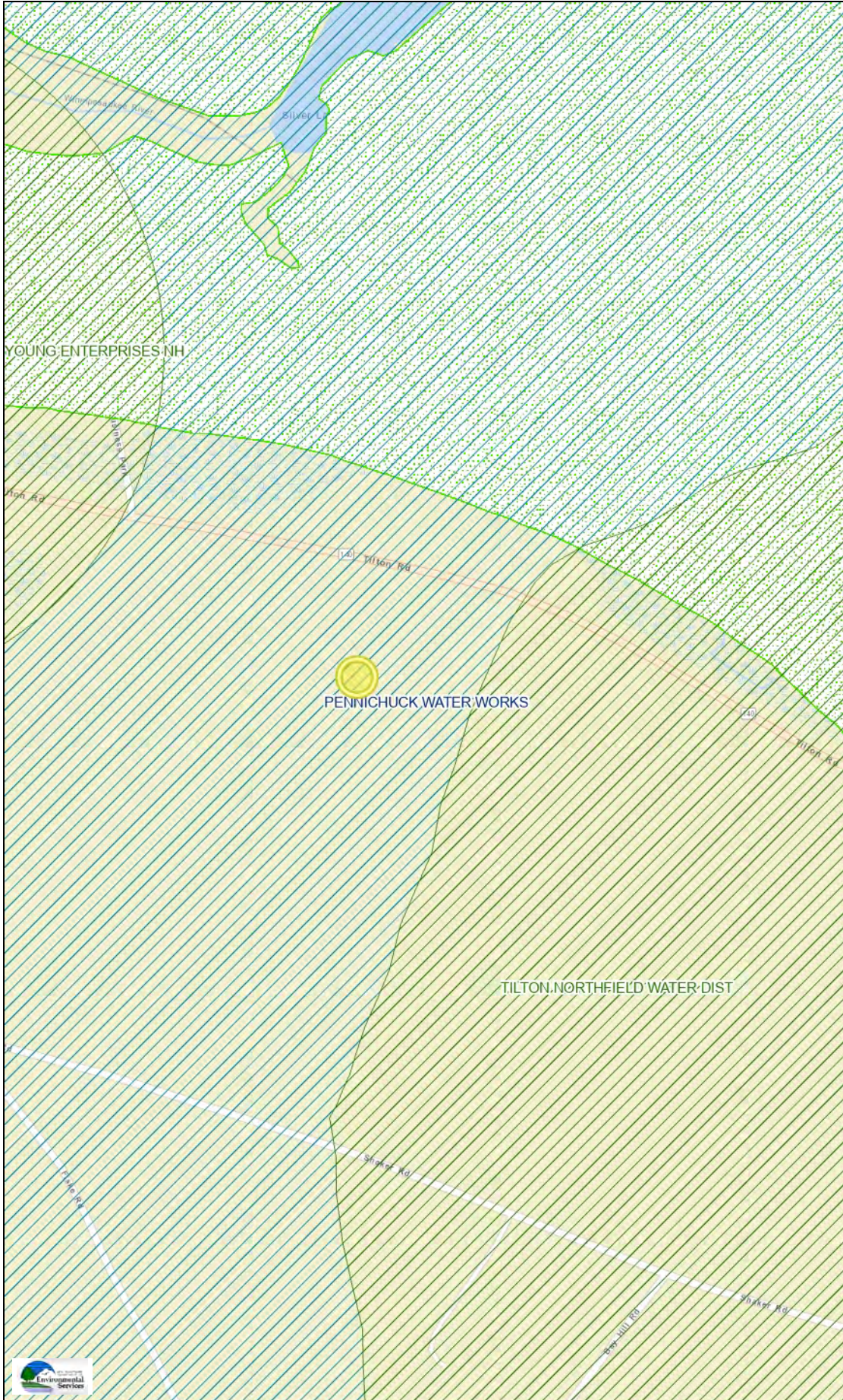
© NH DES, <http://des.nh.gov>

Map Generated: 1/3/2024











Notes

NHDES Screening Layers



Legend

-  Surface Waters with Impairment with Quarter Mile Buffer
-  Wellhead Protection Areas
-  Groundwater Classification / GAA
-  Source Water Protection Areas
-  Water Supply Intake Protection Areas
-  Groundwater Classification / GA1
-  Groundwater Classification / GA2
-  Outstanding Resource Water Watersheds

Map Scale

1: 6,494

© NH DES, <http://des.nh.gov>

Map Generated: 1/3/2024



Notes

3.0 NH NATURAL HERITAGE BUREAU REVIEW



New Hampshire Natural Heritage Bureau NHB DataCheck Results Letter

To: Jessica McNeill
2 Capital Plaza
Suite 305
Concord, NH 03301

From: NH Natural Heritage Bureau

Date: 1/3/2024 (This letter is valid through 1/3/2025)

Re: Review by NH Natural Heritage Bureau of request dated 1/3/2024

Permit Types: Town Review - Northfield, NH
Stormwater Pollution Prevention

NHB ID: NHB24-0020

Applicant: Jessica McNeill

Location: Northfield
Tax Map: R14, Tax Lot: 5-5
Address: South Park Drive

Proj. Description: The proposed project includes constructing one warehouse building (5,968 SF) with supporting driveway entrance, parking area, and stormwater mitigation systems.

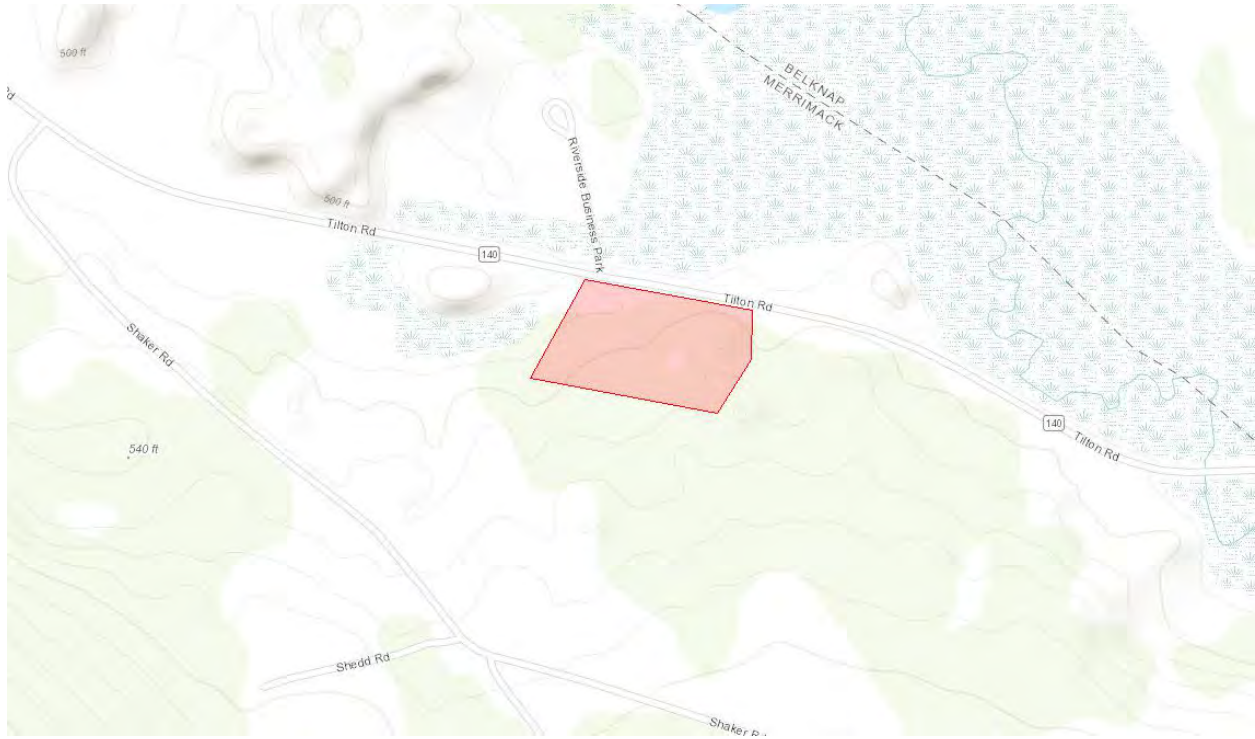
The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: NHB24-0020



4.0 NRCS SOIL INFORMATION



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for Merrimack and Belknap Counties, New Hampshire



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

Custom Soil Resource Report

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

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

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

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

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

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

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

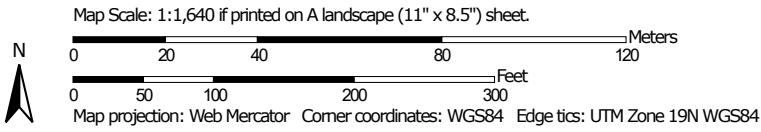
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map


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

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Merrimack and Belknap Counties, New Hampshire
 Survey Area Data: Version 29, Aug 22, 2023

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

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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
35B	Champlain loamy fine sand, 3 to 8 percent slopes	6.5	97.8%
35C	Champlain loamy fine sand, 8 to 15 percent slopes	0.1	1.6%
47C	Henniker fine sandy loam, 8 to 15 percent slopes, very stony	0.0	0.6%
Totals for Area of Interest		6.7	100.0%

Map Unit Descriptions

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

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

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

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

Merrimack and Belknap Counties, New Hampshire

35B—Champlain loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9dnd
Elevation: 250 to 2,940 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 90 to 135 days
Farmland classification: Farmland of local importance

Map Unit Composition

Champlain and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Champlain

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash derived mainly from granite, gneiss and schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 6 inches: loamy fine sand
H2 - 6 to 22 inches: loamy fine sand
H3 - 22 to 65 inches: loamy fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

Minor Components

Croghan

Percent of map unit: 10 percent
Landform: Terraces
Down-slope shape: Linear

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Across-slope shape: Linear
Hydric soil rating: No

Naumburg

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: Yes

Boscawen

Percent of map unit: 5 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Adams

Percent of map unit: 3 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Groveton

Percent of map unit: 2 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

35C—Champlain loamy fine sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9dnc
Elevation: 250 to 2,940 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 90 to 135 days
Farmland classification: Farmland of local importance

Map Unit Composition

Champlain and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Champlain

Setting

Landform: Terraces
Down-slope shape: Linear

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Across-slope shape: Linear

Parent material: Sandy outwash derived mainly from granite, gneiss and schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

H1 - 1 to 6 inches: loamy fine sand

H2 - 6 to 22 inches: loamy fine sand

H3 - 22 to 65 inches: loamy fine sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Ecological site: F144BY601ME - Dry Sand

Hydric soil rating: No

Minor Components

Becket

Percent of map unit: 5 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Adams

Percent of map unit: 5 percent

Landform: Outwash terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Croghan

Percent of map unit: 5 percent

Landform: Terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Boscawen

Percent of map unit: 3 percent

Landform: Terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Groveton

Percent of map unit: 2 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

47C—Henniker fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9dnl
Elevation: 250 to 2,940 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 90 to 135 days
Farmland classification: Farmland of local importance

Map Unit Composition

Henniker and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Henniker

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Basal melt-out till derived from granite, gneiss, or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
H1 - 1 to 4 inches: fine sandy loam
H2 - 4 to 34 inches: fine sandy loam
H3 - 34 to 65 inches: fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 18 to 38 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Minor Components

Pillsbury

Percent of map unit: 5 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: Yes

Canterbury

Percent of map unit: 5 percent
Landform: Drumlins
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Metacomet

Percent of map unit: 5 percent
Landform: Hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Becket

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chichester

Percent of map unit: 3 percent
Landform: Hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Millsite

Percent of map unit: 2 percent
Landform: Hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

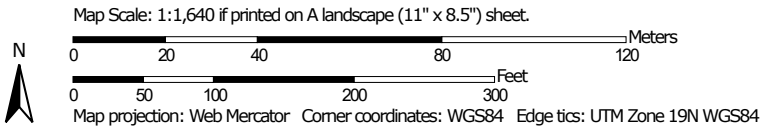
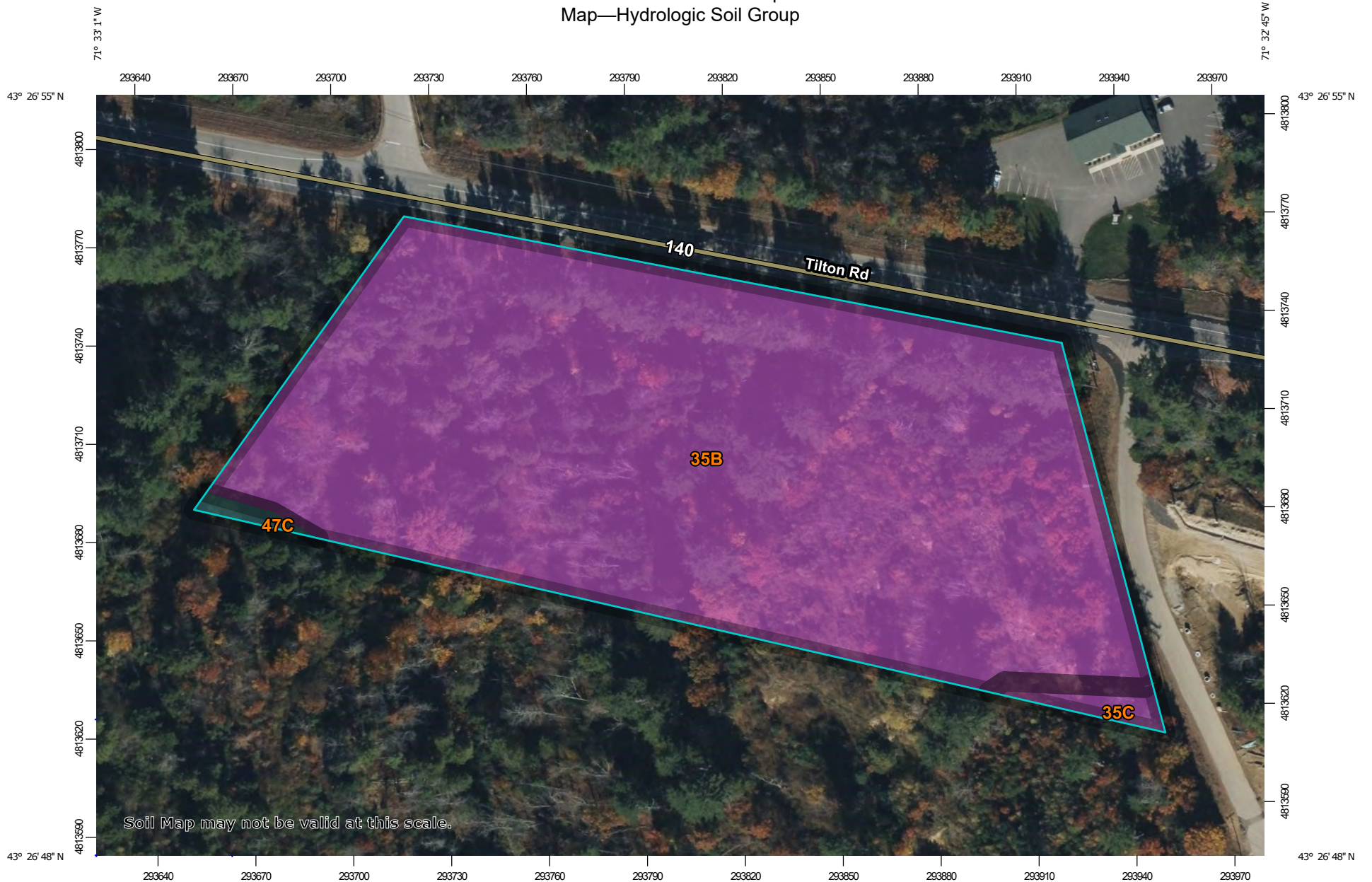
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Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.


If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

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Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

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: Merrimack and Belknap Counties, New Hampshire
 Survey Area Data: Version 29, Aug 22, 2023

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

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35B	Champlain loamy fine sand, 3 to 8 percent slopes	A	6.5	97.8%
35C	Champlain loamy fine sand, 8 to 15 percent slopes	A	0.1	1.6%
47C	Henniker fine sandy loam, 8 to 15 percent slopes, very stony	C	0.0	0.6%
Totals for Area of Interest			6.7	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

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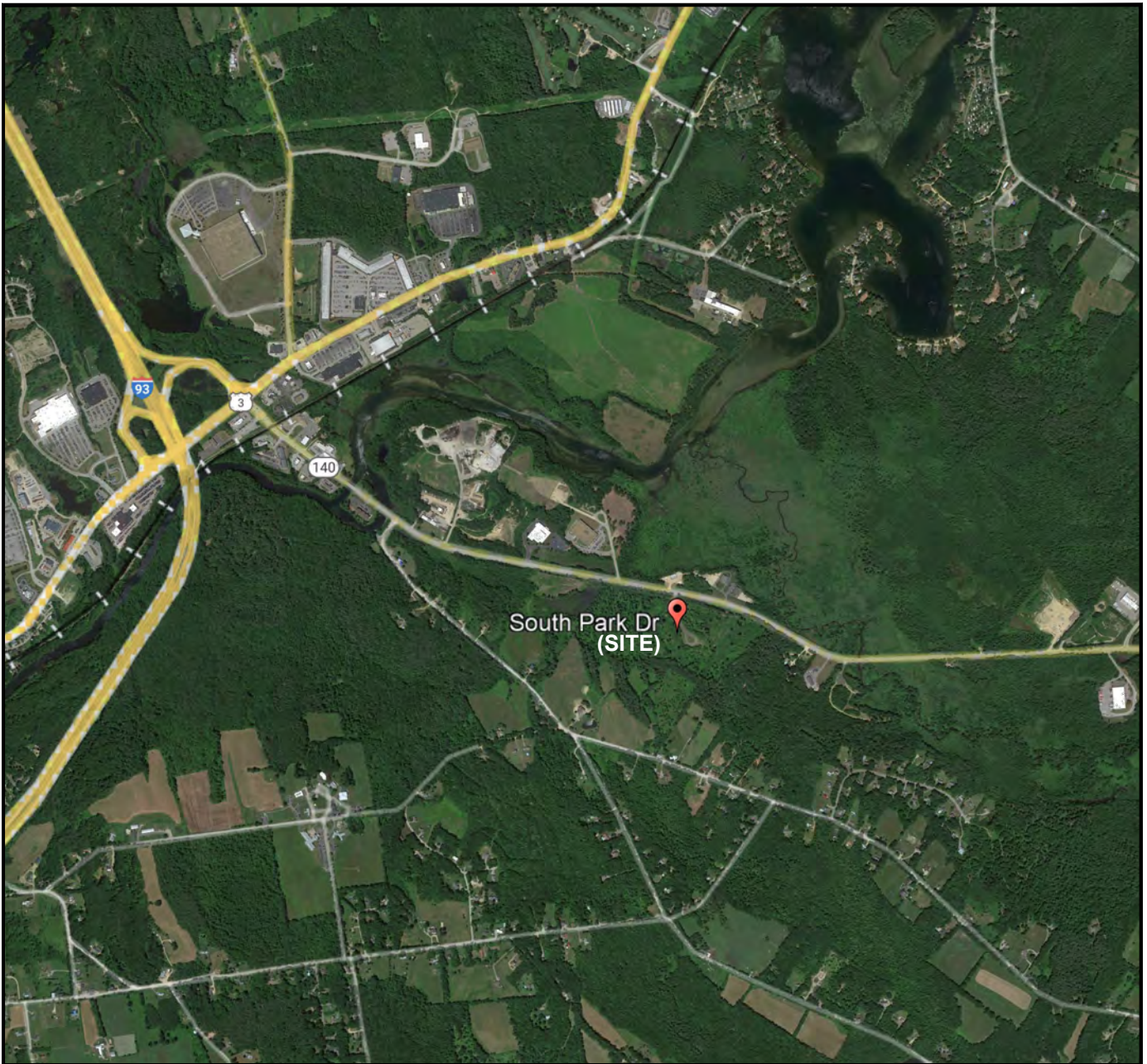
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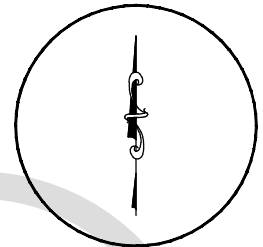
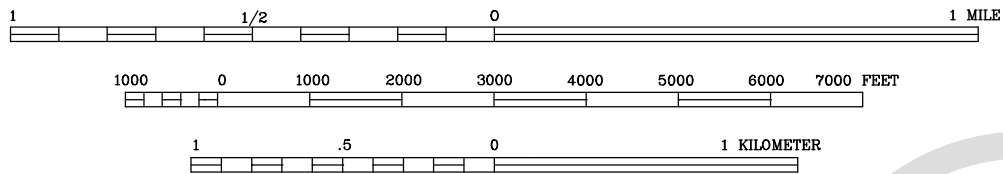
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5.0 AERIAL SITE PHOTOGRAPH



SCALE: 1: 750



NORTH AMERICAN VERTICAL DATUM OF 1988

DATE 01/03/2024	SCALE AS SHOWN	FILE MLBG0001-LOCATION MAP
APPROVED BY DLF	DRAWN BY JMJ	REVISED
OWNER NAME FRITO-LAY	JOB NUMBER MLBG0001	
LOCATION FRITO-LAY SOUTH PARK DRIVE NORTHFIELD, NH MAP R14, LOT 5-5	MAP SOURCE NORTHFIELD, NH USGS QUAD 2021	

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AERIAL VIEW
FIGURE 2

6.0 SITE PHOTOGRAPHS

SITE PHOTOS



Figure 1: Aerial view of property (west of South Park Drive).



