ALTUS ENGINEERING

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

June 28, 2024

Peter Britz, Planning and Sustainability Director
City of Portsmouth Municipal Complex
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Application for Conditional Use Permit
Assessor's Map 201, Lot 8
1 Sagamore Grove
Altus Project No. 5534

Dear Peter,

On behalf of Brett Berger and Flippin Bergers, LLC, Altus Engineering and the design team are pleased to re-submit an application for a Conditional Use Permit. We would appreciate being placed on the July 10th Conservation Commission meeting. Flippin Bergers, LLC own the property located at 1 Sagamore Grove and intends to raze the existing outdated and dilapidated home and construct a new modest single-family residence on the parcel.

The application was previously presented at the June 12th Conservation Commission meeting. The following redesign reduces the building coverage by 522 SF from 2,280 SF to 1,758 SF; and reduces the impervious area by 1,316 SF from 3,694 SF to 2,376 SF. Additionally, the meadow restoration area increases by 965 SF from 3,200 SF to 4,165 SF.

The poorly maintained and obsolete home was constructed prior to City wetland buffer regulations. Portions of the lot are within the State's 250-foot Shoreland Buffer which will require a permit from NHDES. The slightly maintained lawn area extends into the 25-foot no cut buffer.

The new home will be approximately 40-feet from the freshwater wetland. A 25-foot no cut buffer will be established, and maple trees will be planted along the edge of the maintained lawn. Additionally, wetland buffer plaques will be installed to delineate the limits of the maintained portion of the property.

Enclosed for the Commission's consideration please find the following:

- Letter of Authorization
- Conditional Use Permit Narrative
- Wetland Buffer Function and Values Assessment (Cuomo)
- Drainage computations and Stormwater O&M manual
- Project Site Plans

Please feel free to call or email me directly should you have any questions or need any additional information.

Sincerely,

ALTUS ENGINEERING, LLC

Enclosures

eCopy: Brett Berger
Michael Cuomo, Wetlands Scientist

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133 Court Street
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CONDITIONAL USE PERMIT APPLICATION
1 SAGAMORE GROVE
NARRATIVE
JUNE 28, 2024

On behalf of the Applicant, Brett Berger and Flippin Bergers, LLC, Altus Engineering, LLC (Altus) respectfully submits a Wetlands Conditional Use Permit application for the redevelopment of a single-family residence at 1 Sagamore Grove. Mr. Berger proposes to raze the outdated cottage with attached sheds and outbuildings and replace it with a new energy efficient, code compliant home.

The house was constructed prior to City wetland buffer regulations and before most zoning ordinances were enacted. Generally speaking, the house is not habitable and, in its condition, renovation is not economically viable. The parcel size and configuration meet the minimum lot size standards for a parcel in the SBR zoning district. There are only 750 SF of wetlands on the lot. However, only 549 SF of the lot is not within the City's Wetland Buffer. The majority of the open space on the lot currently is lawn with small portions of maturing trees. The applicant proposes to allow the portion of the lawn in the 25-foot buffer, approximately 4,165 SF, to naturalize.

The new home and all of the built infrastructure will be approximately 40-feet from the wetlands.

In accordance with Article 10 Environmental Protection Standards Section 10.1010 Wetland Protect, the redevelopment will require a Conditional Use Permit from the Planning Board. The project does not require any additional relief from the City of Portsmouth Zoning Ordinance.

Per Section 10.1017.50 for criteria for approval of a Conditional Use Permit, Altus offers the following:

(1) The land is reasonably suited to the use, activity, or alteration.

The property is within the SRB Zoning District, a residential zone. All of the abutting properties are residential, including a multi-family structure to the west. The parcel has been used as a single-family residence and will continue to do so. The minimum lot size in the zoning district is 15,000 SF. The redevelopment project is fully compliant in regards to all aspects of the City's Zoning Ordinance. The existing home is served with municipal water supply and has an on-site sanitary subsurface waste disposal system. Recently, the City extended their municipal collection

system down Sagamore Grove. The new home will be connected to the municipal sewage collection system. As such, the only viable use of the property is a single-family residence.

(2) There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity, or alteration.

The 15,249 SF parcel exceeds the minimum lot size for the zoning district. Only 549 SF of the lot is not within the wetland buffer and all of that area is within the front and side yard setbacks which are not buildable by right. Thus, there is no building envelope that meets both the zoning setbacks and is outside the wetland buffer area. No sitework activities are proposed within 25 feet of the wetlands and wetland buffer plaques will be installed along the 25-foot no cut buffer at 50-foot intervals to ensure that the no cut buffer is honored.

(3) There will be no adverse impact on the wetland functional values of the site or surrounding properties;

The lawn currently extends up to the property line and the edge of wetlands. A 25-foot no cut buffer will be provided to improve the filtering of stormwater and separation between the built environment and the adjacent wetlands. The buffer will be over seeded with a conservation seed mix to improve the vegetative diversity. Additionally, trees and shrubs will be planted to enhance the area.

Attached to this report, Wetlands Scientist, Michael Cuomo has provided a functions and values assessment of the wetland system and the buffer area. Mr. Cuomo's report supports the proposed improvements.

The antiquated septic system is approximately 50-feet from the wetlands. It will be removed, eliminating the potential for groundwater contamination from human sources.

Stormwater treatment will be provided where none currently exists. Peak runoff flows will be reduced and treatment provided to improve water quality runoff. Stone drip edges will be installed around the perimeter of the house to promote infiltration and reduce the rate of discharge from the roof. The driveway and patio areas will be constructed using permeable materials to reduce the peak rate of runoff and to promote infiltration. The vegetated buffer will be enhanced between the hardscape and the wetland system.

(4) Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and

The entire redevelopment project will be within areas that have previously been altered. There is a mature stand of trees in the southeast corner of the site that

will be preserved. Generally, only the canopy of off-site vegetation extends onto the property. Thus, impacts to the naturally vegetative area will be minimal.

(5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.

The proposed project will impact approximately 7,900 SF of land area. All of the impacts will be within previously developed areas that are either lawn, building, septic system, or driveway. The design approach avoids impacting natural areas. The house is placed as close to the front lot line as possible and remain compliant with the zoning ordinance. This approach maximizes the wetland system behind the house. A permeable patio area has also been provided along with a small yard area. This will allow for the homeowner to enjoy the outdoor space adjacent to the wetlands and have a small yard to enjoy modest outdoor activities.

(6) Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.

The entire 25-foot buffer will be naturalized. Native shade trees will be planted along the buffer to create a natural boundary between the built and natural landscapes.

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Letter of Authorization

I, Brett Berger of Flipping Bergers, LLC, owner of the property located at 1 Sagamore Grove, Portsmouth, NH, hereby authorize Altus Engineering, LLC of Portsmouth, NH to represent us as the Owner and Applicant in all matters concerning the engineering and related permitting on Portsmouth Tax Map 201, Lot 8, Portsmouth, New Hampshire. This authorization shall include any signatures required for Federal, State and Municipal permit applications.

Signature	Brett Berger	5-7-24
	Brett Berger	Date
Witness	RICHARD HACKEMAN	5/7/24
	Print Name	Date

Michael Cuomo, Soil Scientist
6 York Pond Road, York, Maine 03909
207 363 4532
mcuomosoil@gmail.com

Eric Weinrieb, P.E.
Altus Engineering, Inc.
133 Court Street
Portsmouth, NH 03801-4413

23 May 2024

Dear Mr. Weinrieb;

This letter is in reference to the property at 1 Sagamore Grove in Portsmouth, NH, identified as tax map 201, lot 8. On 26 February and 23 May 2024 I evaluated the wetland buffer to assist you in planning the re-development of this property. This is required for a Conditional Use Permit in Portsmouth Zoning 10.1017.22.

SITE CHARACTERISTICS AND DEVELOPMENT PLAN
The project proposes to demolish the existing single family residence and replace it with another single family residence. The property is located east of Sagamore Avenue, north of Wentworth House Road and south of, but not adjacent to, Sagamore Creek in Portsmouth, NH. This 0.35 acre lot currently has a house, parking area, septic system, and lawn.

No direct wetland impact is proposed. One wetland exists on this site and continues off site to the south and west. The entire wetland is estimated to be about 1/2 acre in size, and the majority of the wetland is off site. This wetland is regulated by the City because it is greater than 10,000 square feet. It requires a 100 foot buffer, per local zoning.

WETLAND
This wetland receives water from natural subsurface and surface flows, including rain water and snow melt, and supplemented by flow from culverts under Wentworth House Road and Sagamore Grove. The wetland is not associated with any natural surface water body and there is no stream flowing in or out. Water ponds to shallow depth and for limited duration in this wetland. The wetland does not have the physical characteristics typically associated with a vernal pool and was not investigated for vernal pool species as part of this work.

The wetland probably extended further to the north and east but was filled at some time in the past when the area was developed. This is inferred by the straight wetland-upland boundaries along these margins of the wetland. The wetland may have flowed north in a

small channel to Sagamore Creek prior to development of the Sagamore Grove neighborhood. This is inferred by the presence of a 8” diameter culvert pipe.

WETLAND CHARACTERISTICS

Using the *Classification of Wetlands and Deepwater Habitats of the United States*, developed by Cowardin and others, this wetland is identified as 'PSS1e'. This indicates a freshwater deciduous shrub wetland, which is seasonally saturated. The dominant plant species in the wetland are listed on the attached field data sheet. The portions of this wetland on and closest to this site are dominated by invasive plants.

The soils in the wetland are poorly drained fine textured sediments of glacio-marine origin. This is the Scitico soil series. The soil is typically saturated to the surface for perhaps 6 months of the average year. The soils have increasing clay content with depth and absorb water slowly. Though deep to bedrock, these soils have shallow effective rooting depth. These soils have been altered by human activity over time, such as filling, drainage, plowing, and conversion to lawn.

WETLAND BUFFER

The buffer has been entirely modified by human activity associated with the current use. The evidence of this disturbance is reflected in the significant population of non-native invasive plant species and limited native plants. Native wildlife is adapted to native plants, so invasive plants generally reduce wildlife habitat value and disrupt native ecosystems.

The portion of the wetland buffer on this property is currently about 14% building and parking; 68% mowed lawn; and 18% shrubs. The shrubs are within the wetland, along the uplands nearest the wetland, and along the eastern property line. The dominant invasive shrubs are common buckthorn, honeysuckle, rugosa rose, and the invasive vine climbing bittersweet. Invasive plants dominate both the lawn and shrub fringe around the wetland.

BUFFER HABITAT ENHANCEMENT

The applicant proposes to establish a no-cut buffer within 25 feet of the wetland boundary. This no-cut buffer will be marked with signs, seeded with conservation mix, and four 2.5 inch sugar maple trees will be planted along the edge. Six high bush blueberries will be planted as part of the landscaping outside the no-cut buffer. This work is proposed for the area closest to the wetland which is now about 80% lawn. The buffer habitat enhancement covers about 22% of the wetland buffer on their site.

CONCLUSIONS

All wetlands and vegetated wetland buffers have value, even those such as this one that are highly degraded and dominated by invasive plants. There is widespread agreement among professionals that degraded wetlands in urban environments can have higher importance than may be obvious because they offer refuge for small wildlife, provide screening and green space, and are remnant wetlands in urban environments where many wetlands have

historically been lost. This degraded wetland also has increased value due to it's physical proximity to Sagamore Creek.

The wetland has been degraded by historical filling, on and off the subject property. The wetland receives untreated stormwater. The wetland has many undesirable invasive plants and sediment deposition is evident. Surrounding residential and commercial development contains structures, parking pavement and lawns, compromising much of the buffer around the wetlands. Most of the 100 foot wetland buffer which is on the subject property has been previously developed and is maintained as lawn. The applicant controls a minority of the wetland buffer, perhaps 20%, and an even smaller part of the wetland itself.