Figure 2: Southern view at the intersection of South Park Drive and Tilton Road. Project parcel seen on right side of roadway.



Figure 3: Southwestern view along project parcel frontage on Tilton Rd.



Figure 4: Southeastern view along project parcel frontage on Tilton Rd.



Figure 5: On-site view of vegetation (poplar trees with bittersweet). Sourced from Stoney Ridge Environmental LLC Site-Specific Soil Report.



Figure 6: On-site view of vegetated slope. Sourced from Stoney Ridge Environmental LLC Site-Specific Soil Report.



Figure 7: On-site view of wetland area on western portion of the project parcel (outside of proposed development). Sourced from Stoney Ridge Environmental LLC Site-Specific Soil Report.

7.0 SITE DESIGN CRITERIA

- 7.1 Groundwater recharge volume calculations
- 7.2 BMP calculation worksheets



INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

Type/Node Name: Infiltration Pond-1

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes	Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← yes
1.53 ac	A = Area draining to the practice	
0.75 ac	A _I = Impervious area draining to the practice	
0.49 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.49 unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.75 ac-in	WQV = 1" x R _v x A	
2,728 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
682 cf	25% x WQV (check calc for sediment forebay volume)	
forebay	Method of pretreatment? (not required for clean or roof runoff)	
1,699 cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
13,421 cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
6,450 sf	A _{SA} = Surface area of the bottom of the pond	
3.00 iph	K _{satDESIGN} = Design infiltration rate ²	
1.7 hours	T _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	< 72-hrs
489.00 feet	E _{BTM} = Elevation of the bottom of the basin	
488.20 feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
486.67 feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
0.80 feet	D _{SHWT} = Separation from SHWT	≥ * ³
2.3 feet	D _{ROCK} = Separation from bedrock	≥ * ³
ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
yes	If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
yes	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
3.0 :1	If a basin is proposed, pond side slopes.	≥ 3:1
491.80 ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
492.58 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
493.00 ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES	10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES	If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{satDESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes: _____



INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

Type/Node Name: Dry Well-1

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes	Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← yes
0.20 ac	A = Area draining to the practice	
0.20 ac	A _I = Impervious area draining to the practice	
1.00 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.95 unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.19 ac-in	WQV = 1" x R _v x A	
690 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
172 cf	25% x WQV (check calc for sediment forebay volume)	
deep sump catch basin Method of pretreatment? (not required for clean or roof runoff)		
cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
2,657 cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
303 sf	A _{SA} = Surface area of the bottom of the pond	
3.00 iph	K _{satDESIGN} = Design infiltration rate ²	
9.1 hours	T _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	< 72-hrs
484.00 feet	E _{BTM} = Elevation of the bottom of the basin	
482.00 feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
481.00 feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
2.00 feet	D _{SHWT} = Separation from SHWT	≥ * ³
3.0 feet	D _{ROCK} = Separation from bedrock	≥ * ³
ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
	If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
yes Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
3.0 :1	If a basin is proposed, pond side slopes.	≥ 3:1
488.65 ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
491.03 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
493.63 ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES	10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES	If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{satDESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes: _____

8.0 HYDRAULIC CALCULATIONS

- 8.1 Extreme Precipitations
- 8.2 Pre-Development Stormwater Plan – SW.1
- 8.3 Post-Development Stormwater Plan – SW.2
- 8.4 Pre-development Conditions
 - 8.4.1 Drainage Diagram
 - 8.4.2 Area Listing
 - 8.4.3 Soil Listing
 - 8.4.4 1-yr Node Listing
 - 8.4.5 2-yr Node Listing
 - 8.4.6 10-yr Node Listing
 - 8.4.7 25-yr Node Listing
 - 8.4.8 50-yr Node Listing
 - 8.4.9 10-yr Storm Full Summary
- 8.5 Post-Development Conditions
 - 8.5.1 Drainage Diagram
 - 8.5.2 Area Listing
 - 8.5.3 Soil Listing
 - 8.5.4 1-yr Node Listing
 - 8.5.5 2-yr Node Listing
 - 8.5.6 10-yr Node Listing
 - 8.5.7 25-yr Node Listing
 - 8.5.8 50-yr Node Listing
 - 8.5.9 10-yr Storm Full Summary



Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing State	Yes
Location	
Latitude	43.447 degrees North
Longitude	71.544 degrees West
Elevation	150 feet
Date/Time	Wed Jan 03 2024 12:37:56 GMT-0500 (Eastern Standard Time)

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	0.49	0.65	0.81	1.01	1yr	0.70	0.96	1.17	1.47	1.85	2.33	2.57	1yr	2.06	2.47	2.89	3.55	4.09	1yr
2yr	0.32	0.49	0.60	0.80	1.00	1.26	2yr	0.86	1.15	1.45	1.80	2.23	2.76	3.09	2yr	2.44	2.98	3.46	4.14	4.73	2yr
5yr	0.37	0.58	0.73	0.98	1.25	1.58	5yr	1.08	1.46	1.83	2.27	2.80	3.44	3.90	5yr	3.05	3.75	4.35	5.11	5.81	5yr
10yr	0.42	0.66	0.84	1.14	1.48	1.89	10yr	1.28	1.75	2.19	2.72	3.33	4.07	4.65	10yr	3.60	4.47	5.18	5.99	6.79	10yr
25yr	0.50	0.80	1.01	1.40	1.85	2.38	25yr	1.60	2.22	2.76	3.43	4.20	5.08	5.87	25yr	4.50	5.65	6.52	7.39	8.35	25yr
50yr	0.57	0.91	1.17	1.63	2.20	2.84	50yr	1.90	2.66	3.30	4.09	4.99	6.01	7.01	50yr	5.32	6.74	7.78	8.67	9.77	50yr
100yr	0.65	1.05	1.35	1.91	2.61	3.39	100yr	2.25	3.19	3.95	4.89	5.94	7.13	8.38	100yr	6.31	8.05	9.27	10.18	11.44	100yr
200yr	0.74	1.21	1.57	2.25	3.09	4.04	200yr	2.67	3.84	4.71	5.83	7.07	8.45	10.01	200yr	7.48	9.62	11.06	11.96	13.39	200yr
500yr	0.89	1.47	1.91	2.77	3.88	5.10	500yr	3.35	4.90	5.96	7.36	8.90	10.59	12.67	500yr	9.37	12.18	13.97	14.80	16.50	500yr

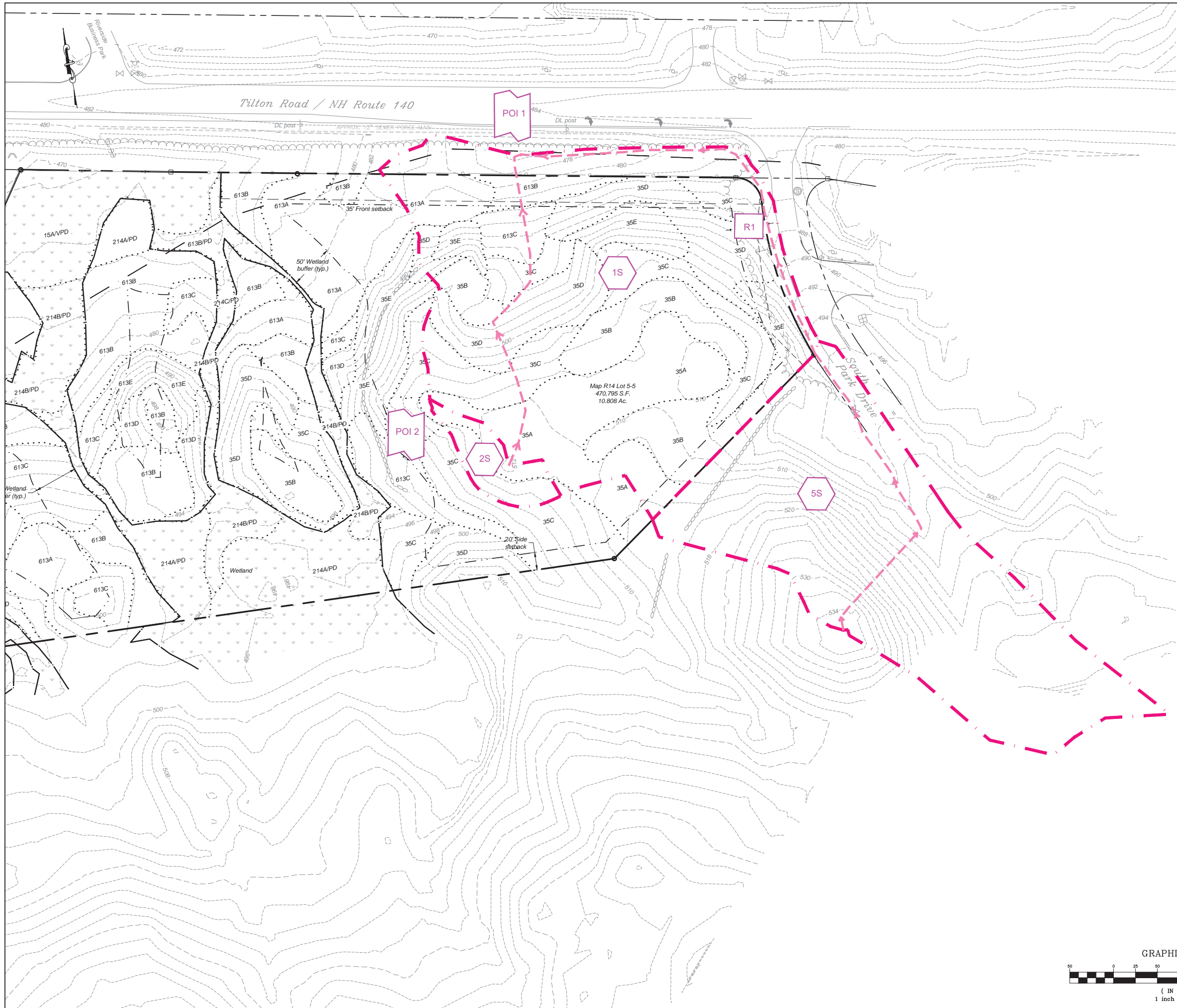
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.35	0.43	0.58	0.71	0.87	1yr	0.61	0.85	0.95	1.30	1.56	2.06	2.34	1yr	1.83	2.25	2.55	3.17	3.79	1yr
2yr	0.31	0.47	0.58	0.79	0.97	1.14	2yr	0.84	1.12	1.30	1.70	2.17	2.69	3.01	2yr	2.38	2.89	3.36	4.04	4.60	2yr
5yr	0.35	0.53	0.66	0.91	1.15	1.37	5yr	1.00	1.34	1.56	2.01	2.59	3.22	3.62	5yr	2.85	3.48	4.04	4.79	5.44	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.54	10yr	1.14	1.51	1.75	2.24	2.89	3.69	4.15	10yr	3.27	3.99	4.65	5.44	6.17	10yr
25yr	0.44	0.67	0.83	1.19	1.56	1.85	25yr	1.35	1.81	2.08	2.60	3.36	4.42	4.95	25yr	3.91	4.76	5.58	6.44	7.28	25yr
50yr	0.49	0.74	0.93	1.33	1.79	2.12	50yr	1.55	2.07	2.37	2.90	3.74	5.07	5.66	50yr	4.49	5.44	6.41	7.31	8.26	50yr
100yr	0.54	0.82	1.02	1.48	2.03	2.42	100yr	1.75	2.37	2.69	3.24	4.19	5.81	6.47	100yr	5.14	6.22	7.37	8.29	9.33	100yr
200yr	0.60	0.91	1.15	1.66	2.32	2.77	200yr	2.00	2.70	3.06	3.63	4.67	6.67	7.39	200yr	5.91	7.11	8.45	9.41	10.58	200yr
500yr	0.70	1.04	1.34	1.94	2.76	3.30	500yr	2.38	3.23	3.61	4.20	5.42	7.98	8.79	500yr	7.06	8.45	10.14	11.13	12.45	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	0.72	0.89	1.07	1yr	0.77	1.05	1.21	1.55	1.95	2.51	2.77	1yr	2.22	2.66	3.12	3.82	4.36	1yr
2yr	0.33	0.51	0.63	0.85	1.05	1.23	2yr	0.90	1.21	1.39	1.81	2.34	2.85	3.21	2yr	2.52	3.09	3.57	4.27	4.87	2yr
5yr	0.40	0.61	0.76	1.04	1.33	1.62	5yr	1.15	1.58	1.83	2.37	2.99	3.68	4.18	5yr	3.26	4.02	4.66	5.43	6.20	5yr
10yr	0.48	0.74	0.91	1.27	1.65	1.97	10yr	1.42	1.92	2.18	2.79	3.50	4.48	5.12	10yr	3.96	4.92	5.72	6.54	7.46	10yr
25yr	0.62	0.95	1.18	1.68	2.21	2.62	25yr	1.91	2.56	2.87	3.60	4.45	5.81	6.71	25yr	5.14	6.46	7.50	8.37	9.53	25yr
50yr	0.76	1.15	1.43	2.06	2.77	3.26	50yr	2.39	3.19	3.54	4.36	5.36	7.09	8.26	50yr	6.28	7.94	9.20	10.10	11.48	50yr
100yr	0.93	1.40	1.75	2.53	3.47	4.06	100yr	3.00	3.97	4.36	5.28	6.45	8.66	10.15	100yr	7.66	9.76	11.33	12.20	13.83	100yr
200yr	1.13	1.70	2.15	3.12	4.35	5.07	200yr	3.75	4.96	5.38	6.41	7.78	10.59	12.51	200yr	9.38	12.03	13.93	14.74	16.69	200yr
500yr	1.48	2.20	2.83	4.12	5.86	6.82	500yr	5.05	6.67	7.13	8.30	9.97	13.83	16.50	500yr	12.24	15.87	18.36	18.95	21.40	500yr





REVISION HISTORY

1.	
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 2030 MAIN STREET, SUITE 342
 DALLAS, TX 75201**

SITE

**42 FL NORTHFIELD PEC -
 DISTRIBUTION
 WAREHOUSE**

**SOUTH PARK DRIVE
 NORTHFIELD, NH 03276**

MAP R14 LOT 5-5

DRAWING TITLE

**PRE-DEVELOPMENT
 WATERSHED PLAN**

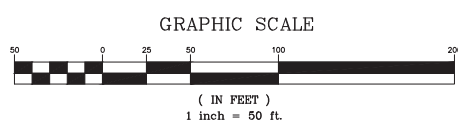
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1" = 50'	01/19/2024		
DRAFTED BY	CHECKED BY	PROJECT MGR	PROJECT NO.
CM/ JMJ	DLF	DLF	MLGB0001

STATE OF NEW HAMPSHIRE
 DAVID L. FROTHINGHAM III
 No. 15460
 LICENSED PROFESSIONAL ENGINEER

SW.1

ENGINEER: DAVID L. FROTHINGHAM III
 NH P.E. #15460

06 OF 20



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OWNER

**ODILON A. CORMIER REV.
TRUST OF 2004
5 LEAVITT ROAD
SANBORNTON, NH 03269**

APPLICANT

**42 REAL ESTATE, LLC
2030 MAIN STREET, SUITE 342
DALLAS, TX 75201**

SITE

**42 FL NORTHFIELD PEC -
DISTRIBUTION
WAREHOUSE**

**SOUTH PARK DRIVE
NORTHFIELD, NH 03276**

MAP R14 LOT 5-5

DRAWING TITLE

**POST-DEVELOPMENT
WATERSHED PLAN**

SCALE

1" = 50'

DATE

01/19/2024

DRAFTED BY

CM/ JMJ

CHECKED BY

DLF

PROJECT MGR

DLF

PROJECT NO.