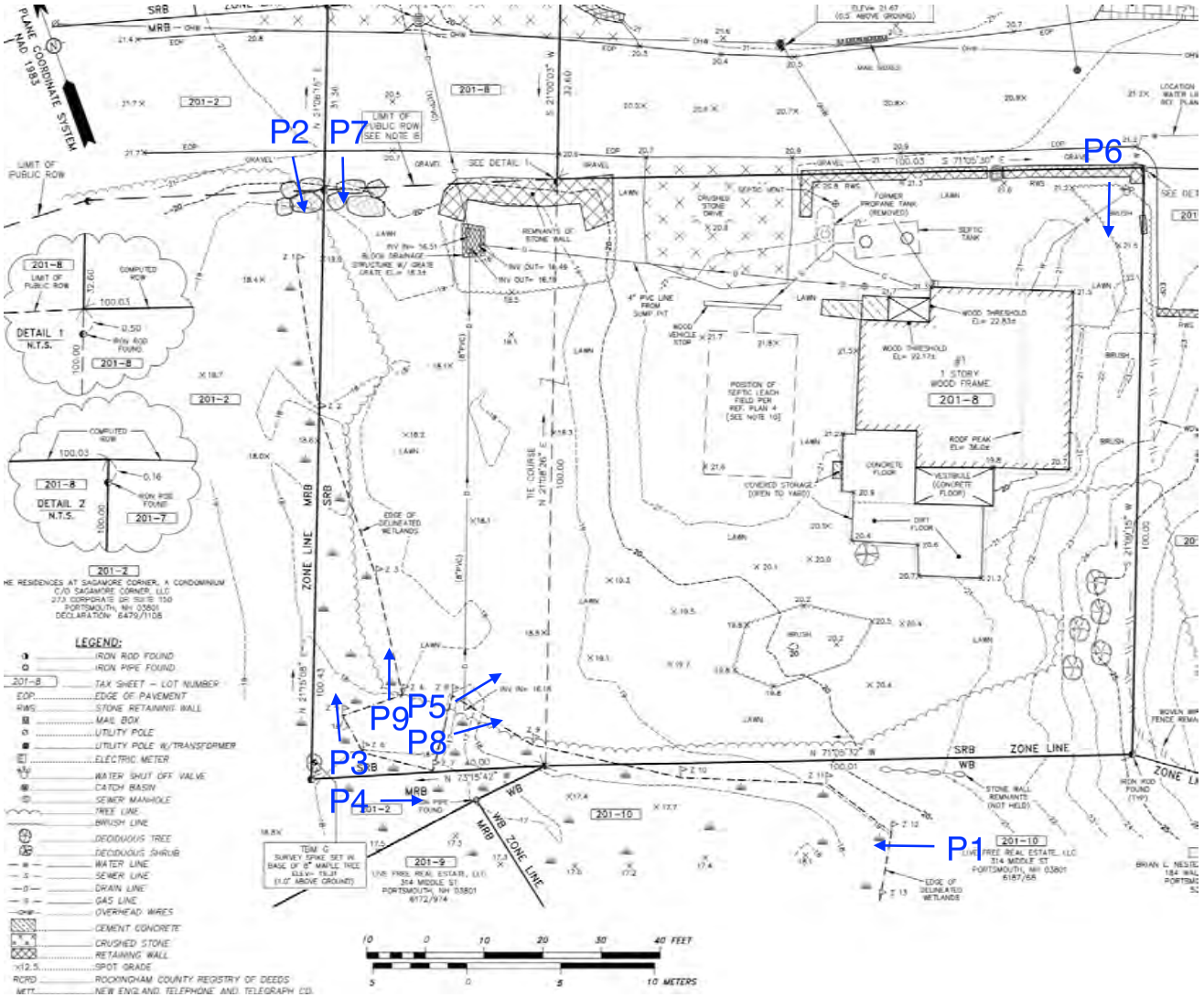
The buffer habitat enhancement which the applicant proposes is not a restoration of a complete natural buffer, but considering the condition of the existing wetland buffer, it is a significant improvement of the portion of the landscape they control.

Please contact me if you have questions regarding this work.

Sincerely,

Michael Cuomo
NH Wetland Scientist #4

Photo Key Sketch
1 Sagamore Grove, Portsmouth, NH
23 May 2024
Michael Cuomo



1 Sagamore Grove, Portsmouth NH
Photos taken 26 February 2024

Photo 1

1 Sagamore Grove, Portsmouth NH
Photos taken 26 February 2024

Photo 2

1 Sagamore Grove, Portsmouth NH
Photos taken 26 February 2024

Photo 3

1 Sagamore Grove, Portsmouth NH
Photos taken 26 February 2024

Photo 4

1 Sagamore Grove, Portsmouth, NH
Photo taken 6 March 2024

Photo 5

1 Sagamore Grove, Portsmouth, NH
23 May 2024

Photo 6

1 Sagamore Grove, Portsmouth, NH
23 May 2024

Photo 7

1 Sagamore Grove, Portsmouth, NH
23 May 2024

Photo 8

1 Sagamore Grove, Portsmouth, NH
23 May 2024

Photo 9

WETLAND FUNCTION-VALUE ASSESSMENT

WETLAND I.D. one of one

PROJECT NAME: Sagamore Grove

PROJECT LOCATION: #1 Sagamore Grove, Portsmouth, NH PREPARED BY: M. Cuomo DATE: 26 Febuary 2024 no snow

TOTAL APPROXIMATE AREA OF WETLAND: 1/2 acre IS WETLAND PART OF A WILDLIFE CORRIDOR? no OR A "HABITAT ISLAND"? yes

ADJACENT LAND USE? residential/commercial MAN MADE? no DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT 15ft

DOMINANT WETLAND SYSTEMS PRESENT: PSS1 CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? no

IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? yes IF NOT, WHERE DOES THE WETLAND LIE IN THE DRAINAGE BASIN? isolated

OF TRIBUTARIES INTO THE WETLAND? none AQUATIC DIVERSITY/ABUNDANCE low VEGETATIVE DIVERSITY/ABUNDANCE moderate

WILDLIFE DIVERSITY/ABUNDANCE low ANTICIPATED IMPACTS buffer only WETLAND AREA IMPACTED: no direct wetland impact

TREES	SHRUBS	HERBS	WILDLIFE	COMMENTS
red maple American elm	European buckthorn Smooth winter-berry holly climbing bittersweet Vitaceae (grape vines)	sensitive fern Ranuncleaceae (buttercup) cattails purple loosetrife		poorly drained mineral soil; some fill in wetlands; buffer is mostly lawn on this lot.

DRAINAGE ANALYSIS

FOR

Residential Development

1 Sagamore Grove
Portsmouth, NH

Tax Map 201, Lot 8

May 29, 2024
Revised: June 28, 2024

Prepared For:

Flippin Bergers, LLC
71 Brackett Road
Portsmouth, NH 03801

Prepared By:

ALTUS ENGINEERING
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335

ALTUS ENGINEERING

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PROJECT DESCRIPTION

The applicant, Flippin Bergers, LLC is proposing to develop an existing residential lot located at 1 Sagamore Grove in Portsmouth, NH. The property is identified as Assessor's Map 208, Lot 8, is 15,249 (+/-) square feet in size and is located in the City's Single Residence B (SRB) district. The site is occupied by a single-family residential house with lawn.

Site Soils

The NRCS indicates that the subject property consists of several primary soil classifications:

140B – Chatfield-Hollis-Canton complex, HSG B

Pre-Development (Existing Conditions)

The sites runoff primarily flows westerly to a wetlands system, which discharged into an 8-inch PVC drainpipe to a man-made drainage structure, located at the northwest corner of the lot. Ultimately, the runoff leaves the site via a 10-inch drainpipe to the City's closed drainage system that discharges to the tidal waters of Sagamore Creek. This structure is identified as the19oint of Analysis (POA). The Pre-Development analysis models the existing site conditions for the point of analysis as a single subcatchment.

Post-Development (Proposed Site Design)

The proposed stormwater system is depicted on the attached Post-Development Watershed Plan. The post-development analysis models the proposed site conditions for the point of analysis as a single subcatchment. The same point of analysis used in the Pre-Development model (POA) was used for comparison of the Pre and Post development conditions.

The Post-Development Watershed Plan illustrates the proposed stormwater management system. Site topography, existing features, proposed site improvements, grading and erosion control measures are shown on the accompanying plans. Recommended erosion control measures are based upon the December 2008 edition of the "*New Hampshire Stormwater Manual Volumes 1 through 3*" prepared by NHDES and Comprehensive Environmental, Inc. as amended.

CALCULATION METHODS

The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25 and 50 year - 24-hour storm events using rainfall data provided by the Northeast Regional Climate Center (NRCC). As the project site lies within a Coastal and Great Bay Community identified by NHDES Alteration of Terrain, all rainfall amounts were increased by 15% to account for potential future increases in rainfall due to climate change.

Disclaimer

Altus Engineering notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

Drainage Analysis

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the Point of Analysis identified on the plans for the 2, 10, 25, and 50-year storm events:

Stormwater Modeling Summary Peak Q (cfs) for Type III 24-Hour Storm Events

*Rainfall Intensities Reflect 15% Increase per AoT	2-Yr Storm (3.69 inch)	10-Yr Storm (5.60 inch)	25-Yr Storm (7.10 inch)	50-Yr Storm (8.50 inch)
POA				
Pre	0.19	0.55	0.88	1.20
Post	0.14	0.46	0.77	1.08
Change	**-0.05**	**-0.09**	**-0.11**	**-0.12**

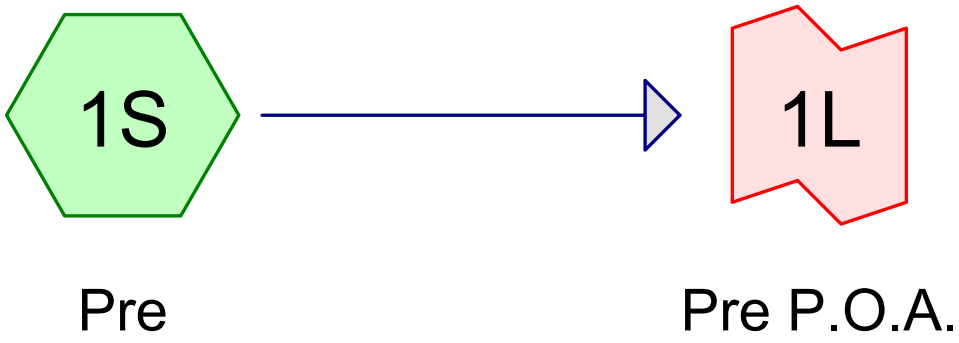
As the above table demonstrates, the proposed peak rates of runoff will be decreased from the existing conditions for all analyzed storm events.

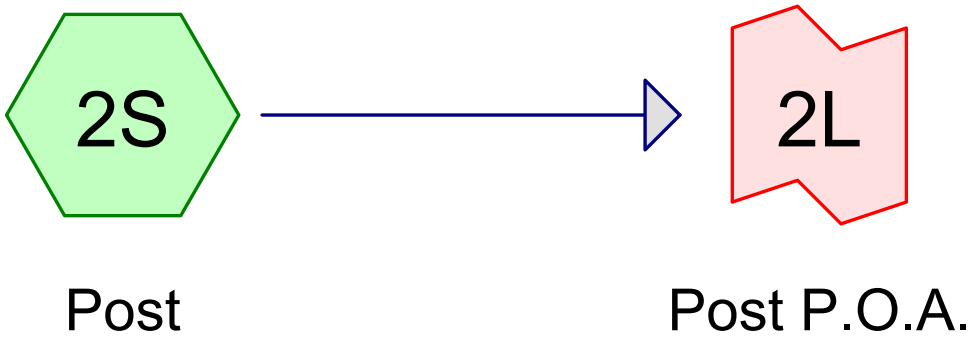
CONCLUSION

This proposed residential development on Sagamore Grove in Portsmouth, NH will have minimal adverse effect on abutting properties and infrastructure as a result of stormwater runoff or siltation. Post-construction peak rates of runoff from the site will be lower than the existing conditions for all analyzed storm events. The new stormwater management system will also provide appropriate treatment of runoff from the proposed impervious area. Appropriate steps will be taken to properly mitigate erosion and sedimentation through the use of temporary and permanent Best Management Practices for sediment and erosion control, including permeable pavers for driveway and patio, roof drip edge, and meadow restoration (3,200'±).

Google Maps 1 Sagamore Grove

Map data ©2024 Google 200 ft





Subcat Reach Pond Link

Routing Diagram for 5534 rev1
Prepared by Altus Engineering, Inc., Printed 6/20/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.297	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.047	48	Brush, Good, HSG B (1S, 2S)
0.096	58	Meadow, non-grazed, HSG B (2S)
0.034	98	Roofs, HSG B (1S)
0.030	98	Unconnected pavement, HSG B (1S, 2S)
0.040	98	Unconnected roofs, HSG B (2S)
0.098	55	Woods, Good, HSG B (1S, 2S)
0.642	**65**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre Runoff Area=13,980 sf 14.13% Impervious Runoff Depth>0.72"
Flow Length=205' Tc=14.2 min CN=64 Runoff=0.19 cfs 0.019 af

Subcatchment 2S: Post Runoff Area=13,980 sf 18.38% Impervious Runoff Depth>0.58"
Flow Length=205' Tc=14.7 min UI Adjusted CN=61 Runoff=0.14 cfs 0.016 af