MLGB0001

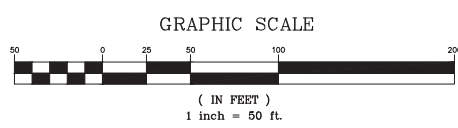
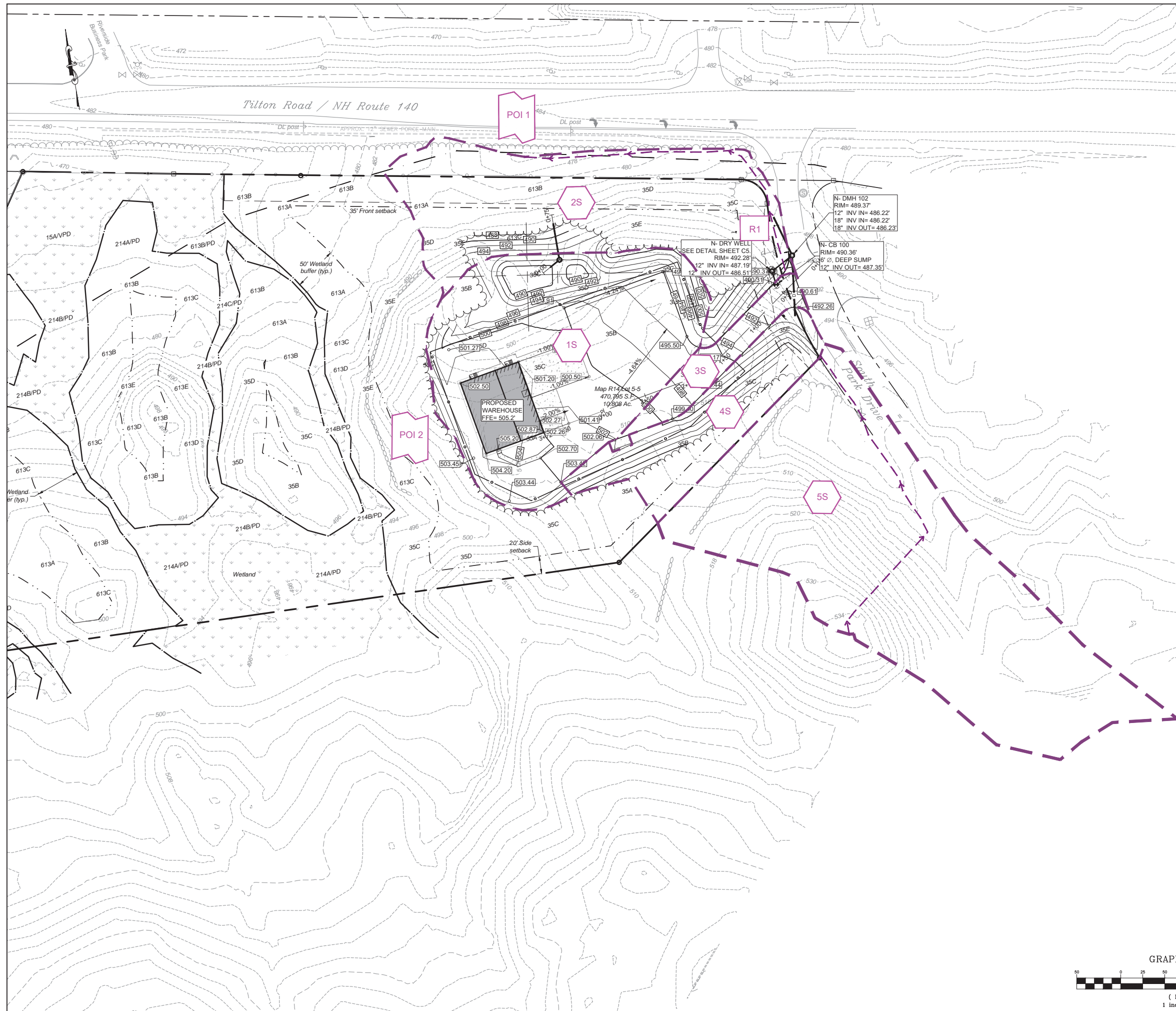
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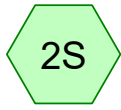


SW.2

ENGINEER: DAVID L. FROTHINGHAM III
NH P.E. #15460

02 OF 02





EDA 2



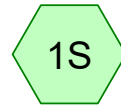
WESTERN PROJECT
BOUNDARY



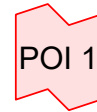
PDA 5



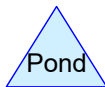
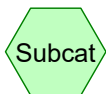
OVERLAND REACH-1



EDA 1



18" CULVERT UNDER
RTE 14



Routing Diagram for Pre-development_MLBG0001
Prepared by Wilcox & Barton, Inc., Printed 1/9/2024
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Pre-development_MLBG0001

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
33,540	39	>75% Grass cover, Good, HSG A (1S, 5S)
9,102	98	Paved parking (5S)
212,285	30	Woods, Good, HSG A (1S, 2S, 5S)
254,927	34	TOTAL AREA

Pre-development_MLBG0001

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Page 3

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
245,825	HSG A	1S, 2S, 5S
0	HSG B	
0	HSG C	
0	HSG D	
9,102	Other	5S
254,927		TOTAL AREA

Pre-development_MLBG0001

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Page 4

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
33,540	0	0	0	0	33,540	>75% Grass cover, Good	
0	0	0	0	9,102	9,102	Paved parking	
212,285	0	0	0	0	212,285	Woods, Good	
245,825	0	0	0	9,102	254,927	TOTAL AREA	

Pre-development_MLBG0001

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Type II 24-hr 2-yr Rainfall=2.76"

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Page 5

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EDA 1 Runoff Area=147,829 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=388' Tc=13.9 min CN=WQ Runoff=0.00 cfs 0 cf

Subcatchment 2S: EDA 2 Runoff Area=7,031 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 5S: PDA 5 Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.23"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=0.72 cfs 1,919 cf

Reach R1: OVERLAND REACH-1 Avg. Flow Depth=0.05' Max Vel=1.69 fps Inflow=0.72 cfs 1,919 cf
n=0.025 L=493.0' S=0.0406 '/' Capacity=8.60 cfs Outflow=0.66 cfs 1,919 cf

Link POI 1: 18" CULVERT UNDER RTE 14 Inflow=0.66 cfs 1,919 cf
Primary=0.66 cfs 1,919 cf

Link POI 2: WESTERN PROJECT BOUNDARY Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 254,927 sf Runoff Volume = 1,919 cf Average Runoff Depth = 0.09"
96.43% Pervious = 245,825 sf 3.57% Impervious = 9,102 sf

Pre-development_MLBG0001

Type II 24-hr 10-yr Rainfall=4.07"

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Page 1

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EDA 1 Runoff Area=147,829 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=388' Tc=13.9 min CN=WQ Runoff=0.00 cfs 47 cf

Subcatchment 2S: EDA 2 Runoff Area=7,031 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=30 Runoff=0.00 cfs 0 cf

Subcatchment 5S: PDA 5 Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.36"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=1.08 cfs 3,012 cf

Reach R1: OVERLAND REACH-1 Avg. Flow Depth=0.07' Max Vel=1.98 fps Inflow=1.08 cfs 3,012 cf
n=0.025 L=493.0' S=0.0406 '/' Capacity=8.60 cfs Outflow=0.99 cfs 3,012 cf

Link POI 1: 18" CULVERT UNDER RTE 14 Inflow=0.99 cfs 3,058 cf
Primary=0.99 cfs 3,058 cf

Link POI 2: WESTERN PROJECT BOUNDARY Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 254,927 sf Runoff Volume = 3,058 cf Average Runoff Depth = 0.14"
96.43% Pervious = 245,825 sf 3.57% Impervious = 9,102 sf

Summary for Subcatchment 1S: EDA 1

Runoff = 0.00 cfs @ 17.69 hrs, Volume= 47 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
10,469	39	>75% Grass cover, Good, HSG A
137,360	30	Woods, Good, HSG A
147,829		Weighted Average
147,829		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0360	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
3.4	338	0.1100	1.66		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
13.9	388	Total			

Summary for Subcatchment 2S: EDA 2

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
7,031	30	Woods, Good, HSG A
7,031		100.00% Pervious Area

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

Summary for Subcatchment 5S: PDA 5

Runoff = 1.08 cfs @ 12.00 hrs, Volume= 3,012 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
67,894	30	Woods, Good, HSG A
* 9,102	98	Paved parking
23,071	39	>75% Grass cover, Good, HSG A
100,067		Weighted Average
90,965		90.90% Pervious Area
9,102		9.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1400	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
0.7	89	0.2000	2.24		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	249	0.0600	1.71		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.2	388	Total			

Summary for Reach R1: OVERLAND REACH-1

Inflow Area = 100,067 sf, 9.10% Impervious, Inflow Depth = 0.36" for 10-yr event
 Inflow = 1.08 cfs @ 12.00 hrs, Volume= 3,012 cf
 Outflow = 0.99 cfs @ 12.04 hrs, Volume= 3,012 cf, Atten= 8%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
 Max. Velocity= 1.98 fps, Min. Travel Time= 4.2 min
 Avg. Velocity = 0.42 fps, Avg. Travel Time= 19.7 min

Peak Storage= 247 cf @ 12.04 hrs
 Average Depth at Peak Storage= 0.07'
 Bank-Full Depth= 0.25' Flow Area= 1.9 sf, Capacity= 8.60 cfs

7.00' x 0.25' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 3.0 ' Top Width= 8.50'
 Length= 493.0' Slope= 0.0406 '
 Inlet Invert= 495.00', Outlet Invert= 475.00'



Summary for Link POI 1: 18" CULVERT UNDER RTE 14

Inflow Area = 247,896 sf, 3.67% Impervious, Inflow Depth = 0.15" for 10-yr event
 Inflow = 0.99 cfs @ 12.04 hrs, Volume= 3,058 cf
 Primary = 0.99 cfs @ 12.04 hrs, Volume= 3,058 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link POI 2: WESTERN PROJECT BOUNDARY

Inflow Area = 7,031 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

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Type II 24-hr 25-yr Rainfall=5.08"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EDA 1

Runoff Area=147,829 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=388' Tc=13.9 min CN=WQ Runoff=0.01 cfs 271 cf

Subcatchment 2S: EDA 2

Runoff Area=7,031 sf 0.00% Impervious Runoff Depth=0.01"
Tc=5.0 min CN=30 Runoff=0.00 cfs 4 cf

Subcatchment 5S: PDA 5

Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.50"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=1.35 cfs 4,130 cf

Reach R1: OVERLAND REACH-1

Avg. Flow Depth=0.08' Max Vel=2.17 fps Inflow=1.35 cfs 4,130 cf
n=0.025 L=493.0' S=0.0406 '/' Capacity=8.60 cfs Outflow=1.26 cfs 4,130 cf

Link POI 1: 18" CULVERT UNDER RTE 14

Inflow=1.26 cfs 4,402 cf
Primary=1.26 cfs 4,402 cf

Link POI 2: WESTERN PROJECT BOUNDARY

Inflow=0.00 cfs 4 cf
Primary=0.00 cfs 4 cf

Total Runoff Area = 254,927 sf Runoff Volume = 4,406 cf Average Runoff Depth = 0.21"
96.43% Pervious = 245,825 sf 3.57% Impervious = 9,102 sf

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Type II 24-hr 50-yr Rainfall=6.01"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EDA 1

Runoff Area=147,829 sf 0.00% Impervious Runoff Depth=0.10"
Flow Length=388' Tc=13.9 min CN=WQ Runoff=0.05 cfs 1,228 cf

Subcatchment 2S: EDA 2

Runoff Area=7,031 sf 0.00% Impervious Runoff Depth=0.07"
Tc=5.0 min CN=30 Runoff=0.00 cfs 43 cf

Subcatchment 5S: PDA 5

Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.68"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=1.69 cfs 5,654 cf

Reach R1: OVERLAND REACH-1

Avg. Flow Depth=0.09' Max Vel=2.37 fps Inflow=1.69 cfs 5,654 cf
n=0.025 L=493.0' S=0.0406 '/' Capacity=8.60 cfs Outflow=1.59 cfs 5,654 cf

Link POI 1: 18" CULVERT UNDER RTE 14

Inflow=1.62 cfs 6,882 cf
Primary=1.62 cfs 6,882 cf

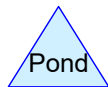
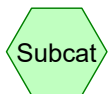
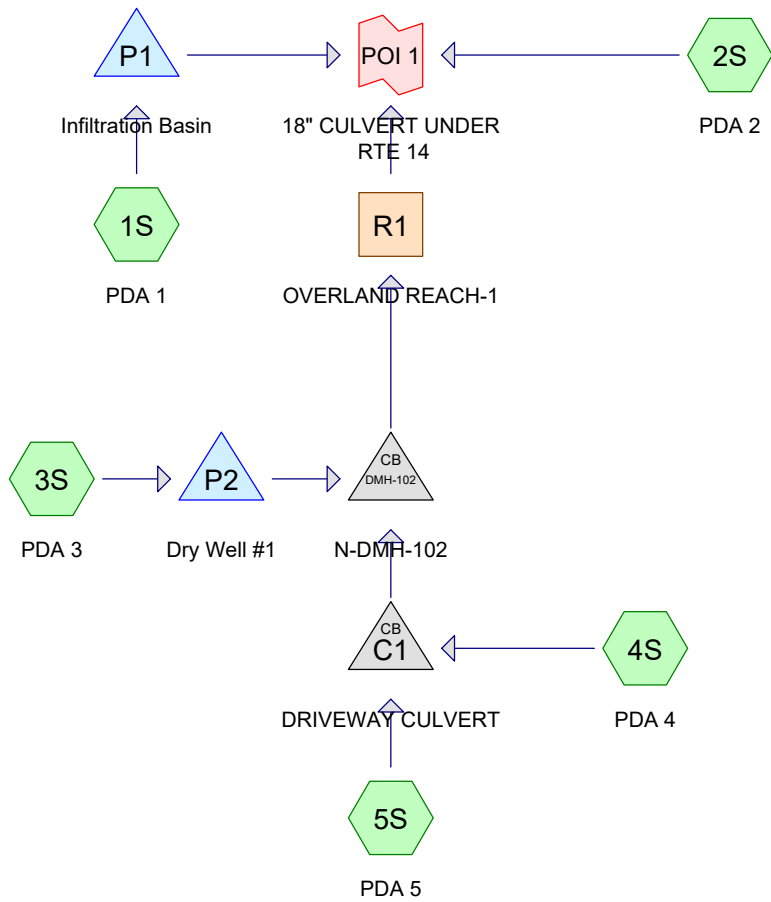
Link POI 2: WESTERN PROJECT BOUNDARY

Inflow=0.00 cfs 43 cf
Primary=0.00 cfs 43 cf

Total Runoff Area = 254,927 sf Runoff Volume = 6,925 cf Average Runoff Depth = 0.33"
96.43% Pervious = 245,825 sf 3.57% Impervious = 9,102 sf



WESTERN PROJECT
BOUNDARY



Routing Diagram for Post-Development_MLBG0001
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
42,372	39	>75% Grass cover, Good, HSG A (1S, 2S, 4S, 5S)
46,454	30	Brush, Good, HSG A (1S, 2S, 4S)
50,646	98	Paved parking (1S, 2S, 3S, 5S)
115,455	30	Woods, Good, HSG A (2S, 4S, 5S)
254,927	45	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
204,281	HSG A	1S, 2S, 4S, 5S
0	HSG B	
0	HSG C	
0	HSG D	
50,646	Other	1S, 2S, 3S, 5S
254,927		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
42,372	0	0	0	0	42,372	>75% Grass cover, Good	
46,454	0	0	0	0	46,454	Brush, Good	
0	0	0	0	50,646	50,646	Paved parking	
115,455	0	0	0	0	115,455	Woods, Good	
204,281	0	0	0	50,646	254,927	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	C1	490.00	486.22	80.0	0.0472	0.012	18.0	0.0	0.0
2	DMH-102	486.12	485.88	48.0	0.0050	0.012	18.0	0.0	0.0
3	P1	489.00	487.00	25.0	0.0800	0.013	18.0	0.0	0.0
4	P2	486.52	486.22	30.0	0.0100	0.013	12.0	0.0	0.0

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Type II 24-hr 2-yr Rainfall=2.76"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PDA 1 Runoff Area=66,826 sf 49.26% Impervious Runoff Depth=1.25"
Tc=5.0 min CN=WQ Runoff=2.97 cfs 6,938 cf

Subcatchment 2S: PDA 2 Runoff Area=57,701 sf 0.26% Impervious Runoff Depth=0.01"
Flow Length=389' Tc=9.2 min CN=WQ Runoff=0.01 cfs 31 cf

Subcatchment 3S: PDA 3 Runoff Area=8,479 sf 100.00% Impervious Runoff Depth=2.53"
Flow Length=254' Tc=1.6 min CN=98 Runoff=0.82 cfs 1,787 cf

Subcatchment 4S: PDA 4 Runoff Area=21,854 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=WQ Runoff=0.00 cfs 0 cf

Subcatchment 5S: PDA 5 Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.23"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=0.72 cfs 1,919 cf

Reach R1: OVERLAND REACH-1 Avg. Flow Depth=0.06' Max Vel=1.45 fps Inflow=0.72 cfs 1,919 cf
n=0.025 L=350.0' S=0.0241 '/' Capacity=6.63 cfs Outflow=0.67 cfs 1,919 cf

Pond C1: DRIVEWAY CULVERT Peak Elev=490.38' Inflow=0.72 cfs 1,919 cf
18.0" Round Culvert n=0.012 L=80.0' S=0.0472 '/' Outflow=0.72 cfs 1,919 cf

Pond DMH-102: N-DMH-102 Peak Elev=486.55' Inflow=0.72 cfs 1,919 cf
18.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=0.72 cfs 1,919 cf

Pond P1: Infiltration Basin Peak Elev=491.22' Storage=3,218 cf Inflow=2.97 cfs 6,938 cf
Discarded=0.20 cfs 6,643 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 6,643 cf

Pond P2: Dry Well #1 Peak Elev=486.89' Storage=0.017 af Inflow=0.82 cfs 1,787 cf
Discarded=0.06 cfs 1,787 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 1,787 cf

Link POI 1: 18" CULVERT UNDER RTE 14 Inflow=0.68 cfs 1,950 cf
Primary=0.68 cfs 1,950 cf

Link POI 2: WESTERN PROJECT BOUNDARY Primary=0.00 cfs 0 cf

Total Runoff Area = 254,927 sf Runoff Volume = 10,675 cf Average Runoff Depth = 0.50"
80.13% Pervious = 204,281 sf 19.87% Impervious = 50,646 sf

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Type II 24-hr 10-yr Rainfall=4.07"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PDA 1 Runoff Area=66,826 sf 49.26% Impervious Runoff Depth=1.90"
Tc=5.0 min CN=WQ Runoff=4.41 cfs 10,583 cf

Subcatchment 2S: PDA 2 Runoff Area=57,701 sf 0.26% Impervious Runoff Depth=0.01"
Flow Length=389' Tc=9.2 min CN=WQ Runoff=0.02 cfs 63 cf

Subcatchment 3S: PDA 3 Runoff Area=8,479 sf 100.00% Impervious Runoff Depth=3.83"
Flow Length=254' Tc=1.6 min CN=98 Runoff=1.21 cfs 2,710 cf

Subcatchment 4S: PDA 4 Runoff Area=21,854 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=WQ Runoff=0.00 cfs 6 cf

Subcatchment 5S: PDA 5 Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.36"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=1.08 cfs 3,012 cf

Reach R1: OVERLAND REACH-1 Avg. Flow Depth=0.08' Max Vel=1.69 fps Inflow=1.08 cfs 3,018 cf
n=0.025 L=350.0' S=0.0241 '/' Capacity=6.63 cfs Outflow=1.01 cfs 3,018 cf

Pond C1: DRIVEWAY CULVERT Peak Elev=490.46' Inflow=1.08 cfs 3,018 cf
18.0" Round Culvert n=0.012 L=80.0' S=0.0472 '/' Outflow=1.08 cfs 3,018 cf

Pond DMH-102: N-DMH-102 Peak Elev=486.65' Inflow=1.08 cfs 3,018 cf
18.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=1.08 cfs 3,018 cf

Pond P1: Infiltration Basin Peak Elev=491.80' Storage=5,057 cf Inflow=4.41 cfs 10,583 cf
Discarded=0.25 cfs 10,289 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 10,289 cf

Pond P2: Dry Well #1 Peak Elev=488.65' Storage=0.028 af Inflow=1.21 cfs 2,710 cf
Discarded=0.08 cfs 2,710 cf Primary=0.00 cfs 0 cf Outflow=0.08 cfs 2,710 cf

Link POI 1: 18" CULVERT UNDER RTE 14 Inflow=1.03 cfs 3,081 cf
Primary=1.03 cfs 3,081 cf

Link POI 2: WESTERN PROJECT BOUNDARY Primary=0.00 cfs 0 cf

Total Runoff Area = 254,927 sf Runoff Volume = 16,374 cf Average Runoff Depth = 0.77"
80.13% Pervious = 204,281 sf 19.87% Impervious = 50,646 sf

Summary for Subcatchment 1S: PDA 1

Runoff = 4.41 cfs @ 11.95 hrs, Volume= 10,583 cf, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
* 32,916	98	Paved parking
19,566	30	Brush, Good, HSG A
14,344	39	>75% Grass cover, Good, HSG A
66,826		Weighted Average
33,910		50.74% Pervious Area
32,916		49.26% Impervious Area