Link 1L: Pre P.O.A. Inflow=0.19 cfs 0.019 af
Primary=0.19 cfs 0.019 af

Link 2L: Post P.O.A. Inflow=0.14 cfs 0.016 af
Primary=0.14 cfs 0.016 af

Total Runoff Area = 0.642 ac Runoff Volume = 0.035 af Average Runoff Depth = 0.65"
83.74% Pervious = 0.538 ac 16.26% Impervious = 0.104 ac

Summary for Subcatchment 1S: Pre

Runoff = 0.19 cfs @ 12.23 hrs, Volume= 0.019 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.69"

Area (sf)	CN	Description
1,055	48	Brush, Good, HSG B
2,220	55	Woods, Good, HSG B
8,729	61	>75% Grass cover, Good, HSG B
483	98	Unconnected pavement, HSG B
1,493	98	Roofs, HSG B
13,980	64	Weighted Average
12,004		85.87% Pervious Area
1,976		14.13% Impervious Area
483		24.44% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.3	45	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.2	205	Total			

Summary for Subcatchment 2S: Post

Runoff = 0.14 cfs @ 12.26 hrs, Volume= 0.016 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.69"

Area (sf)	CN	Adj	Description
986	48		Brush, Good, HSG B
2,059	55		Woods, Good, HSG B
4,200	61		>75% Grass cover, Good, HSG B
830	98		Unconnected pavement, HSG B
1,740	98		Unconnected roofs, HSG B
4,165	58		Meadow, non-grazed, HSG B
13,980	65	61	Weighted Average, UI Adjusted
11,410			81.62% Pervious Area
2,570			18.38% Impervious Area
2,570			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.8	45	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.7	205	Total			

Summary for Link 1L: Pre P.O.A.

Inflow Area = 0.321 ac, 14.13% Impervious, Inflow Depth > 0.72" for 2-yr event
Inflow = 0.19 cfs @ 12.23 hrs, Volume= 0.019 af
Primary = 0.19 cfs @ 12.23 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Post P.O.A.

Inflow Area = 0.321 ac, 18.38% Impervious, Inflow Depth > 0.58" for 2-yr event
Inflow = 0.14 cfs @ 12.26 hrs, Volume= 0.016 af
Primary = 0.14 cfs @ 12.26 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre Runoff Area=13,980 sf 14.13% Impervious Runoff Depth>1.81"
Flow Length=205' Tc=14.2 min CN=64 Runoff=0.55 cfs 0.048 af

Subcatchment 2S: Post Runoff Area=13,980 sf 18.38% Impervious Runoff Depth>1.58"
Flow Length=205' Tc=14.7 min UI Adjusted CN=61 Runoff=0.46 cfs 0.042 af

Link 1L: Pre P.O.A. Inflow=0.55 cfs 0.048 af
Primary=0.55 cfs 0.048 af

Link 2L: Post P.O.A. Inflow=0.46 cfs 0.042 af
Primary=0.46 cfs 0.042 af

Total Runoff Area = 0.642 ac Runoff Volume = 0.091 af Average Runoff Depth = 1.69"
83.74% Pervious = 0.538 ac 16.26% Impervious = 0.104 ac

Summary for Subcatchment 1S: Pre

Runoff = 0.55 cfs @ 12.21 hrs, Volume= 0.048 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
1,055	48	Brush, Good, HSG B
2,220	55	Woods, Good, HSG B
8,729	61	>75% Grass cover, Good, HSG B
483	98	Unconnected pavement, HSG B
1,493	98	Roofs, HSG B
13,980	64	Weighted Average
12,004		85.87% Pervious Area
1,976		14.13% Impervious Area
483		24.44% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.3	45	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.2	205	Total			

Summary for Subcatchment 2S: Post

Runoff = 0.46 cfs @ 12.22 hrs, Volume= 0.042 af, Depth> 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Adj	Description
986	48		Brush, Good, HSG B
2,059	55		Woods, Good, HSG B
4,200	61		>75% Grass cover, Good, HSG B
830	98		Unconnected pavement, HSG B
1,740	98		Unconnected roofs, HSG B
4,165	58		Meadow, non-grazed, HSG B
13,980	65	61	Weighted Average, UI Adjusted
11,410			81.62% Pervious Area
2,570			18.38% Impervious Area
2,570			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.8	45	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.7	205	Total			

Summary for Link 1L: Pre P.O.A.

Inflow Area = 0.321 ac, 14.13% Impervious, Inflow Depth > 1.81" for 10-yr event
Inflow = 0.55 cfs @ 12.21 hrs, Volume= 0.048 af
Primary = 0.55 cfs @ 12.21 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Post P.O.A.

Inflow Area = 0.321 ac, 18.38% Impervious, Inflow Depth > 1.58" for 10-yr event
Inflow = 0.46 cfs @ 12.22 hrs, Volume= 0.042 af
Primary = 0.46 cfs @ 12.22 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre Runoff Area=13,980 sf 14.13% Impervious Runoff Depth>2.83"
Flow Length=205' Tc=14.2 min CN=64 Runoff=0.88 cfs 0.076 af

Subcatchment 2S: Post Runoff Area=13,980 sf 18.38% Impervious Runoff Depth>2.54"
Flow Length=205' Tc=14.7 min UI Adjusted CN=61 Runoff=0.77 cfs 0.068 af

Link 1L: Pre P.O.A. Inflow=0.88 cfs 0.076 af
Primary=0.88 cfs 0.076 af

Link 2L: Post P.O.A. Inflow=0.77 cfs 0.068 af
Primary=0.77 cfs 0.068 af

Total Runoff Area = 0.642 ac Runoff Volume = 0.144 af Average Runoff Depth = 2.69"
83.74% Pervious = 0.538 ac 16.26% Impervious = 0.104 ac

Summary for Subcatchment 1S: Pre

Runoff = 0.88 cfs @ 12.21 hrs, Volume= 0.076 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.10"

Area (sf)	CN	Description
1,055	48	Brush, Good, HSG B
2,220	55	Woods, Good, HSG B
8,729	61	>75% Grass cover, Good, HSG B
483	98	Unconnected pavement, HSG B
1,493	98	Roofs, HSG B
13,980	64	Weighted Average
12,004		85.87% Pervious Area
1,976		14.13% Impervious Area
483		24.44% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.3	45	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.2	205	Total			

Summary for Subcatchment 2S: Post

Runoff = 0.77 cfs @ 12.21 hrs, Volume= 0.068 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=7.10"

Area (sf)	CN	Adj	Description
986	48		Brush, Good, HSG B
2,059	55		Woods, Good, HSG B
4,200	61		>75% Grass cover, Good, HSG B
830	98		Unconnected pavement, HSG B
1,740	98		Unconnected roofs, HSG B
4,165	58		Meadow, non-grazed, HSG B
13,980	65	61	Weighted Average, UI Adjusted
11,410			81.62% Pervious Area
2,570			18.38% Impervious Area
2,570			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.8	45	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.7	205	Total			

Summary for Link 1L: Pre P.O.A.

Inflow Area = 0.321 ac, 14.13% Impervious, Inflow Depth > 2.83" for 25-yr event
Inflow = 0.88 cfs @ 12.21 hrs, Volume= 0.076 af
Primary = 0.88 cfs @ 12.21 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Post P.O.A.

Inflow Area = 0.321 ac, 18.38% Impervious, Inflow Depth > 2.54" for 25-yr event
Inflow = 0.77 cfs @ 12.21 hrs, Volume= 0.068 af
Primary = 0.77 cfs @ 12.21 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Pre Runoff Area=13,980 sf 14.13% Impervious Runoff Depth>3.87"
Flow Length=205' Tc=14.2 min CN=64 Runoff=1.20 cfs 0.104 af

Subcatchment 2S: Post Runoff Area=13,980 sf 18.38% Impervious Runoff Depth>3.53"
Flow Length=205' Tc=14.7 min UI Adjusted CN=61 Runoff=1.08 cfs 0.094 af

Link 1L: Pre P.O.A. Inflow=1.20 cfs 0.104 af
Primary=1.20 cfs 0.104 af

Link 2L: Post P.O.A. Inflow=1.08 cfs 0.094 af
Primary=1.08 cfs 0.094 af

Total Runoff Area = 0.642 ac Runoff Volume = 0.198 af Average Runoff Depth = 3.70"
83.74% Pervious = 0.538 ac 16.26% Impervious = 0.104 ac

Summary for Subcatchment 1S: Pre

Runoff = 1.20 cfs @ 12.20 hrs, Volume= 0.104 af, Depth> 3.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.50"

Area (sf)	CN	Description
1,055	48	Brush, Good, HSG B
2,220	55	Woods, Good, HSG B
8,729	61	>75% Grass cover, Good, HSG B
483	98	Unconnected pavement, HSG B
1,493	98	Roofs, HSG B
13,980	64	Weighted Average
12,004		85.87% Pervious Area
1,976		14.13% Impervious Area
483		24.44% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.3	45	0.0350	2.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.2	205	Total			

Summary for Subcatchment 2S: Post

Runoff = 1.08 cfs @ 12.21 hrs, Volume= 0.094 af, Depth> 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=8.50"

Area (sf)	CN	Adj	Description
986	48		Brush, Good, HSG B
2,059	55		Woods, Good, HSG B
4,200	61		>75% Grass cover, Good, HSG B
830	98		Unconnected pavement, HSG B
1,740	98		Unconnected roofs, HSG B
4,165	58		Meadow, non-grazed, HSG B
13,980	65	61	Weighted Average, UI Adjusted
11,410			81.62% Pervious Area
2,570			18.38% Impervious Area
2,570			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1000	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.69"
0.8	45	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	30	0.0780	1.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	80	0.0001	0.45	0.16	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
14.7	205	Total			

Summary for Link 1L: Pre P.O.A.

Inflow Area = 0.321 ac, 14.13% Impervious, Inflow Depth > 3.87" for 50-yr event
Inflow = 1.20 cfs @ 12.20 hrs, Volume= 0.104 af
Primary = 1.20 cfs @ 12.20 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Post P.O.A.

Inflow Area = 0.321 ac, 18.38% Impervious, Inflow Depth > 3.53" for 50-yr event
Inflow = 1.08 cfs @ 12.21 hrs, Volume= 0.094 af
Primary = 1.08 cfs @ 12.21 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.763 degrees West
Latitude	43.072 degrees North
Elevation	0 feet
Date/Time	Wed, 23 Dec 2020 12:00:25 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	Add 15%		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	3.06		2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.21	3.69		2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.07	4.68		3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.23	2.89	3.75	4.87	5.60		4.31	5.32	6.09	7.11	7.98	**10yr**
25yr	0.48	0.76	0.97	1.34	1.77	2.34	**25yr**	1.53	2.14	2.78	3.63	4.74	6.17	7.10		5.46	6.83	7.80	9.03	10.05	**25yr**
50yr	0.54	0.86	1.10	1.54	2.07	2.76	**50yr**	1.79	2.53	3.29	4.32	5.66	7.39	8.50		6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.60	0.97	1.25	1.77	2.42	3.26	**100yr**	2.09	2.98	3.90	5.16	6.77	8.85	10.18		7.83	9.98	11.38	12.96	14.27	**100yr**
200yr	0.67	1.10	1.43	2.05	2.82	3.83	**200yr**	2.44	3.52	4.62	6.13	8.08	10.61	12.55	**200yr**	9.39	12.07	13.76	15.55	17.02	**200yr**
500yr	0.80	1.31	1.71	2.48	3.48	4.76	**500yr**	3.00	4.38	5.76	7.70	10.22	13.48	16.14	**500yr**	11.93	15.52	17.67	19.78	21.49	**500yr**