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

Summary for Subcatchment 2S: PDA 2

Runoff = 0.02 cfs @ 12.00 hrs, Volume= 63 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
40,634	30	Woods, Good, HSG A
13,392	30	Brush, Good, HSG A
* 149	98	Paved parking
3,526	39	>75% Grass cover, Good, HSG A
57,701		Weighted Average
57,552		99.74% Pervious Area
149		0.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0900	0.25		Sheet Flow, Grass: Short n= 0.150 P2= 2.76"
0.8	74	0.0470	1.52		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.1	265	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
9.2	389	Total			

Summary for Subcatchment 3S: PDA 3

Runoff = 1.21 cfs @ 11.90 hrs, Volume= 2,710 cf, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
* 8,479	98	Paved parking
8,479		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	141	0.0473	1.93		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.76"
0.4	113	0.0500	4.54		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	254	Total			

Summary for Subcatchment 4S: PDA 4

Runoff = 0.00 cfs @ 17.54 hrs, Volume= 6 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

Area (sf)	CN	Description
6,927	30	Woods, Good, HSG A
13,496	30	Brush, Good, HSG A
1,431	39	>75% Grass cover, Good, HSG A
21,854		Weighted Average
21,854		100.00% Pervious Area

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

Summary for Subcatchment 5S: PDA 5

Runoff = 1.08 cfs @ 12.00 hrs, Volume= 3,012 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.07"

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Type II 24-hr 10-yr Rainfall=4.07"

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Area (sf)	CN	Description
67,894	30	Woods, Good, HSG A
* 9,102	98	Paved parking
23,071	39	>75% Grass cover, Good, HSG A
100,067		Weighted Average
90,965		90.90% Pervious Area
9,102		9.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1400	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.76"
0.7	89	0.2000	2.24		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.4	249	0.0600	1.71		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.2	388	Total			

Summary for Reach R1: OVERLAND REACH-1

Inflow Area = 130,400 sf, 13.48% Impervious, Inflow Depth = 0.28" for 10-yr event
 Inflow = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf
 Outflow = 1.01 cfs @ 12.03 hrs, Volume= 3,018 cf, Atten= 6%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
 Max. Velocity= 1.69 fps, Min. Travel Time= 3.4 min
 Avg. Velocity = 0.36 fps, Avg. Travel Time= 16.4 min

Peak Storage= 208 cf @ 12.03 hrs
 Average Depth at Peak Storage= 0.08'
 Bank-Full Depth= 0.25' Flow Area= 1.9 sf, Capacity= 6.63 cfs

7.00' x 0.25' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 3.0 '/' Top Width= 8.50'
 Length= 350.0' Slope= 0.0241 '/'
 Inlet Invert= 483.44', Outlet Invert= 475.00'



Summary for Pond C1: DRIVEWAY CULVERT

Inflow Area = 121,921 sf, 7.47% Impervious, Inflow Depth = 0.30" for 10-yr event
 Inflow = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf
 Outflow = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf

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Type II 24-hr 10-yr Rainfall=4.07"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 490.46' @ 12.00 hrs
Flood Elev= 492.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	490.00'	18.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 490.00' / 486.22' S= 0.0472 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.07 cfs @ 12.00 hrs HW=490.46' TW=486.65' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.07 cfs @ 2.32 fps)

Summary for Pond DMH-102: N-DMH-102

Inflow Area = 130,400 sf, 13.48% Impervious, Inflow Depth = 0.28" for 10-yr event
Inflow = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf
Outflow = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.00 hrs, Volume= 3,018 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 486.65' @ 12.00 hrs
Flood Elev= 489.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	486.12'	18.0" Round Culvert L= 48.0' Ke= 0.500 Inlet / Outlet Invert= 486.12' / 485.88' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.07 cfs @ 12.00 hrs HW=486.65' TW=483.52' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.07 cfs @ 2.86 fps)

Summary for Pond P1: Infiltration Basin

Inflow Area = 66,826 sf, 49.26% Impervious, Inflow Depth = 1.90" for 10-yr event
Inflow = 4.41 cfs @ 11.95 hrs, Volume= 10,583 cf
Outflow = 0.25 cfs @ 12.70 hrs, Volume= 10,289 cf, Atten= 94%, Lag= 44.9 min
Discarded = 0.25 cfs @ 12.70 hrs, Volume= 10,289 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 491.80' @ 12.70 hrs Surf.Area= 2,457 sf Storage= 5,057 cf
Flood Elev= 493.00' Surf.Area= 4,860 sf Storage= 9,465 cf

Plug-Flow detention time= 218.3 min calculated for 10,282 cf (97% of inflow)
Center-of-Mass det. time= 200.4 min (949.4 - 749.0)

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Type II 24-hr 10-yr Rainfall=4.07"

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Volume	Invert	Avail.Storage	Storage Description
#1	489.00'	1,699 cf	Forebay (Prismatic) Listed below (Recalc) -Impervious
#2	490.00'	13,421 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		15,120 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
489.00	194	0	0
490.00	402	298	298
491.00	680	541	839
492.00	1,039	860	1,699

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
490.00	1,514	0	0
491.00	2,012	1,763	1,763
492.00	2,567	2,290	4,053
493.00	4,860	3,714	7,766
494.00	6,450	5,655	13,421

Device	Routing	Invert	Outlet Devices
#1	Discarded	490.00'	3.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 487.00'
#2	Primary	489.00'	18.0" Round Culvert L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 489.00' / 487.00' S= 0.0800 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	492.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 2	493.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.25 cfs @ 12.70 hrs HW=491.80' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=489.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Controls 0.00 cfs)

↑ **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond P2: Dry Well #1

Inflow Area = 8,479 sf, 100.00% Impervious, Inflow Depth = 3.83" for 10-yr event
 Inflow = 1.21 cfs @ 11.90 hrs, Volume= 2,710 cf
 Outflow = 0.08 cfs @ 12.46 hrs, Volume= 2,710 cf, Atten= 93%, Lag= 33.4 min
 Discarded = 0.08 cfs @ 12.46 hrs, Volume= 2,710 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 488.65' @ 12.46 hrs Surf.Area= 0.014 ac Storage= 0.028 af

Flood Elev= 493.63' Surf.Area= 0.024 ac Storage= 0.061 af

Plug-Flow detention time= 151.4 min calculated for 2,708 cf (100% of inflow)

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Type II 24-hr 10-yr Rainfall=4.07"

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Center-of-Mass det. time= 151.3 min (894.9 - 743.5)

Volume	Invert	Avail.Storage	Storage Description
#1	484.00'	0.010 af	8.00'D x 9.00'H Vertical Cone/Cylinder-DRY WELL Inside #2 0.013 af Overall - 6.0" Wall Thickness = 0.010 af
#2	483.00'	0.033 af	11.00'D x 10.63'H Vertical Cone/Cylinder Z=1.0 0.097 af Overall - 0.013 af Embedded = 0.084 af x 40.0% Voids
#3	485.36'	0.001 af	24.0" Round Pipe Storage Inside #4 L= 16.0' S= 0.0100 '/
#4	483.00'	0.009 af	9.00'W x 16.00'L x 7.36'H Prismatic 0.024 af Overall - 0.001 af Embedded = 0.023 af x 40.0% Voids
#5	483.36'	0.005 af	6.00'D x 7.00'H Vertical Cone/Cylinder-N-CB-100 Inside #6
#6	483.00'	0.002 af	9.00'D x 7.36'H Vertical Cone/Cylinder 0.011 af Overall - 0.005 af Embedded = 0.006 af x 40.0% Voids
		0.061 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	483.00'	3.000 in/hr Exfiltration over Wetted area Phase-In= 0.01'
#2	Primary	486.52'	12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 486.52' / 486.22' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	491.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.08 cfs @ 12.46 hrs HW=488.65' (Free Discharge)

↑1=**Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=483.00' TW=486.12' (Dynamic Tailwater)

↑2=**Culvert** (Controls 0.00 cfs)

↑3=**Orifice/Grate** (Controls 0.00 cfs)

Summary for Link POI 1: 18" CULVERT UNDER RTE 14

Inflow Area = 254,927 sf, 19.87% Impervious, Inflow Depth = 0.15" for 10-yr event
 Inflow = 1.03 cfs @ 12.03 hrs, Volume= 3,081 cf
 Primary = 1.03 cfs @ 12.03 hrs, Volume= 3,081 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link POI 2: WESTERN PROJECT BOUNDARY

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

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Type II 24-hr 25-yr Rainfall=5.08"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PDA 1 Runoff Area=66,826 sf 49.26% Impervious Runoff Depth=2.43"
Tc=5.0 min CN=WQ Runoff=5.52 cfs 13,555 cf

Subcatchment 2S: PDA 2 Runoff Area=57,701 sf 0.26% Impervious Runoff Depth=0.03"
Flow Length=389' Tc=9.2 min CN=WQ Runoff=0.02 cfs 156 cf

Subcatchment 3S: PDA 3 Runoff Area=8,479 sf 100.00% Impervious Runoff Depth=4.84"
Flow Length=254' Tc=1.6 min CN=98 Runoff=1.52 cfs 3,422 cf

Subcatchment 4S: PDA 4 Runoff Area=21,854 sf 0.00% Impervious Runoff Depth=0.02"
Tc=5.0 min CN=WQ Runoff=0.00 cfs 38 cf

Subcatchment 5S: PDA 5 Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.50"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=1.35 cfs 4,130 cf

Reach R1: OVERLAND REACH-1 Avg. Flow Depth=0.09' Max Vel=1.85 fps Inflow=1.35 cfs 4,169 cf
n=0.025 L=350.0' S=0.0241 '/' Capacity=6.63 cfs Outflow=1.28 cfs 4,169 cf

Pond C1: DRIVEWAY CULVERT Peak Elev=490.52' Inflow=1.35 cfs 4,169 cf
18.0" Round Culvert n=0.012 L=80.0' S=0.0472 '/' Outflow=1.35 cfs 4,169 cf

Pond DMH-102: N-DMH-102 Peak Elev=486.72' Inflow=1.35 cfs 4,169 cf
18.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/' Outflow=1.35 cfs 4,169 cf

Pond P1: Infiltration Basin Peak Elev=492.27' Storage=6,514 cf Inflow=5.52 cfs 13,555 cf
Discarded=0.32 cfs 13,266 cf Primary=0.00 cfs 0 cf Outflow=0.32 cfs 13,266 cf

Pond P2: Dry Well #1 Peak Elev=489.89' Storage=0.036 af Inflow=1.52 cfs 3,422 cf
Discarded=0.10 cfs 3,422 cf Primary=0.00 cfs 0 cf Outflow=0.10 cfs 3,422 cf

Link POI 1: 18" CULVERT UNDER RTE 14 Inflow=1.30 cfs 4,325 cf
Primary=1.30 cfs 4,325 cf

Link POI 2: WESTERN PROJECT BOUNDARY Primary=0.00 cfs 0 cf

Total Runoff Area = 254,927 sf Runoff Volume = 21,302 cf Average Runoff Depth = 1.00"
80.13% Pervious = 204,281 sf 19.87% Impervious = 50,646 sf

Post-Development_MLBG0001

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Type II 24-hr 50-yr Rainfall=6.01"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PDA 1 Runoff Area=66,826 sf 49.26% Impervious Runoff Depth=2.96"
Tc=5.0 min CN=WQ Runoff=6.60 cfs 16,487 cf

Subcatchment 2S: PDA 2 Runoff Area=57,701 sf 0.26% Impervious Runoff Depth=0.11"
Flow Length=389' Tc=9.2 min CN=WQ Runoff=0.05 cfs 533 cf

Subcatchment 3S: PDA 3 Runoff Area=8,479 sf 100.00% Impervious Runoff Depth=5.77"
Flow Length=254' Tc=1.6 min CN=98 Runoff=1.80 cfs 4,078 cf

Subcatchment 4S: PDA 4 Runoff Area=21,854 sf 0.00% Impervious Runoff Depth=0.10"
Tc=5.0 min CN=WQ Runoff=0.01 cfs 178 cf

Subcatchment 5S: PDA 5 Runoff Area=100,067 sf 9.10% Impervious Runoff Depth=0.68"
Flow Length=388' Tc=9.2 min CN=WQ Runoff=1.69 cfs 5,654 cf

Reach R1: OVERLAND REACH-1 Avg. Flow Depth=0.11' Max Vel=2.03 fps Inflow=1.70 cfs 5,871 cf
n=0.025 L=350.0' S=0.0241 '/ Capacity=6.63 cfs Outflow=1.63 cfs 5,871 cf

Pond C1: DRIVEWAY CULVERT Peak Elev=490.59' Inflow=1.70 cfs 5,832 cf
18.0" Round Culvert n=0.012 L=80.0' S=0.0472 '/ Outflow=1.70 cfs 5,832 cf

Pond DMH-102: N-DMH-102 Peak Elev=486.80' Inflow=1.70 cfs 5,871 cf
18.0" Round Culvert n=0.012 L=48.0' S=0.0050 '/ Outflow=1.70 cfs 5,871 cf

Pond P1: Infiltration Basin Peak Elev=492.58' Storage=7,611 cf Inflow=6.60 cfs 16,487 cf
Discarded=0.39 cfs 15,682 cf Primary=0.27 cfs 515 cf Outflow=0.67 cfs 16,197 cf

Pond P2: Dry Well #1 Peak Elev=491.03' Storage=0.044 af Inflow=1.80 cfs 4,078 cf
Discarded=0.11 cfs 4,039 cf Primary=0.06 cfs 40 cf Outflow=0.17 cfs 4,079 cf

Link POI 1: 18" CULVERT UNDER RTE 14 Inflow=1.67 cfs 6,919 cf
Primary=1.67 cfs 6,919 cf

Link POI 2: WESTERN PROJECT BOUNDARY Primary=0.00 cfs 0 cf

Total Runoff Area = 254,927 sf Runoff Volume = 26,930 cf Average Runoff Depth = 1.27"
80.13% Pervious = 204,281 sf 19.87% Impervious = 50,646 sf

9.0 SITE SPECIFIC SOIL REPORT

November 21, 2023



Erin Lambert PE
Wilcox & Barton Inc.
elambert@wilcoxandbarton.com

RE: R14 Lot 5-5/South Park Drive
Northfield, NH

SUBJECT: Site-Specific Soil Map Report

Dear Ms. Lambert

The purpose of this soil report and accompanying soil map is to document the soil characteristics for the project location referenced above in the Town of Northfield, NH.

This soil map was prepared by Stoney Ridge Environmental (SRE) utilizing the Site-Specific Soil Mapping Standards for New Hampshire and Vermont (SSSMS), SSSNNE Special Publication No. 3, Version 7, July 2021. The soil map units were identified using the New Hampshire State-Wide Numerical Soils Legend, Issue #10, January 2011. Further references used in the process of developing the soil map, soil legend and soil report are listed below:

- 1 *For disturbed soils, the January 4, 2011 Draft Proposal for Disturbed Soil Mapping Unit Supplement for AoT Site Specific Soil Maps was utilized.*
- 2 *Soil Science Division Staff. 2017. Soil Survey Manual. C. Ditzer, K. Scheffe and H.C. Monger (editors) USDA Handbook 18. Government Printing Office, Washington, D.C.*
- 3 *Field Indicators for Identifying Hydric Soils in New England. Version 4, June 2020.*
- 4 *Field Book for Describing and Sampling Soils. Version 3.0, National Survey Center. Natural Resources Conservation Services (NRCS). September 2012.*
- 5 *United States Department of Agriculture. Natural Resources Conservation Services. Official Series Descriptions. US Department of Agriculture, (NRCS).*
- 6 *Ksat Values for New Hampshire Soils. SSSNNE Special Publication No.5, September 2009.*
- 7 *Chapter 7. USDA NRCS Engineering Handbook.*
- 8 *The Site-Specific Soil Mapping Standards For New Hampshire And Vermont. SSSNNE Special Publication No.3, Version 7. July 2021.*

The Site-Specific Soil Mapping Standards apply the latest up to date knowledge of soils and provide the public with the most advanced soil resource information available today. The Site-Specific Standards are based on a universally recognized taxonomic system of soil classification and are supported by national soil mapping standards established by the USDA National Cooperative Soil Survey. They allow for the development of multi-purpose soil map products, which are carefully controlled and monitored through a state, regional, and national quality assessment program. The Site-Specific Standards are backed by the most advanced soil research program in the world. The Site-Specific Standards have been developed by the Society of Soil Scientists of Northern New England in cooperation with the USDA Natural Resources Conservation Service in response to the need to provide regulatory agencies, local officials, and land use planners with consistent, high quality, large scale soil resource information.

The accompanying soil map was developed on a base map of 1" = 60', with contour intervals of 2 feet. The base existing conditions plan was supplied by Wilcox & Barton, Inc.. The soils fieldwork for the Site-Specific Soils Map was performed on November 21, 2023 and on December 20, 2023. This field work included observing and recording test pits dug by a tracked excavator. All field work and soil mapping was completed by Cynthia M. Balcius CSS, CWS & CPESC of SRE.

Location Description



The site is located at the corner of South Park Road and Route 140 in Northfield, NH. This lot is part of a previously approved and partially developed industrial park. The site is bordered by a rental storage facility to the west and the large UPS facility to the east. Route 140 borders the northern boundary to the north and a wooded industrial lot borders to the south. This entire stretch of Route 140 lies within a glacial outwash plain. There are numerous gravel pits scattered throughout the area along Route 140. This site lies within this same glacial outwash plain.

Overall the site is currently vegetated, but was logged in the recent past. The resulting conditions include thick primary successional growth with many young birch and poplar trees along with thick areas of bittersweet vines and rosa multiflora. The site is dense with vegetation and more than likely was agricultural pasture in the past. Large mounds of sand deposits with steep slopes rising up in the northeast portion of the site are present. These undulating hills include narrow poorly drained drainage ways that flow towards the northwest corner of the lot where a significant scrub shrub wetland area exists. These wetlands have been delineated by others and have been survey located as part of the Existing Conditions Plan used for the soil survey. There are no buildings or structures on site presently.



A view of the thick poplar trees wrapped tight in bittersweet.

General Soil Conditions

The overall soil conditions on site find soils developed in very deep glacial outwash sands and fine sands while the wetland areas have developed in a mix of sands and organics. The seasonal highwater tables were found deep in the profiles in the northeast portion of the site while the northwest side of the site transitioned to more moderately well drained soils surrounding poorly drained and very poorly drained soils.

Site Soil Descriptions

Champlain loamy sand (35A,B,C,D & E): The Champlain loamy sands dominate the northeast portion of the site. These somewhat excessively drained soils have formed on deep glacial outwash sands. Seasonal highwater tables were found greater than 40 inches below the surface.

Slopes on site ranged from relatively level to very steep. The K_{sat} rates for this soil series range from 6.0 to 20.0 inches per hour in the upper horizons and 20.0 to 100.0 inches per hour in the lower substratum.



View of the sandy Champlain soils.

Croghan fine sand (613A,B,C&D): Croghan soils are moderately well drained and have developed in deep glacial outwash deposits. This soil series was observed in the transitional slope areas around the wetland drainage ways and the low lying depressional wetlands. Seasonal highwater tables were found between 15 and 40 inches. Slopes were generally moderately steep transitioning to relatively level areas. There are some minor inclusions of Croghan variant, a somewhat poorly drained soils found immediately adjacent to some of the wetland areas in the depressional areas. The K_{sat} rates for this soil series range from 20.0 to 100.0 inches per hour in the upper horizons and 20.0 to 100.0 inches per hour in the lower substratum.



A view of the sloping topography of the site.

Searsport mucky peat (15A/PD): Searsport mucky peat is very poorly drained soil and is found in the northwest corner of the site. This soil has developed in sandy wet glacial outwash materials and exhibit 8 to 12 inches of organic muck over sands. Seasonal highwater tables are found at the surface. The K_{sat} rates for this soil type range from 6.0 to 20.0 inches per hour in the upper horizons and 6.0 to 20.0 inches per hour in the lower substratum.

Naumburg loamy sand (214A/PD,B/PD & C/PD): Naumburg loamy sands have formed in wet glacial outwash sands. The seasonal highwater table can be found at or near the surface for at least part of the year. This map unit was found in the drainage ways and some of the lower depressional areas that are mapped as wetlands on site. The K_{sat} rates for this soil type range from 6.0 to 20.0 inches per hour in the upper horizons and 6.0 to 20.0 inches per hour in the lower substratum.



Another view of the deep Champlain sands.




A view of the Naumburg Poorly Drained Soils within some of the wetlands on site.

Test pit profiles have been included in this report. A Site-Specific Soil Map Unit legend for the site-specific soil map symbols used in the preparation of this map is also attached to this report.

This completes the narrative report that accompanies the site-specific soil map prepared for the site identified as R14 Lot 5-5 South Park Drive, Northfield, New Hampshire. If there are any questions regarding the soil map or the report, please feel free to contact me at 776-5825.

Sincerely,

Stoney Ridge Environmental, LLC



Cynthia M. Balchus, CSS, CWS, CPESC
Senior Soil & Wetland Scientist

Soil Test Pit Profiles
Wilcox & Barton
Northfield, NH

Test Pit: 1

Date: December 20, 2023

Weather: Sunny/Cold

Depth (in)	Color	Texture	Structure	Consistence	Redox
0-9	10YR 3/2	FSL	GR	FR	
9-17	10YR 5/6	LFS	WSBK	FR	
17-28	2.5Y 5/6	FS	GR	FR	
28-45	2.5Y 6/8	S	GR	VFR	c/d 7.5YR 5/6
45-63	5Y 5/4	VFS/LVFS	GR	FR	c/d 10YR 5/6

Notes: Stratified sands in lower substratum.

ESHWT:	28"	Water:	None	Roots:	12"	Ledge:	>63"
Soil Series:	613 Croghan fine sand		HSG/SG:	B/3	Termination:	63"	
Recorded By:	Cynthia M Balcius CSS# 084			Witness:	Joshua Reynolds		

Test Pit: 2

Depth (in)	Color	Texture	Structure	Consistence	Redox
0-15	10YR 3/3	LFS	GR	FR	
15-31	10YR 5/6	LS	GR	FR	
31-46	2.5Y 5/6	FS	WGR	FR	
46-64	2.5Y 6/4	FS	WSBK	FR	c/d 10YR 5/8

Notes: Sands and fine sands

ESHWT:	46"	Water:	None	Roots:	18-24"	Ledge:	>64"
Soil Series:	35 Champlain loamy sand		HSG/SG:	A/1	Termination:	64"	
Recorded By:	Cynthia M Balcius CSS# 084			Witness:	Joshua Reynolds		

Test Pit: 3

Depth (in)	Color	Texture	Structure	Consistence	Redox
0-5	10YR 3/3	FSL	WGR	FR	
5-20	10YR 4/4	LFS	GR	FR	
20-35	10YR 4/6	LFS	GR	FR	
35-46	2.5Y 5/6	S	GR	FR	
46-62	2.5Y 6/6	FS	WGR	VFR	c/d 7.5YR 5/8

Notes: 35-46” few small cobbles, <1% gravel

ESHWT:	46”	Water:	None	Roots:	36”	Ledge:	>62”
Soil Series:	35 Champlain loamy sand		HSG/SG:	A/1		Termination:	62”
Recorded By:	Cynthia M Balcius CSS# 084			Witness:	Joshua Reynolds		

Test Pit: 4

Depth (in)	Color	Texture	Structure	Consistence	Redox
0-4	10YR 2/2	FSL	GR	FR	
4-9	10YR 3/3	FSL	GR	FR	
9-21	10YR 5/6	LFS	GR	FR	
21-37	2.5Y 5/6	FS	WSBK/GR	FR	
37-65	10YR 5/8	FS	WSBK	FR	

Notes: 5% gravel, few large stones, 2-5% cobble

ESHWT:	>65”	Water:	None	Roots:	12”	Ledge:	>65”
Soil Series:	35 Champlain loamy sand		HSG/SG:	A/1		Termination:	65”
Recorded By:	Cynthia M Balcius CSS# 084			Witness:	Joshua Reynolds		



Test Pit: 5

Depth (in)	Color	Texture	Structure	Consistence	Redox
0-7	10YR 3/4	FSL	GR	FR	
7-23	10YR 4/6	FS	GR	FR	
23-40	10YR 5/8	LS	GR	FR	
40-72	2.5Y 6/6	VFS	WSBK/GR	FR	c/d 7.5YR 5/8

Notes: 5-10% gravel, 10% cobble (23-37”), stratification of sands in C horizon, very fine roots at 36”

ESHWT:	40”	Water:	None	Roots:	8”	Ledge:	>72”
Soil Series:	35 Champlain loamy sand		HSG/SG:	A/1	Termination:	72”	
Recorded By:	Cynthia M Balcius CSS# 084			Witness:	Joshua Reynolds		



Wilcox & Barton
 South Park Drive R14 Lot 5-5
 SRE# 23-072
 January 9, 2024

SITE-SPECIFIC SOIL MAP UNIT KEY

<u>Symbol</u>	<u>Map Unit</u>	<u>Slope Class</u>	<u>Drainage Class</u>	<u>HSG/Group</u>
15A/VPD	Searsport mucky peat	0-3%	Very Poorly Drained	D/6
35A	Champlain loamy sand	0-3%	Somewhat Excessively Drained	A/1
35B	Champlain loamy sand	3-8%	Somewhat Excessively Drained	A/1
35C	Champlain loamy sand	8-15%	Somewhat Excessively Drained	A/1
35D	Champlain loamy sand	15-25%	Somewhat Excessively Drained	A/1
35E	Champlain loamy sand	25-50%	Somewhat Excessively Drained	A/1
214A/PD	Naumburg loamy sand	0-3%	Poorly Drained	C/5
214B/PD	Naumburg loamy sand	3-8%	Poorly Drained	C/5
214C/PD	Naumburg loamy sand	8-15%	Poorly Drained	C/5
613A	Croghan fine sand	0-3%	Moderately Well Drained	B/3
613B	Croghan fine sand	3-8%	Moderately Well Drained	B/3
613C	Croghan fine sand	8-15%	Moderately Well Drained	B/3
613D	Croghan fine sand	15-25%	Moderately Well Drained	B/3

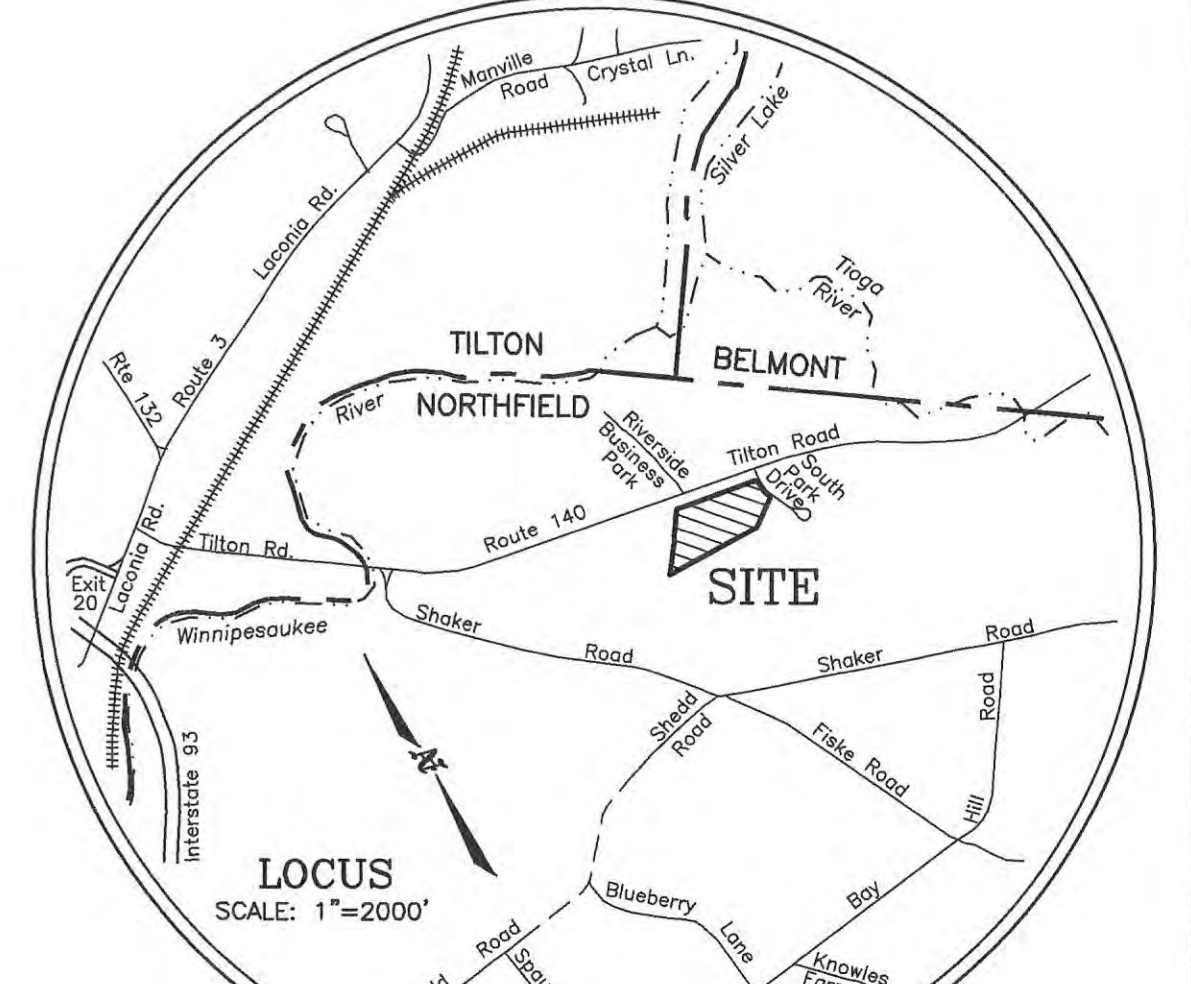
“This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, produced by a certified soil scientist, and is not a product of the USDA Natural Resources Conservation Service. There is a narrative report that accompanies this map and map key.”

LEGEND

- ANGLE POINT
- CONCRETE BOUND FOUND
- IRON ROD FOUND
- IRON PIPE FOUND
- UTILITY POLE W/ANCHOR
- GAS VALVE
- WATER GATE
- CURB-STOP
- FIRE HYDRANT
- SEWER MANHOLE
- HIGHWAY WIRE MESH FENCE
- BARBED WIRE FENCE
- 2' CONTOUR LINE
- 10' CONTOUR LINE
- WETLAND SOILS BOUNDARY
- APPROX. WATER MAIN
- D.I. WS APPROX. DUCTILE IRON WATER SERVICE
- SFM APPROX. 2" SEWER FORCE MAIN
- SS APPROX. SEWER SERVICE
- G APPROX. GAS LINE
- OHU OVERHEAD UTILITIES

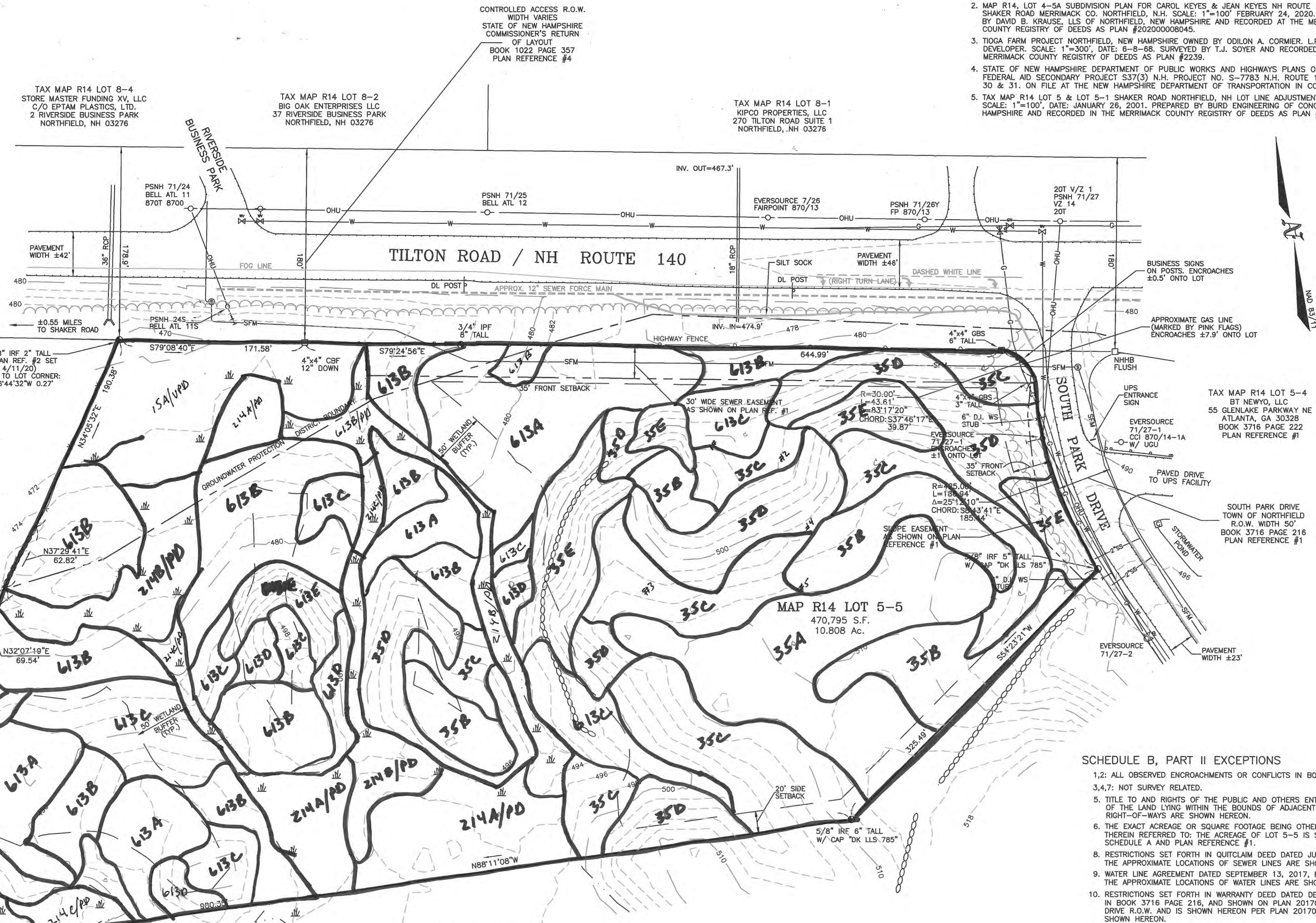
PLAN REFERENCES

1. TAX MAP R14 LOT 5-1 ROUTE 140 NORTHFIELD, NH SUBDIVISION PLAN SCALE: 1"=100', DATE: JUNE 22, 1998 LAST REVISED 6/8/02 SHEET 1 OF 8, PREPARED BY BURD ENGINEERING OF CONCORD NEW HAMPSHIRE AND RECORDED IN THE MERRIMACK COUNTY REGISTRY OF DEEDS AS PLAN #201700019233.
2. MAP R14, LOT 4-5A SUBDIVISION PLAN FOR CAROL KEYS & JEAN KEYS NH ROUTE 140 & SHAKER ROAD MERRIMACK CO. NORTHFIELD, NH. SCALE: 1"=100' FEBRUARY 24, 2020. PREPARED BY DAVID B. KRAUSE, LLS OF NORTHFIELD, NEW HAMPSHIRE AND RECORDED AT THE MERRIMACK COUNTY REGISTRY OF DEEDS AS PLAN #20200008045.
3. TOGA FARM PROJECT NORTHFIELD, NEW HAMPSHIRE OWNED BY ODILON A. CORMIER, L.R. DULAC DEVELOPER. SCALE: 1"=300'. DATE: 6-8-88. SURVEYED BY T.J. SOYER AND RECORDED AT THE MERRIMACK COUNTY REGISTRY OF DEEDS AS PLAN #20200008045.
4. STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS PLANS OF PROPOSED FEDERAL AID SECONDARY PROJECT S37(3) N.H. PROJECT NO. S-7783 N.H. ROUTE 140, SHEETS 30 & 31. ON FILE AT THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION IN CONCORD.
5. TAX MAP R14 LOT 5 & LOT 5-1 SHAKER ROAD NORTHFIELD, NH LOT LINE ADJUSTMENT PLAN. SCALE: 1"=100'. DATE: JANUARY 26, 2001. PREPARED BY BURD ENGINEERING OF CONCORD, NEW HAMPSHIRE AND RECORDED IN THE MERRIMACK COUNTY REGISTRY OF DEEDS AS PLAN #15370.



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE BOUNDARY AND IMPROVEMENTS ON LOT 5-5 AS SHOWN ON ASSESSORS MAP R14. THIS PLAN HAS BEEN COMPLETED IN ACCORDANCE WITH THE 2021 ALTA/NSPS SURVEY STANDARDS AS SPECIFIED HEREON.
2. THE PARCEL SHOWN HEREON IS LOCATED IN THE NORTHFIELD ZONING DISTRICT "C/A" COMMERCIAL-INDUSTRIAL, AND SUBJECT TO FOLLOWING DIMENSIONAL REGULATIONS:
 MINIMUM FRONTAGE: 150 FEET
 MINIMUM LOT SIZE: 0.5 ACRES (WITH SEWER)
 MAXIMUM BUILDING HEIGHT: 3 STORIES
 WETLAND BUFFER: 50 FEET UNDISTURBED
 BUILDING SETBACKS: FRONT 35 FEET, SIDE 20 FEET, REAR 20 FEET
3. A PORTION OF THE PROPERTY IS ALSO LOCATED IN THE GROUNDWATER PROTECTION OVERLAY DISTRICT. THE BOUNDARY OF WHICH, AS SHOWN HEREON HAS BEEN GRAPHICALLY REPRODUCED FROM THE TOWN GROUNDWATER PROTECTION OVERLAY DISTRICT PLAN.
4. THE INFORMATION SHOWN HEREON IS FROM A FIELD SURVEY PERFORMED BY THIS OFFICE FROM OCTOBER 2019-AUGUST 2023 USING A TOTAL STATION INSTRUMENT. THE TRAVERSE HAD AN ERROR OF CLOSURE OF BETTER THAN 1 PART IN 15,000. THE SURVEY WAS COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF A STANDARD PROPERTY SURVEY AS DEFINED IN THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES LAM 500.
5. THE BOUNDARY OF LOT 5-5 IS FROM PLAN REFERENCE #1. THE BEARINGS SHOWN HEREON ARE REFERENCED TO NAD 83/11 BASED ON GPS OBSERVATIONS PERFORMED BY THIS OFFICE IN OCTOBER 2019.
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS FROM A FIELD SURVEY PERFORMED BY THIS OFFICE FROM OCTOBER 2019-DECEMBER 2021, AND AUGUST 2023 USING A TOTAL STATION INSTRUMENT, AND FROM THE SURVEY RECORDS OF PAUL M. DARBYSHIRE AND ASSOC. THE VERTICAL DATUM IS NAVD83 BASED ON GPS OBSERVATIONS PERFORMED BY THIS OFFICE IN OCTOBER 2019.
7. THE PROPERTY SHOWN HEREON DOES NOT LIE IN THE 100 YEAR FLOOD ZONE AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP 3301300183E FOR THE TOWN OF NORTHFIELD, MERRIMACK COUNTY, WITH EFFECTIVE DATE APRIL 19, 2010.
8. THE WETLANDS SHOWN HEREON WERE DELINEATED IN THE FIELD BY THIS OFFICE IN JULY 2023.
9. THE UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE, BASED ON SURFACE EVIDENCE LOCATED DURING THE SURVEYS AND TIES PROVIDED BY KIP CORMIER BUILDERS, INC. AND LIBERTY UTILITIES. CONTACT DIGSAFE BEFORE EXCAVATION.
10. SEWER LINE INFRASTRUCTURE: SEE M.C.R.D. BOOK 3603 PAGE 2675 TO THE TOWN OF NORTHFIELD SEWER DISTRICT, DATED JULY 30, 2018.
11. AGREEMENT BETWEEN TILTON-NORTHFIELD WATER DISTRICT AND TRUSTEES OF THE ODILON A. CORMIER REVOCABLE TRUST OF 2004, DATED SEPTEMBER 13, 2017 FOR THE WATER DISTRICT TO ACCEPT OWNERSHIP AND MAINTENANCE RESPONSIBILITIES OF THE WATER LINE IN SOUTH PARK DRIVE SERVING THE SUBDIVISION LOTS. NO DEED FOUND AT REGISTRY.