Lower Confidence Limits

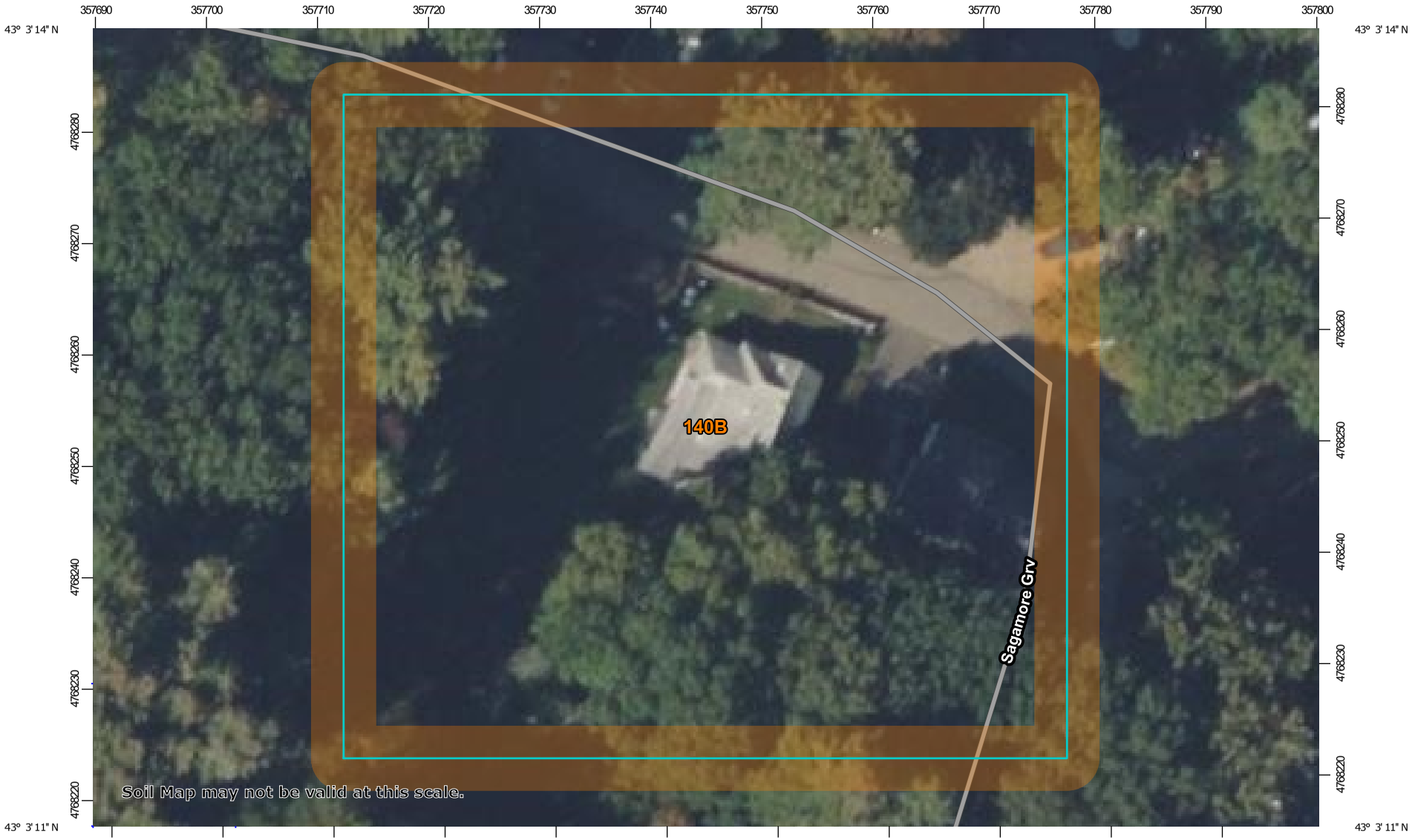
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.24	2.49	**1yr**	1.98	2.40	2.87	3.18	3.90	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.08	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.79	4.19	**5yr**	3.35	4.03	4.72	5.53	6.24	**5yr**
10yr	0.39	0.59	0.73	1.03	1.33	1.60	**10yr**	1.14	1.56	1.80	2.39	3.06	4.37	4.86	**10yr**	3.87	4.67	5.44	6.41	7.20	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.75	3.53	4.72	5.89	**25yr**	4.18	5.66	6.65	7.79	8.68	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.35	3.07	3.93	5.33	6.80	**50yr**	4.72	6.54	7.72	9.04	10.02	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.47	**100yr**	1.73	2.41	2.63	3.41	4.35	6.00	7.85	**100yr**	5.31	7.55	8.98	10.51	11.56	**100yr**
200yr	0.59	0.89	1.13	1.63	2.28	2.81	**200yr**	1.96	2.75	2.93	3.78	4.79	6.72	9.06	**200yr**	5.95	8.71	10.42	12.22	13.37	**200yr**
500yr	0.68	1.02	1.31	1.90	2.71	3.36	**500yr**	2.34	3.29	3.41	4.31	5.45	7.82	10.94	**500yr**	6.92	10.52	12.69	14.96	16.19	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.98	3.16	**1yr**	2.64	3.04	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.42	3.70	**2yr**	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.96	**5yr**	3.84	4.77	5.38	6.37	7.16	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.11	3.95	5.34	6.20	**10yr**	4.72	5.96	6.82	7.84	8.75	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.51	2.95	4.07	5.15	7.78	8.34	**25yr**	6.88	8.02	9.15	10.34	11.41	**25yr**
50yr	0.67	1.02	1.27	1.83	2.46	3.13	**50yr**	2.12	3.06	3.60	5.00	6.32	9.74	10.46	**50yr**	8.62	10.06	11.44	12.72	13.96	**50yr**
100yr	0.79	1.19	1.49	2.16	2.96	3.81	**100yr**	2.55	3.72	4.37	6.16	7.76	12.18	13.10	**100yr**	10.78	12.60	14.31	15.69	17.09	**100yr**
200yr	0.92	1.39	1.76	2.55	3.56	4.65	**200yr**	3.07	4.55	5.34	7.58	9.54	15.28	16.44	**200yr**	13.53	15.81	17.92	19.35	20.92	**200yr**
500yr	1.15	1.71	2.19	3.19	4.53	6.04	**500yr**	3.91	5.90	6.93	10.02	12.56	20.65	22.20	**500yr**	18.27	21.34	24.13	25.51	27.34	**500yr**

Powered by ACIS Northeast Regional Climate Center

Soil Map—Rockingham County, New Hampshire
(1 Sagamore Grove, Portsmouth)



Map Scale: 1:505 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	1.0	100.0%
Totals for Area of Interest		**1.0**	**100.0%**

STORMWATER INSPECTION AND MAINTENANCE MANUAL

Brett Berger
Flippin Bergers, LLC
Assessor's Map 201, Lot 8
1 Sagamore Grove
Portsmouth, NH 03801

Proper inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality. The following responsible parties shall be in charge of managing the stormwater facilities:

RESPONSIBLE PARTIES:

Owner:	*Brett Berger*	*Flippin Bergers, LLC*	*(914) 299-4438*
	Name	*Company*	*Phone*
Inspection:	*Brett Berger*	*Flippin Bergers, LLC*	*(914) 299-4438*
	Name	*Company*	*Phone*
Maintenance:	*Brett Berger*	*Flippin Bergers, LLC*	*(914) 299-4438*
	Name	*Company*	*Phone*

NOTES:

Inspection and maintenance responsibilities shall transfer to any future property owner(s).