BARBED WIRE WAS HELD BY PLAN REFERENCE #1 AT THIS POINT, AND THIS FENCE APPEARS TO BE MORE MODERN THAN THE FENCE ±3.5' TO THE WEST. THIS MAY NOT BEST REPRESENT THE HISTORICAL LOCATION OF THIS PROPERTY LINE. AS PLAN REFERENCE #3 INDICATES THE LINE IS ALONG STONEWALL, NOT FENCE. HOWEVER, PLAN REFERENCE #2 HAS ALSO HELD THIS SAME BOUNDARY. NEITHER FENCE OR STONEWALL IS CALLED FOR IN DEEDS.

5/8" IRF 7" TALL W/ CAP "DK LLS 785" (PLAN REF. #2 SET 4/11/20) IN OLDER LOOKING BARBED WIRE 0.20' EAST OF PROPERTY LINE. MORE MODERN LOOKING BARBED WIRE FENCE ±3' TO THE EAST HERE.

TAX MAP R14 LOT 4-5A CAROL KEYS & JEAN KEYS 90 SHAKER ROAD NORTHFIELD, NH 03276 BOOK 1190 PAGE 106 PROBATE #317-2013-ET-00241 PLAN REFERENCE #2

5/8" IRF 1" TALL W/ CAP "DK LLS 785" IN STONES. TIE TO LOT CORNER: N10°16'20"E 0.30'

TAX MAP R14 LOT 5-2 140 SOUTH PARK LLC P.O. BOX 181 TILTON, NH 03276 BOOK 3816 PG. 1993 PLAN REFERENCE #1

SCHEDULE B, PART II EXCEPTIONS

- 1,2: ALL OBSERVED ENCROACHMENTS OR CONFLICTS IN BOUNDARY LINES ARE SHOWN HEREON.
- 3,4,7: NOT SURVEY RELATED.
5. TITLE TO AND RIGHTS OF THE PUBLIC AND OTHERS ENTITLED THERETO IN AND TO THOSE PORTIONS OF THE LAND LYING WITHIN THE BOUNDS OF ADJACENT STREETS, ROADS AND WAYS: ADJACENT ROAD RIGHT-OF-WAYS ARE SHOWN HEREON.
6. THE EXACT ACREAGE OR SQUARE FOOTAGE BEING OTHER THAN AS STATED IN SCHEDULE A OR THE PLAN(S) THEREIN REFERRED TO: THE ACREAGE OF LOT 5-5 IS SHOWN HEREON, AND IS THE SAME AS NOTED IN SCHEDULE A AND PLAN REFERENCE #1.
8. RESTRICTIONS SET FORTH IN QUITCLAIM DEED DATED JULY 30, 2018, RECORDED IN BOOK 3603 PAGE 2675: THE APPROXIMATE LOCATIONS OF SEWER LINES ARE SHOWN HEREON. SEE ALSO NOTES #8 & 9 HEREON.
9. WATER LINE AGREEMENT DATED SEPTEMBER 13, 2017, RECORDED AUGUST 7, 2018 IN BOOK 3603 PAGE 2682: THE APPROXIMATE LOCATIONS OF WATER LINES ARE SHOWN HEREON. SEE ALSO NOTES #8 & 10 HEREON.
10. RESTRICTIONS SET FORTH IN WARRANTY DEED DATED DECEMBER 18, 2020, RECORDED DECEMBER 3, 2020 IN BOOK 3716 PAGE 216, AND SHOWN ON PLAN 201700019233; BOOK 3716 PAGE 216 IS THE SOUTH PARK DRIVE R.O.W. AND IS SHOWN HEREON PER PLAN 201700019233 (PLAN REFERENCE #1). ALL MATTERS ARE SHOWN HEREON.
11. MATTERS SET FORTH ON PLAN 2239, PLAN 201700019233 AND PLAN 15370: THE PLANS ARE REFERENCED HEREON AND ANY MATTERS AFFECTING THE LOT ARE SHOWN HEREON.

1"=60'
2' Topo
a = 0-3
b = 3-8
c = 8-15
d = 15-25
e = 25-50
f = 50+

LEGAL DESCRIPTION

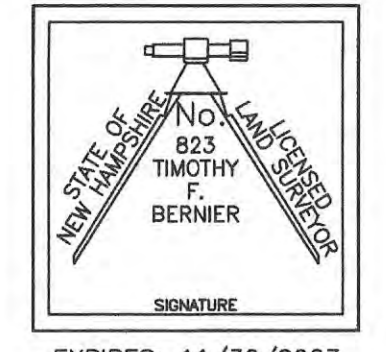
MAP R14 LOT 5-5
 A CERTAIN PARCEL OF LAND SITUATED ON THE WESTERLY SIDE OF SOUTH PARK DRIVE AND THE SOUTHERLY SIDE OF TILTON ROAD/ NH ROUTE 140 IN THE TOWN OF NORTHFIELD, COUNTY OF MERRIMACK, STATE OF NEW HAMPSHIRE, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS: BEGINNING AT AN IRON ROD ON THE WESTERLY SIDE OF SAID SOUTH PARK DRIVE, AT LAND OF 140 SOUTH PARK LLC;
 THENCE ALONG LAND OF SAID 140 SOUTH PARK LLC, S54°23'21"W A DISTANCE OF THREE HUNDRED TWENTY-FIVE AND FORTY-NINE HUNDREDTHS (325.49) FEET TO AN IRON ROD;
 THENCE N88°11'08"W A DISTANCE OF NINE HUNDRED EIGHTY AND THIRTY-FIVE HUNDREDTHS (980.35) FEET TO AN IRON ROD AT THE END OF A STONEWALL AT LAND OF CAROL & JEAN KEYS;
 THENCE BY LAND OF SAID KEYS AND LAND OF WINNIPESAUKEE COMMERCIAL PROPERTIES LLC N38°50'19"E A DISTANCE OF THREE HUNDRED THIRTY AND EIGHTY-THREE HUNDREDTHS (330.83) FEET TO A POINT;
 THENCE CONTINUING BY LAND OF SAID WINNIPESAUKEE COMMERCIAL PROPERTIES LLC N32°07'19"E A DISTANCE OF SIXTY-NINE AND FIFTY-FOUR HUNDREDTHS (69.54) FEET TO A POINT AT THE BEGINNING OF A STONEWALL;
 THENCE ALONG SAID STONEWALL N37°29'41"E A DISTANCE OF SIXTY-TWO AND EIGHTY-TWO HUNDREDTHS (62.82) FEET TO A POINT AT THE END OF SAID STONEWALL;
 THENCE N34°05'32"E A DISTANCE OF ONE HUNDRED NINETY AND THIRTY-EIGHT HUNDREDTHS (190.38) FEET TO AN IRON ROD ON THE SOUTHERLY SIDE OF SAID TILTON ROAD/NH ROUTE 140;
 THENCE ALONG SAID ROAD S79°08'40"E A DISTANCE OF ONE HUNDRED SEVENTY-ONE AND FIFTY-EIGHT HUNDREDTHS (171.58) FEET TO A CONCRETE BOUNDARY;
 THENCE ALONG SAID ROAD S79°24'56"E A DISTANCE OF SIX HUNDRED FORTY-FOUR AND NINETY-NINE HUNDREDTHS (644.99) FEET TO A GRANITE BOUND AT SOUTH PARK DRIVE;
 THENCE ON A CURVE TO THE RIGHT HAVING A RADIUS OF 30.00' A DISTANCE OF FORTY-THREE AND SIXTY-ONE HUNDREDTHS (43.61) FEET TO A GRANITE BOUND;
 THENCE ON A CURVE TO THE LEFT HAVING A RADIUS OF 425.00' A DISTANCE OF ONE HUNDRED EIGHTY-SIX AND NINETY-FOUR HUNDREDTHS (186.94) FEET TO THE POINT OF BEGINNING, CONTAINING 470,795 SQUARE FEET OR 10,808 ACRES.

CERTIFICATION

TO: (i) 42 REAL ESTATE, LLC (ii) REPUBLIC TITLE OF TEXAS, INC. (iii) 42 FL NORTHFIELD, LP

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS: 1-5,8c-b,7a,7b,7c,8,11,13,14 & 16-19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED IN JULY-AUGUST 2023.
 I ALSO CERTIFY THAT LOT 5-5 SHOWN HEREON IS THE SAME AS LOT 5-5 ON PLAN REFERENCE #1 AND IS A PORTION OF THE PROPERTY DESCRIBED IN MERRIMACK COUNTY REGISTRY OF DEEDS BOOK 3536 PAGE 2438.

DATE OF PLAN: _____
 TIMOTHY F. BERNIER LLS



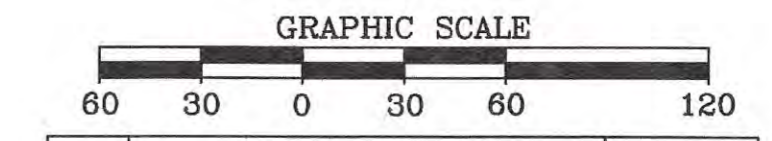
EXPIRES: 11/30/2023

Draft

ALTA/NSPS LAND TITLE SURVEY
 PREPARED FOR
42 FL NORTHFIELD, LP
 ASSESSORS MAP R14 LOT 5-5
 SOUTH PARK DRIVE
 NORTHFIELD, NH
 SCALE 1"=60' DATE: AUGUST 2023

OWNER OF RECORD

MAP R14 LOT 5-5
 ODILON A. CORMIER REVOCABLE TRUST OF 2004
 NICOLE M. CORMIER & SUZANNE C. ARENA, TRUSTEES
 5 LEAVITT ROAD
 SANBORTON, NH 03269
 BOOK 3536 PAGE 2438



NO.	REVISION	DATE



T. F. BERNIER, INC.
 Land Surveyors - Designers - Consultants
 50 PLEASANT STREET - P.O. BOX 3464
 CONCORD, NEW HAMPSHIRE 03302-3464
 Tel:(603)224-4148 - Fax:(603)224-0507

DESIGNED BY	DRAWN BY	CHECKED BY	F.B.	P.C.	JOB #
	JRC	TFB	232	02	711-01

DRAWING NAME
Alta 2023.DWG

REVISION HISTORY

1.

ISSUED FOR

PERMITTING

ALL DOCUMENTS PREPARED BY WILCOX & BARTON, INC. ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY WILCOX & BARTON, INC. FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO WILCOX & BARTON, INC. OWNER SHALL INDEMNIFY AND HOLD HARMLESS WILCOX & BARTON, INC. FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

OWNER

**ODILON A. CORMIER REV.
TRUST OF 2004
5 LEAVITT ROAD
SANBORNTON, NH 03269**

APPLICANT

**42 REAL ESTATE, LLC
2030 MAIN STREET, SUITE 342
DALLAS, TX 75201**

SITE

**42 FL NORTHFIELD PEC -
DISTRIBUTION
WAREHOUSE**

**SOUTH PARK DRIVE
NORTHFIELD, NH 03276**

MAP R14 LOT 5-5

DRAWING TITLE

**PRE-DEVELOPMENT
SITE-SPECIFIC SOIL MAP**

SCALE

1" = 50'

DATE

01/19/2024

DRAFTED BY

CM/ JMJ

CHECKED BY

DLF

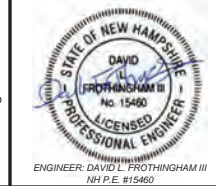
PROJECT MGR

DLF

PROJECT NO.

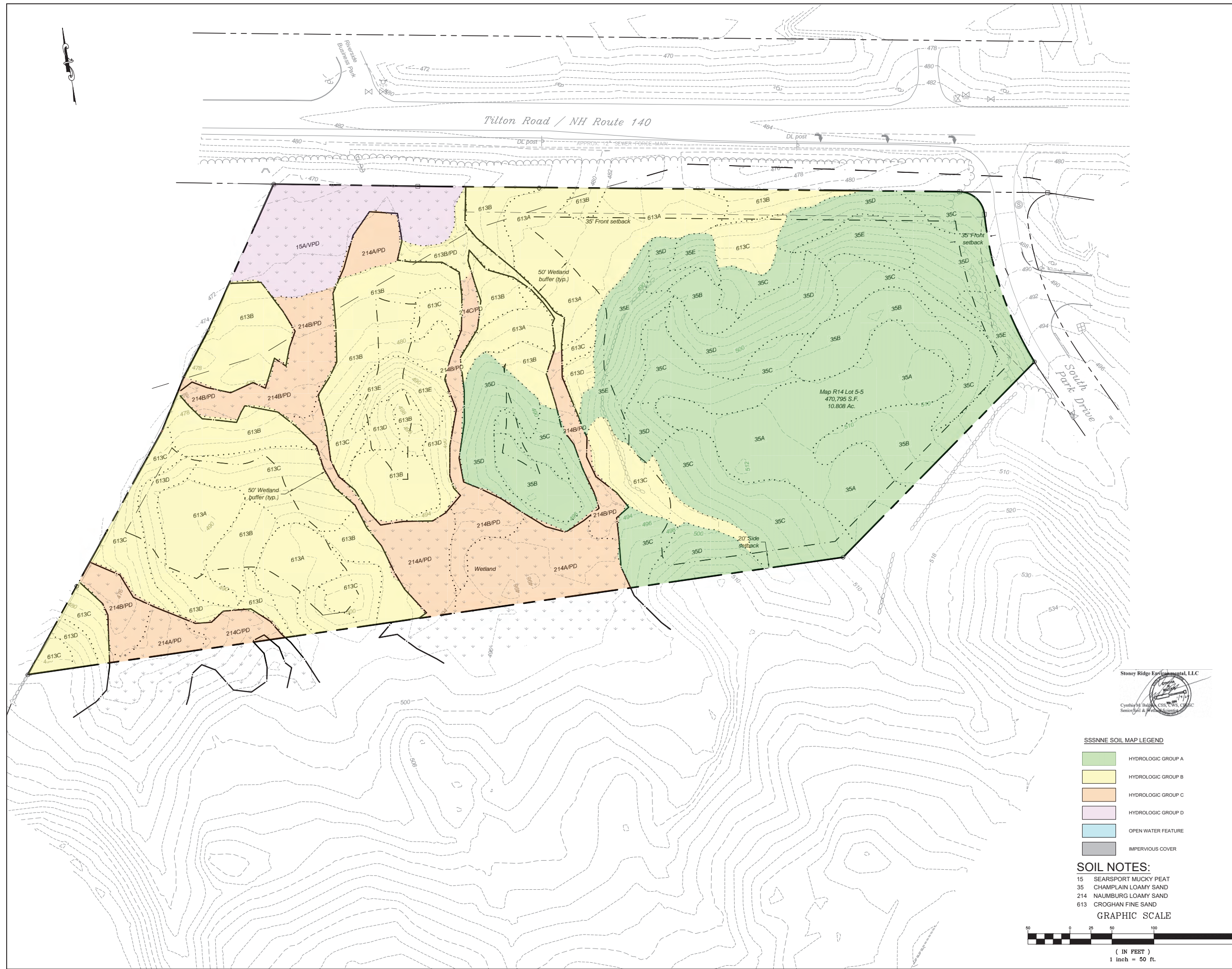
MLGB0001

SHEET NO.



SM.1

06 OF 20



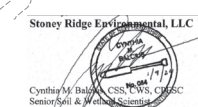
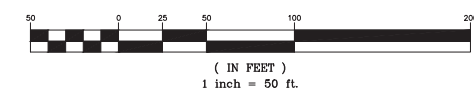
SSSNNE SOIL MAP LEGEND

- HYDROLOGIC GROUP A
- HYDROLOGIC GROUP B
- HYDROLOGIC GROUP C
- HYDROLOGIC GROUP D
- OPEN WATER FEATURE
- IMPERVIOUS COVER

SOIL NOTES:

- 15 SEARSPORT MUCKY PEAT
- 35 CHAMPLAIN LOAMY SAND
- 214 NAUMBURG LOAMY SAND
- 613 CROGHAN FINE SAND

GRAPHIC SCALE



REVISION HISTORY

1.

ISSUED FOR

PERMITTING

ALL DOCUMENTS PREPARED BY WILCOX & BARTON, INC. ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY WILCOX & BARTON, INC. FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO WILCOX & BARTON, INC. OWNER SHALL INDEMNIFY AND HOLD HARMLESS WILCOX & BARTON, INC. FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

OWNER

**ODILON A. CORMIER REV.
TRUST OF 2004
5 LEAVITT ROAD
SANBORNTON, NH 03269**

APPLICANT

**42 REAL ESTATE, LLC
2030 MAIN STREET, SUITE 342
DALLAS, TX 75201**

SITE

**42 FL NORTHFIELD PEC -
DISTRIBUTION
WAREHOUSE**

**SOUTH PARK DRIVE
NORTHFIELD, NH 03276**

MAP R14 LOT 5-5

DRAWING TITLE

**POST-DEVELOPMENT
SITE-SPECIFIC SOIL MAP**

SCALE

1" = 50'

DATE

01/19/2024

DRAFTED BY

CM/ JMJ

CHECKED BY

DLF

PROJECT MGR

DLF

PROJECT NO.

MLGB0001

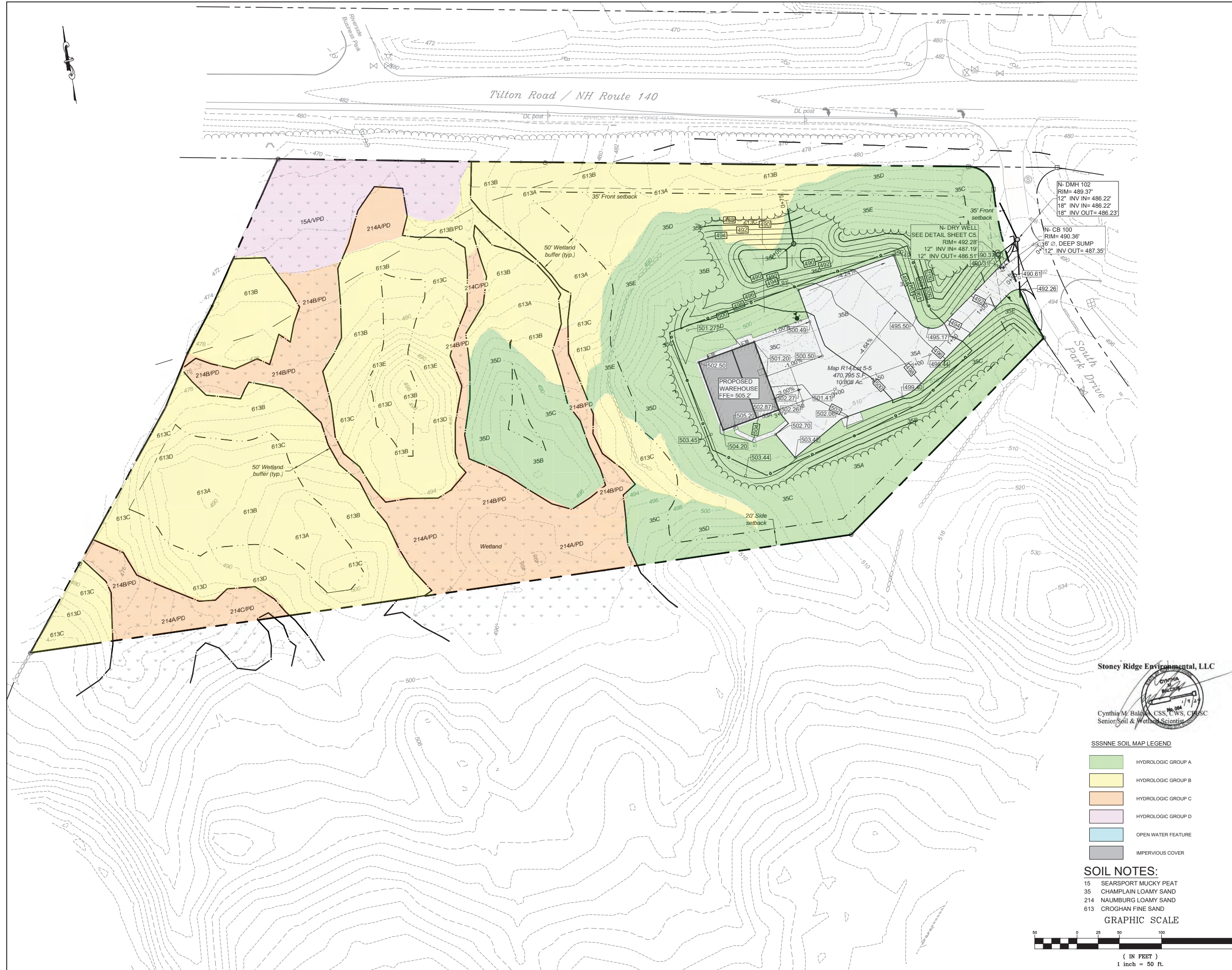
SHEET NO.



SM.2

ENGINEER: DAVID L. FROTHINGHAM III
NH P.E. #15460

02 OF 02



Stoney Ridge Environmental, LLC

Cynthia M. Balogh, CSS, CWS, CWS-C, CWS-SC
Senior Soil & Wetland Scientist

Map R14 Lot 5-5
470,795 S.F. = 10,808 Ac.

PROPOSED WAREHOUSE
FFE= 505.2'

N- DRY WELL
SEE DETAIL SHEET C5.
RIM= 492.28'
12" INV IN= 487.19'
12" INV OUT= 486.51'

N- CB 100
RIM= 490.36'
6" Ø, DEEP SUMP
12" INV IN= 487.35'
12" INV OUT= 487.35'

N- DMH 102
RIM= 489.37'
12" INV IN= 486.22'
18" INV IN= 486.22'
18" INV OUT= 486.23'

Map R14 Lot 5-5
470,795 S.F. = 10,808 Ac.

Map R14 Lot 5-5
470,795 S.F. = 10,808 Ac.

Map R14 Lot 5-5
470,795 S.F. = 10,808 Ac.

10.0 INFILTRATION FEASIBILITY REPORT

Wilcox & Barton INC.

CIVIL • ENVIRONMENTAL • GEOTECHNICAL

INFILTRATION FEASIBILITY REPORT

for

**42 FL Northfield PEC – Distribution Warehouse
South Park Drive
Northfield, NH 03276**

Prepared for:

42 Real Estate, LLC
2030 Main Street, Suite 342
Dallas, TX 75201

Prepared by:

Wilcox & Barton, Inc.
2 Home Avenue
Concord, New Hampshire 03301
Contact: David L. Frothingham III, PE, (802) 461-6828



Wilcox & Barton, Inc. Project No.: MLBG0001

January 19, 2024

WWW.WILCOXANDBARTON.COM

#1B Commons Drive, Unit 12B, Londonderry, NH 03053 • Ph: (603) 369-4190 | (888) 777-5805 • Fax: (603) 369-6639

Offices In: New Hampshire • Vermont • Massachusetts • Connecticut • Hawaii

1.0 LOCATION OF THE PRACTICE.....2
2.0 EXISTING TOPOGRAPHY AT THE LOCATION OF THE PRACITICES.....2
3.0 TEST PIT LOCATIONS.....2
4.0 SEASONAL HIGH WATER (SHWT) AND BEDROCK ELEVATIONS2
5.0 PROFILE DESCRIPTION AND SOILS.....3
6.0 SUMMARY OF DATA USED TO DETERMINE THE INFILTRATION RATE.....3



1.0 LOCATION OF THE PRACTICE

This project proposes two stormwater systems that require infiltration to function properly. The two systems are identified on the plans as Dry Well 1 and Infiltration Pond 1. Additionally, two building drip edges are proposed surrounding the warehouse building identified as Drip Edge 1 and Drip Edge 2.

Dry Well 1 – This practice is located immediately to the north of the proposed driveway entrance. This practice receives 0.20-acres of impervious cover. The impervious area consists of the paved driveway entrance.

Infiltration Pond 1 - This practice is located to the north of the proposed development, to the north of the proposed parking area. The infiltration practice receives runoff from the paved parking area, pedestrian sidewalks, and the warehouse building, resulting in drainage from 1.53-acres of partially impervious area and partially grassed landscaped land.

Drip Edge 1 – This practice is located surrounding the western portion of the warehouse building. This practice receives 0.082-acres of impervious cover. The impervious area consists of the western portion of the warehouse building.

Drip Edge 2 – This practice is located surrounding the southern portion of the warehouse building. This practice receives 0.01-acres of impervious cover. The impervious area consists of the southern portion of the warehouse building.

2.0 EXISTING TOPOGRAPHY AT THE LOCATION OF THE PRACTICES

The existing topography at all the infiltration practices is in undisturbed wooded land, mainly consisting of slopes between 3% and 11% towards the north and west. The existing cover in the location of the practices is comprised of wooded cover with excessively well-draining soils.

3.0 TEST PIT LOCATIONS

Test pits have been performed in the locations of the infiltration practices, which are adjacent to the proposed impervious cover. The test pits were performed on December 20, 2023, which reflected that seasonal high groundwater was observed between 28”-65” below existing grade. One additional test pit shall be completed during construction in the dry well location to confirm the design intent prior to installing the dry well. Please see the Site-Specific Soil Survey Report and the Test Pit Logs for more information.

4.0 SEASONAL HIGH WATER (SHWT) AND BEDROCK ELEVATIONS

The test pits performed indicated that the soils are excessively well drained with SHWT and bedrock present at depths greater than 20” between 28”-65”. The test pit results are provided to verify the minimum separation from the bottom of each practice to the elevation of seasonal high water and bedrock.

5.0 PROFILE DESCRIPTION AND SOILS

Please refer to “Site-Specific Soil Survey Report”.

6.0 SUMMARY OF DATA USED TO DETERMINE THE INFILTRATION RATE

On-site soils consist of Champlain loamy fine sand within the project area, which is hydrologic soil group A and is excessively well drained. The Champlain loamy fine sand has an infiltration rate measured at 6.0-20.0 inches/hour within the B Horizon. As a result, the site soils were modeled with a design infiltration rate of 3.0 inches/hour, after a factor of safety of 2 was applied to the maximum infiltration rate of 6 inches/hour.

11.0 INSPECTION AND MAINTNENACE MANUAL



Wilcox & Barton INC.

CIVIL • ENVIRONMENTAL • GEOTECHNICAL

INSPECTION AND MAINTENANCE MANUAL

for

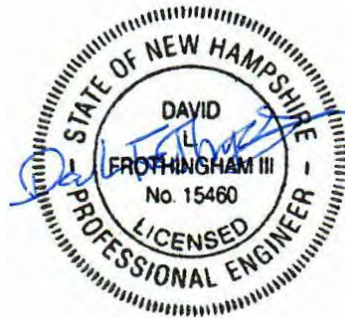
**42 FL Northfield PEC – Distribution Warehouse
South Park Drive
Northfield, NH 03276**

Prepared for:

42 Real Estate, LLC
2030 Main Street, Suite 342
Dallas, TX 75201

Prepared by:

Wilcox & Barton, Inc.
2 Home Avenue
Concord, New Hampshire 03301
Contact: David L. Frothingham III, PE, (802) 461-6828



**Wilcox & Barton, Inc.
Project No.: MLBG0001**

January 19, 2024

INSPECTION AND MAINTENANCE PROCEDURES

RESPONSIBLE PARTIES

Inspection/Maintenance/Record Keeping:

Contact Name
42 Real Estate, LLC
2030 Main Street, Suite 342
Dallas, TX 75201
Point of Contact: TBD

INSPECTION SCHEDULE

Catch Basin	Each catch basin will be inspected when the system is installed and prior to directing stormwater to it. Structure inverts will be measured and documented at this time as a baseline reference for future inspections. Catch basins will be inspected every three months (minimum) and after major storm events exceeding 2.5 inches in a 24-hour period. Inspection results will be recorded using the Inspection Forms included at the end of this document.
Infiltration Pond	The infiltration pond will be inspected when the system is installed and prior to directing storm water to it. The sediment forebay will be inspected twice annually (minimum). If, upon visual inspection, it is found that sediment has accumulated and/or debris is present, a stadia rod will be inserted to determine the depth of sediment and debris shall be removed. Inlet/outlet structures will be inspected annually (minimum) and the infiltration components will be inspected at least twice annually and after major storm events exceeding 2.5 inches in a 24-hour period. Inspection results will be recorded using the Inspection Forms included at the end of this document.
Infiltration Trenches/Building Drip Edges	Each infiltration trench will be inspected when the system is installed and prior to directing stormwater to it. The infiltration trenches will be inspected twice annually (minimum) and after major storm events exceeding 2.5 inches in a 24-hour period. Trash and debris shall be removed at each inspection. At least once annually, the system shall be inspected for drawdown time. Inspection results will be recorded using the Inspection Forms included at the end of this document.

Dry Well Each dry well will be inspected when the system is installed and prior to directing stormwater to it. The dry well will be inspected twice annually (minimum) and after major storm events exceeding 2.5 inches in a 24-hour period. Trash and debris shall be removed at each inspection. At least once annually, the system shall be inspected for drawdown time. Inspection results will be recorded using the Inspection Forms included at the end of this document.

MAINTENANCE PROCEDURES

Catch Basins Debris will be removed from catch basin inlet grates, and inlet/outlet pipes inside the structures. Sediment will be removed from the interior of the structures by vac truck when the depth of sediment exceeds 25% of the structure diameter. Water and sediment from cleanout procedures must be disposed of in accordance with federal, state, and local regulations at an approved off-site disposal facility, and must not be discharged into sanitary sewer systems. Maintenance will be recorded in the Inspection and Maintenance Log included at the end of this document.

Infiltration Pond When the average depth of sediment in the sediment forebay exceeds 3 inches, clean out will be performed. Trash and debris will be removed from the inlet/outlet structures when observed during inspections. Maintenance will be recorded in the Inspection and Maintenance Log included at the end of this document. If the infiltration system does not drain within 72 hours, a qualified professional shall be consulted.

Infiltration Trenches/Building Drip Edges When the average depth of sediment in the infiltration trench exceeds half depth of trench, sediment laden material will be removed and replaced. Trash and debris will be removed from the area when observed during inspections. Maintenance will be recorded in the Inspection and Maintenance Log included at the end of this document. If dewatering times exceed 72 hours following a rainfall event, then a qualified professional shall assess the condition of the facility to determine measures required to restore filtration function.

Dry Well When the average depth of sediment in the dry well exceeds 3 inches, clean out will be performed. Trash and debris will be removed from the inlet/outlet structures when observed during inspections. Maintenance will be recorded in the Inspection and Maintenance Log included at the end of this document. If the infiltration system does not drain within 72 hours, a qualified professional shall be consulted.

RECORD KEEPING

Record keeping and inspection/maintenance activity will begin upon completion of all terrain activities that direct stormwater to the practices described herein. All records, including records from maintenance subcontractors, will be maintained by 42 Real Estate, LLC or designee. 42 Real Estate, LLC will be responsible for ensuring the long-term effectiveness of the stormwater practices.

WINTER MAINTENANCE

The proposed 42 FL Northfield PEC – Distribution Warehouse facility development for 42 Real Estate, LLC at South Park Drive, Northfield, NH is a project including one warehouse building located outside of any/all Groundwater Classification Areas. The majority of stormwater runoff from the project area collects via the proposed infiltration systems which leads off-site via the existing culvert to the north.

All winter maintenance contractors shall record salt usage by vehicle for each storm and periodically compare the usage rates to confirm spreader calibrations. All winter maintenance contractors shall record storm response data, including date, air temperature, ground surface temperature, storm start and end time, snow fall total, salt usage, application rates, application times, and plow times to be compared and analyzed by the applicators and property managers to improve and minimize salt use. The attached “Deicing and Anti-Icing Log” shall be used as a guide.

INVASIVE SPECIES MAINTENANCE

The site shall be inspected and monitored for the presence of invasive plants during maintenance activities. If invasive plants are found on-site, they will need to be controlled and removed of in a safe and effective manner. In order to determine how to effectively remove the invasive plant(s), the reproduction of that particular plant type needs to be determined. The methodology of removal and disposal shall adhere to the guidelines set forth by UNH Cooperative Extension, located in “Methods for Disposing Non-Native Invasive Plants,” which is attached to this manual for reference.

Catch Basin/Drain Manhole Inspection Form

General Information	
Date of Inspection	
Inspector's Name(s)	
Inspector's Title(s)	
Type of Inspection:	<input type="checkbox"/> Routine (quarterly) <input type="checkbox"/> Post-storm event

Structure ID	Blockage?	Floatable Debris?	Visible Damage?	Depth of Buildup*	Odor?	Maintenance Required? Provide detail below
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other	<input type="checkbox"/> Yes <input type="checkbox"/> No

Corrective Action Needed and Notes

**If the depth of sediment buildup in the bottom of the structure has reached approximately 25% of the diameter of the structure, the unit requires cleaning.*

Infiltration Pond Inspection Form

General Information	
Date of Inspection	
Inspector's Name(s)	
Inspector's Title(s)	
Type of Inspection:	<input type="checkbox"/> Routine (annually) <input type="checkbox"/> Other

Trash/Debris?	Visible Sediment?	Depth of Sediment Buildup*	Maintenance Required? Provide detail below
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No

Visible Damage:

Inlet

Outlet

None

Describe:

Corrective Action Needed and Notes

** If the average depth of sediment buildup exceeds 3 inches, **the sediment forebay and/or pond requires cleaning.***

** If settlement, erosion, seepage, animal burrows, woody vegetation, and/or other conditions that could degrade the embankment and reduce its stability for impounding water, **immediate corrective action should be implemented.***

Infiltration Trench/Building Drip Edge Inspection Form

General Information	
Date of Inspection	
Inspector's Name(s)	
Inspector's Title(s)	
Type of Inspection:	<input type="checkbox"/> Routine (quarterly) <input type="checkbox"/> Post-storm event <input type="checkbox"/> Dewatering (Annually)

Trash/Debris?	Visible Sediment?	Depth of Sediment Buildup*	Maintenance Required? Provide detail below
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No

Visible Damage:

Inlet

Outlet

None

Describe:

Corrective Action Needed and Notes

** If the average depth of sediment buildup exceeds half the depth of the trench, **the unit requires cleaning.***

** If settlement, erosion, seepage, animal burrows, woody vegetation, and/or other conditions that could degrade the embankment and reduce its stability for impounding water, **immediate corrective action should be implemented.***

Dry Well Inspection Form

General Information	
Date of Inspection	
Inspector's Name(s)	
Inspector's Title(s)	
Type of Inspection:	<input type="checkbox"/> Routine (quarterly) <input type="checkbox"/> Post-storm event <input type="checkbox"/> Dewatering (Annually)

Trash/Debris?	Visible Sediment?	Depth of Sediment Buildup*	Maintenance Required? Provide detail below
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No

Visible Damage:

- Inlet
- Outlet
- None

Describe:

Corrective Action Needed and Notes

* If the average depth of sediment buildup exceeds 3 inches, **the structure requires cleaning.**

* If settlement, erosion, seepage, animal burrows, woody vegetation, and/or other conditions that could degrade the embankment and reduce its stability for impounding water, **immediate corrective action should be implemented.**

Inspection and Maintenance Log

Date:				
Performed by:				
Practice:	<u>Catch Basins/Drain Manholes</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Pond</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Trenches</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Dry Well</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance
Date:				
Performed by:				
Practice:	<u>Catch Basins/Drain Manholes</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Pond</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Trenches</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Dry Well</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance
Date:				
Performed by:				
Practice:	<u>Catch Basins/Drain Manholes</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Pond</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Trenches</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Dry Well</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance
Date:				
Performed by:				
Practice:	<u>Catch Basins/Drain Manholes</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Pond</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Trenches</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Dry Well</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance
Practice:	<u>Catch Basins/Drain Manholes</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Pond</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Infiltration Trenches</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance	<u>Dry Well</u> <input type="checkbox"/> Inspection <input type="checkbox"/> Maintenance

Winter Maintenance Policy Checklist for Contractors

Recommended Practice	Y	N	Comments
Develop a Winter Maintenance Policy Plan outlining procedures for the preservation of the surface facilities and stating the adopted practices for salt minimization.			
Use de-/anti-icing logs with noted application rates, material usage totals, equipment calibration record, and material specifications (brine mix ratio, ice melt manufacturer recommendations, etc.).			
Record and log site storm event data including date, air temperature, ground surface temperature, storm start and end time, and snow fall/rain fall totals.			
Record total salt usage, application rates, application times, and plow times to improve current and future salt minimization efforts on site.			
Develop Winter Maintenance Policy training program for applicators.			
Use anti-icing pretreatment where applicable prior to snowstorm events.			
Plow/shovel areas before beginning de-icing activities.			
Use wet materials. Establish pre-wetting procedures and inspection checks for quality control.			
Do not apply sodium chloride (road salt) for pavement temperatures below 15° F. If possible, wait for warmer temperatures before deicing. Consult manufacturer specifications for deicer applications below 0° F.			
Use salt for melting and only use sand for traction in hazardous areas.			
Outside storage of salt, sand, and other like winter maintenance materials shall not be permitted on the 42 FL Northfield PEC – Distribution Warehouse site.			
Sweep up areas of sand application and dispose of properly.			

Checklist is adapted from UNH Technology Transfer Center's "Training Materials for Best Management Practices for Winter Road, Parking Lot, and Sidewalk Maintenance" dated January 31, 2014 in partnership with NHDES and NHDOT.

CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

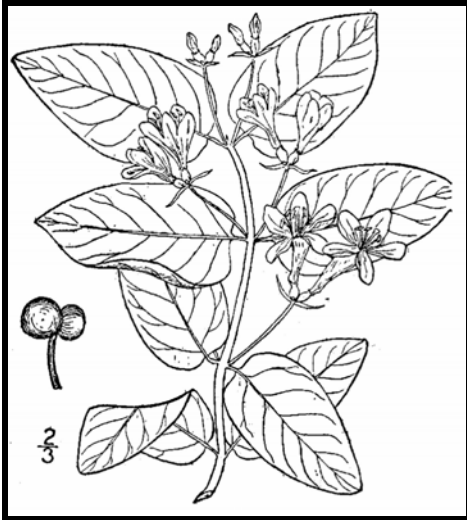
Background:

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.



Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle

Lonicera tatarica

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine

the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag “head first” at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.






Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database /
Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Be diligent looking for seedlings for years in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Woody Plants	Method of Reproducing	Methods of Disposal
Norway maple <i>(Acer platanoides)</i> European barberry <i>(Berberis vulgaris)</i> Japanese barberry <i>(Berberis thunbergii)</i> autumn olive <i>(Elaeagnus umbellata)</i> burning bush <i>(Euonymus alatus)</i> Morrow's honeysuckle <i>(Lonicera morrowii)</i> Tatarian honeysuckle <i>(Lonicera tatarica)</i> showy bush honeysuckle <i>(Lonicera x bella)</i> common buckthorn <i>(Rhamnus cathartica)</i> glossy buckthorn <i>(Frangula alnus)</i>	Fruit and Seeds 	<p>Prior to fruit/seed ripening</p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> ▪ Pull or cut and leave on site with roots exposed. No special care needed. <p>Larger plants</p> <ul style="list-style-type: none"> ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn. <hr/> <p>After fruit/seed is ripe</p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
oriental bittersweet <i>(Celastrus orbiculatus)</i> multiflora rose <i>(Rosa multiflora)</i>	Fruits, Seeds, Plant Fragments 	<p>Prior to fruit/seed ripening</p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> ▪ Pull or cut and leave on site with roots exposed. No special care needed. <p>Larger plants</p> <ul style="list-style-type: none"> ▪ Make a brush pile. ▪ Burn. <hr/> <p>After fruit/seed is ripe</p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Non-Woody Plants	Method of Reproducing	Methods of Disposal
<p>garlic mustard (<i>Alliaria petiolata</i>)</p> <p>spotted knapweed (<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. <p>black swallow-wort (<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> ▪ May cause skin rash. Wear gloves and long sleeves when handling. <p>pale swallow-wort (<i>Cynanchum rossicum</i>)</p> <p>giant hogweed (<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. <p>dame's rocket (<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed (<i>Lepidium latifolium</i>)</p> <p>purple loosestrife (<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass (<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed (<i>Polygonum perfoliatum</i>)</p>	<p>Fruits and Seeds</p> 	<p>Prior to flowering</p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and leave on site with roots exposed. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. <hr/> <p>During and following flowering</p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and leave on site with roots exposed. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
<p>common reed (<i>Phragmites australis</i>)</p> <p>Japanese knotweed (<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed (<i>Polygonum x bohemicum</i>)</p>	<p>Fruits, Seeds, Plant Fragments</p> <p>Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.</p>	<p>Small infestation</p> <ul style="list-style-type: none"> ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

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12.0 SALT MINIMIZATION PLAN



Wilcox & Barton INC.

CIVIL • ENVIRONMENTAL • GEOTECHNICAL

SALT MINIMIZATION PLAN for

**42 FL Northfield PEC – Distribution Warehouse
South Park Drive
Northfield, NH 03276**

Prepared for:

42 Real Estate, LLC
2030 Main Street, Suite 342
Dallas, TX 75201

Prepared by:

Wilcox & Barton, Inc.
2 Home Avenue
Concord, New Hampshire 03301
Contact: David L. Frothingham III, PE, (802) 461-6828

**Wilcox & Barton, Inc.
Project No.: MLBG0001**

January 19, 2024



Background

The project consists of the development of an existing vacant/undeveloped parcel with one warehouse building and supporting infrastructure. The facility is located at South Park Drive, Northfield, NH and is located within the Winnepesaukee River watershed and a stratified drift aquifer of the Winnepesaukee River Basin. Stormwater runoff from the site collects at an unnamed tributary to the Tioga River. There are no surface water impairments for the Tioga River and the proposed facility is not within the groundwater protection district. In the interest of protecting the watershed and aquifer for future development in the region, a plan to reduce salt usage at the proposed facility shall be in place. Based on studies by the NHDES and US EPA, increasing sources of impairments have been linked to the use of deicing, anti-icing, and pretreatment materials applied during winter maintenance of roadways and other paved surfaces.

The presence of snow and ice on roadways, parking lots, and sidewalks creates a public safety concern – hence, the need for using salt and other deicing measures. However, salt (specifically the chloride in salt) can have a negative impact to plants, wildlife, aquatic species, surface water, and groundwater. The objective of this Salt Minimization Plan is to reduce the amount of chloride entering the surface waters and groundwaters while still maintaining roadway and site safety.

Project Area Description

The 42 FL Northfield PEC – Distribution Warehouse facility is proposed to be an approximately 6,000-square foot distribution facility with associated parking, driveway, utilities, and stormwater management systems. The distribution facility will receive packages by tractor trailers and distribute them to local delivery trucks. The proposed building is sited on the eastern portion of the property with automobile and tractor trailer parking spaces to the east of the building. Loading docks for delivery trucks run down the length of the eastern side of the proposed building.

Access to the new facility is proposed through a new driveway from South Park Drive. The driveway is proposed to separate the semi-truck traffic accessing the loading docks from the delivery vehicles and employee traffic. The construction of the project will not impact any wetlands or the associated wetland buffers.

Responsibility

42 Real Estate, LLC and all property managers are responsible for implementing and complying with the Salt Minimization Plan; reviewing the success of the Plan; and continuing to update the Plan as new requirements, practices, and products are developed. A copy of this Plan shall be given to all personnel that are involved with winter maintenance within the 42 FL Northfield PEC – Distribution Warehouse development for mandatory implementation.



Certifications

All salt applicators within the 42 FL Northfield PEC – Distribution Warehouse facility shall be current NHDES Certified Green SnowPro applicators or equivalent. Salt applicators are responsible for maintaining their annual certification. Information on these certifications can be found in the links provided below:

- <https://www.des.nh.gov/land/roads/road-salt-reduction/green-snowpro-certification>
- <https://t2.unh.edu/green-snowpro-salt-applicator-certification-training>

Weather Monitoring

Winter maintenance contractors and salt applicators employed within the 42 FL Northfield PEC – Distribution Warehouse facility shall monitor storm events using National Weather Service (<http://www.noaa.gov>), local TV stations, and website weather information. All vehicles used for the application of road salt or brining and pre-wetting solution shall be equipped with an annually calibrated air and ground surface temperature monitor. Air and ground temperatures shall be monitored throughout the day to ensure that the operators are making informed decisions as to when and to what extent materials are applied to the roadways, parking lots and sidewalks.

Pretreatment and Treatment of Parking Lots and Roadways

Apply pre-wetted deicer, salt brine, or liquid deicers to parking lots and roadways prior frost or snow accumulation to prevent icing. Pre-wetting paved areas has been shown to limit the amount of salt needed in most snowstorms. Salt brine or liquid deicers shall not be applied before a rainstorm, but they can be applied before a light freezing drizzle. For more information, refer to attached Anti-Icing and Pre-wetting NH Best Management Practices sheets from the Technology Transfer Center at UNH.

If snow accumulates prior to salting the parking lots and roadways within the 42 FL Northfield PEC – Distribution Warehouse facility, the surfaces should be plowed before applying deicers. Only apply salt to pavement surface or icy surfaces to prevent or reduce icing as necessary. Pavement surface temperature shall be monitored in parking lots and roadways. If pavement temperature is below 15° F, winter maintenance contractors shall only use pre-wetted salt or brining solution. Dry salt (sodium chloride) will not melt fast enough at these temperatures.

Note that winter sanding of non-porous pavement shall only be permitted in hazardous areas to provide traction.

Pretreatment and Treatment of Pedestrian Pathways

Always remove snow prior to applying deicers to sidewalks and building entrances. It is strongly recommended that a pre-wetted salt or brining solution be applied to pedestrian pathways. For more information, refer to attached Anti-Icing, Pre-wetting, and Brine Making NH Best Management Practices sheets from the Technology Transfer Center at UNH. For salt

spreaders, drop spreaders are preferred, but if using a rotary spreader, shields must be installed to restrict the spread pattern to the walkway only.

Plowing

Plow operations should be timed to allow maximum melting by salt before snow is plowed off the road or parking lot. Snow piles shall not be located on top of catch basins, within swales and ponds, or in employee parking spaces. Within the development, snow piles should be stored within the parking lot as much as possible so that solids can be recovered after the snow melts.

Salt & Sand Piles

Outside storage of salt, sand, and other like winter maintenance materials shall not be permitted at the 42 FL Northfield PEC – Distribution Warehouse facility. For more information, refer to attached Material Storage and Housekeeping NH Best Management Practices sheets from the Technology Transfer Center at UNH.

Equipment & Equipment Calibration

Spreaders used within 42 FL Northfield PEC – Distribution Warehouse facility shall be equipped with ground speed control applicators to regulate the amount of salt discharged consistently. All equipment utilized for the application of pre-wetted deicer, liquid chemical, and road salt aggregate should be calibrated each fall. Equipment should be checked after each storm and recalibrated if necessary. For more information, refer to attached Hydraulic-Run Spreader Calibration and Pony Motor-Run Spreader Calibration NH Best Management Practices sheets from the Technology Transfer Center at UNH.

Documentation

All winter maintenance contractors shall record salt usage by vehicle for each storm and periodically compare the usage rates to confirm spreader calibrations. All winter maintenance contractors shall record storm response data, including date, air temperature, ground surface temperature, storm start and end time, snow fall total, salt usage, application rates, application times, and plow times to be compared and analyzed by the applicators and property managers to improve the salt minimization process. The attached "Winter Maintenance Policy Checklist for Contractors" and "Deicing and Anti-Icing Log" shall be used as a guide.

WINTER MAINTENANCE POLICY CHECKLIST FOR CONTRACTORS



Winter Maintenance Policy Checklist for Contractors

Recommended Practice	Y	N	Comments
Develop a Winter Maintenance Policy Plan outlining procedures for the preservation of the surface facilities and stating the adopted practices for salt minimization.			
Use de-/anti-icing logs with noted application rates, material usage totals, equipment calibration record, and material specifications (brine mix ratio, ice melt manufacturer recommendations, etc.).			
Record and log site storm event data including date, air temperature, ground surface temperature, storm start and end time, and snow fall/rain fall totals.			
Record total salt usage, application rates, application times, and plow times to improve current and future salt minimization efforts on site.			
Develop Winter Maintenance Policy training program for applicators.			
Use anti-icing pretreatment where applicable prior to snow storm events.			
Plow/shovel areas before beginning de-icing activities.			
Use wet materials. Establish pre-wetting procedures and inspection checks for quality control.			
Do not apply sodium chloride (road salt) for pavement temperatures below 15° F. If possible, wait for warmer temperatures before deicing. Consult manufacturer specifications for deicer applications below 0° F.			
Use salt for melting and only use sand for traction in hazardous areas.			
Outside storage of salt, sand, and other like winter maintenance materials shall not be permitted on the 42 FL Northfield PEC - Distribution Warehouse site.			
Sweep up areas of sand application and dispose of properly.			

Checklist is adapted from UNH Technology Transfer Center's "Training Materials for Best Management Practices for Winter Road, Parking Lot, and Sidewalk Maintenance" dated January 31, 2014 in partnership with NHDES and NHDOT.

DEICING AND ANTI-ICING LOG



Traffic Memo

Project: 42 FL Northfield PEC – Distribution Warehouse– Northfield
Address: South Park Drive, Northfield, NH 03276 (Lot 14-0005-005)
Owner: Odilon A. Cormier Revocable Trust
Applicant: 42 Real Estate, LLC

42 Real Estate, LLC is proposing the construction of a 6,000 sf distribution warehouse on South Park Drive in Northfield NH. This facility is referred to as a Product Exchange Center (P.E.C.). The project is located across the street from the recently completed UPS warehouse on South Park Drive.

Facility Operations

The location will receive, and ship packaged products. There will be vehicular parking and traffic 24 hours each day to and from the site. During the night a tractor-trailer will deliver product for each route based at the P.E.C. In the early morning the Route Sales Representative (R.S.R.) comes to the site, pulls their route van out, backs his personal vehicle in the vacated space, moves their van to its pre- assigned dock position, loads their route van and then departs to make their deliveries. The R.S.R. will return to the site when they have completed their deliveries and park in one of the empty parking spaces. The process then begins again that evening. In this way the route van parking doubles as auto parking. Therefore, auto parking will be minimal.

The facility is proposed with minimal office space, three 48” loading docks and one 28” loading dock. The facility is expected to have no more than 8 employees. The most applicable land use in the 2021 ITE Trip Generation Manual to the facility is Intermodal Truck Terminal, Land Use 30. Below is a chart of the anticipated traffic generation based on the building square footage:

Trip Generation Estimates				
Peak Hour Of Generator	Gross Floor Area	# of Employees	Trips per 1,000 sf	Total Peak Trips
AM Peak of adjacent street (7am to 9am)	6,000		1.97	12
PM Peak of adjacent street (4 pm to 6pm)	6,000		1.87	11
Total Daily Trips*	6,000	8		40

* The ITE Trip Manual does not provide a daily trip study for this type of facility, total daily trips extrapolated from number of employees, number of delivery trucks and anticipated tractor-trailer truck deliveries, 2-3 per night.



The anticipated trip generation fits within the expected trip generation presented for the building out of the business park presented in the traffic analysis presented by Stephen G. Pernaw & Company, Inc. for the previously permitted UPS facility in the park. Please find the project site plan and the UPS traffic study attached.



COMMERCIAL / INDUSTRIAL

COLOR CHART

TRIM/DOWNSPOUT

METAL PANELS

Signature® 200

STANDARD COLORS

26- AND 24-GAUGE MATERIAL.

SILICONIZED POLYESTER

Polar White is a Straight Polyester.

* Also available in 29-gauge

** Minimum quantities and/or extended lead times required for 24-gauge. Please inquire.



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COBALT BLUE***



HAWAIIAN BLUE***



BURNISHED SLATE***



CHARCOAL GRAY***



ASH GRAY*



KOKO BROWN*



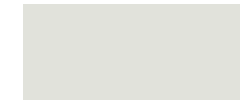
DESERT SAND*



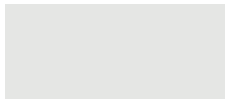
SADDLE TAN*



LIGHT STONE*



SOLAR WHITE*



POLAR WHITE**



RUSTIC RED*



CRIMSON RED***



FERN GREEN***



GALVALUME PLUS®

Final color selection should be made from metal color chips.

Please select color for exterior of building
Gutters and Trims to match

CDG Color Selections
Exterior Building (Metal Panels) Color: Ash Gray
Trim/Downspout Color: Charcoal Gray

Standing Seam Roof Color

PBR
KOKO BROWN

CDG Design Group, P.C.
 REVIEWED
 NO EXCEPTIONS TAKEN
 REJECTED
 MAKE CORRECTIONS NOTED
 REVISE & RESUBMIT
 DATE: 12/05/2023 BY: NV
 This review is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions (which shall be confirmed and coordinated in the field), process/procedure, and coordination of this with all other disciplines and satisfactory performance of this work.



PROJECT: FLYERS ENERGY HANGAR

Please present to the developer for their review and approval.
In turn, the developer may also need to present to Frito Lay for approval.
With those approvals, and to be safe, it might be a good idea to run by the city as well.

Signature® 300

STANDARD COLORS

26-GAUGE MATERIAL.

PBR, PBU, AVP, PBC, PBD PANELS ONLY.

POLYVINYLIDENE FLUORIDE (PVDF); LOW GLOSS

* Also available in 24-gauge.

** Minimum quantities and/or extended lead times required for 24-gauge. Please inquire.

+ Minimum quantities and/or extended lead times required for all gauges. Please inquire.



BONE WHITE***



SNOW WHITE**



SLATE GRAY***



MEDIUM BRONZE**



BROWNSTONE**



ALMOND**



BRITE RED**



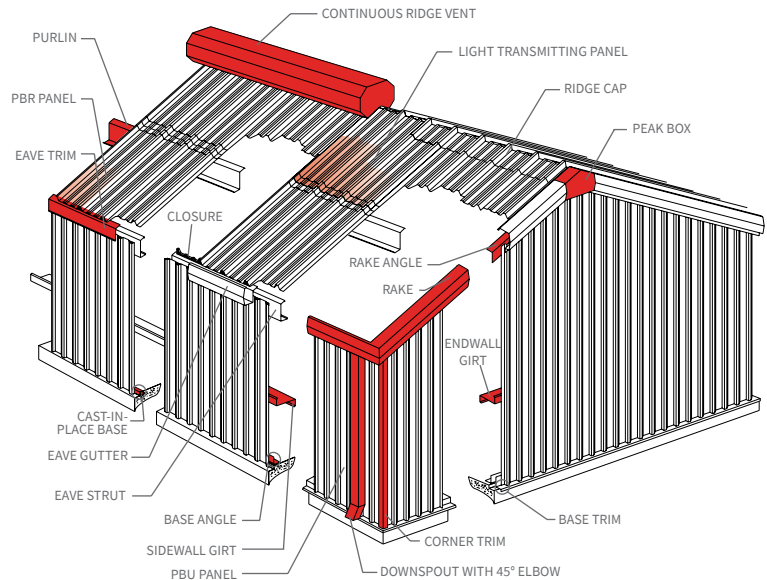
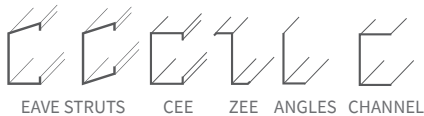
HARBOR BLUE**



CLASSIC GREEN***

AVAILABLE ACCESSORIES

- Hat and Channel Sections
- Light Transmitting Panels
- Vents
- Roof Jacks
- Fasteners
- Ridge Caps
- Closures
- Doors
- Windows
- Sealants
- Insulation
- Bracing
- Bolts
- Louvers
- Sliding Door Hardware





AVP
ASH GRAY

PROJECT: JAY'S POWER CENTER

PANEL PROFILE	PANEL	29-GAUGE		26-GAUGE			24-GAUGE			22-GAUGE		
		Galvalume Plus	Sig 200	Galvalume Plus	Sig 200	Sig 300	Galvalume Plus	Sig 200	Sig 300	Galvalume Plus	Sig 200	Sig 300
<p>Reverse Roll</p>	PBR	●	■	●	●	■	●	■	■	●	■	■
	PBU	●	■	●	●	■	●	■	■	●	■	■
	PBC	●	■	●	●	■	●	■	■	●	■	■
	PBD	●	■	●	●	■	●	■	■	●	■	■
	7.2	●	■	●	■	■	●	■	■	●	■	■
	AVP	●	■	●	●	■	●	■	■	●	■	■
	5V CRIMP	●	■	●	■	■						

● AVAILABLE IN ANY QUANTITY

■ MAY REQUIRE MINIMUM QUANTITY



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