This manual shall be updated as needed to reflect any changes related to any transfer of ownership and/or any delegation of inspection and maintenance responsibilities to another entity

DRIP STRIPS

Function – Drip strips are to provide erosion control of surface where impervious surfaces meet non-impervious surfaces, such as building or roadway edges. They also can provide for the infiltration and treatment of runoff and are particularly effective for roof-generated stormwater.

Maintenance

- Drip strips should be inspected annually for erosion, rutting, and migration of stone. Any areas experiencing erosion shall be properly maintained by replacing or adding additional stone to the area of concern.
- Remove litter such as trash, leaves, lawn clippings and pet wastes in the spring and fall.

LANDSCAPED AREAS – ORGANIC FERTILIZER MANAGEMENT

Function – All fertilizer used on site shall be certified organic. Organic fertilizer management involves controlling the rate, timing and method of organic fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Organic fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply organic fertilizer to frozen ground.
- Clean up any organic fertilizer spills.
- Do not allow organic fertilizer to be broadcast into water bodies.
- When organically fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.

LANDSCAPED AREAS - LITTER CONTROL

Function – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

Maintenance

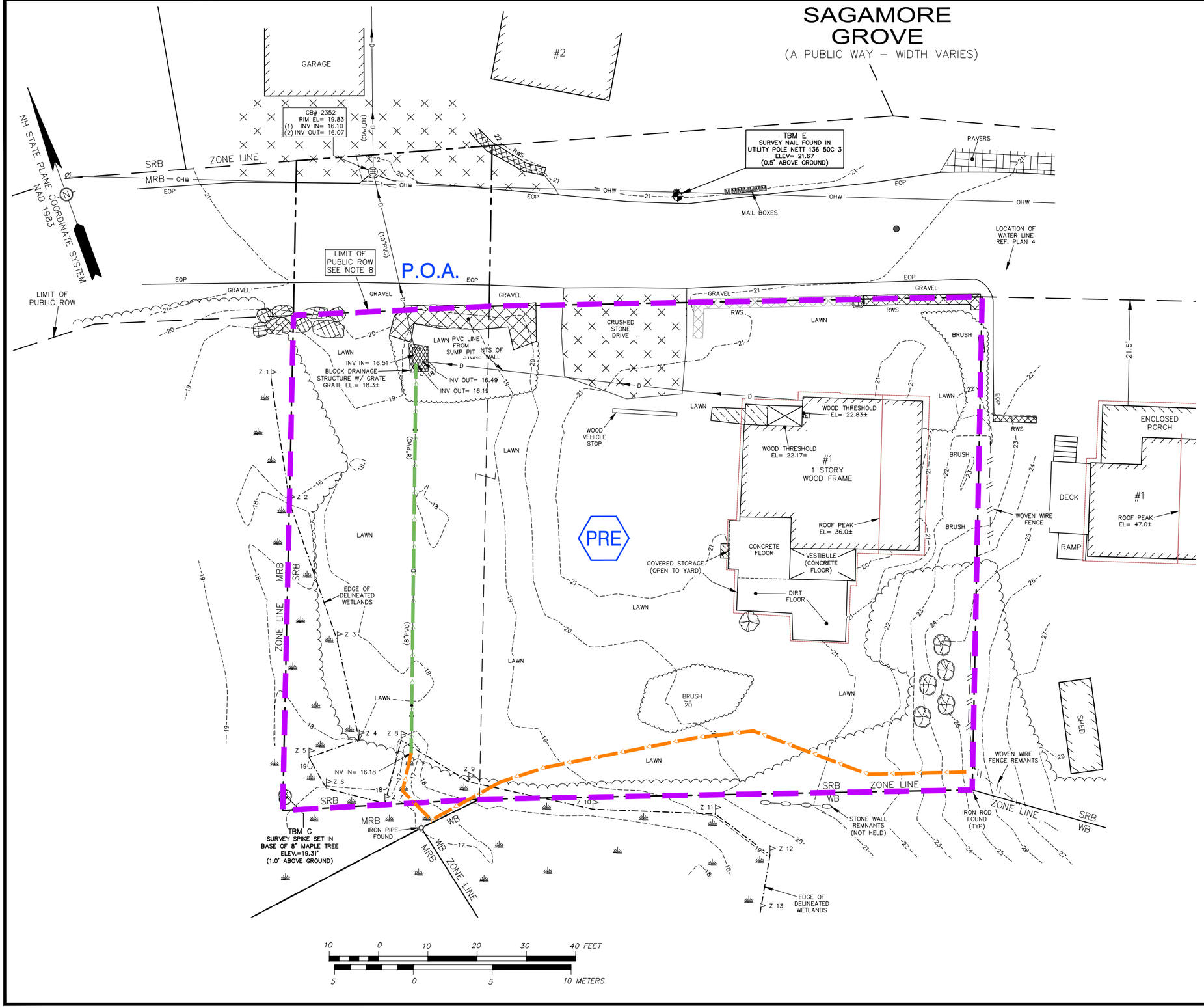
- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

GENERAL CLEAN UP

- Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet filter, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drainpipes that may have accumulated during construction.
- Once in operation, all paved areas of the site should be swept at least once annually at the end of winter/early spring prior to significant spring rains.

SAGAMORE GROVE

(A PUBLIC WAY – WIDTH VARIES)



ENGINEER:

ALTUS ENGINEERING

133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

5/29/24

ISSUED FOR: APPROVAL

ISSUE DATE: MAY 29, 2024

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5534–REV1.DWG

SCALE:
22" x 34" – 1" = 10'
11" x 17" – 1" = 20'

OWNER/APPLICANT:
FLIPPIN BERGERS, LLC
71 BRACKETT ROAD
PORTSMOUTH, NH 03801
ASSESSOR'S PARCEL 201–8
RCRD 6530/243

PROJECT/LOCATION:
PROPOSED SINGLE-FAMILY RESIDENCE
1 SAGAMORE GROVE
PORTSMOUTH, N.H.
ASSESSOR'S PARCEL 201–8

TITLE:
PRE-DEVELOPMENT WATERSHED PLAN

SHEET NUMBER:
WS - 1

P5534

ENGINEER:

ALTUS ENGINEERING

133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -

ISSUED FOR: APPROVAL

ISSUE DATE: JUNE 28, 2024

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	5/29/24
1	REV. BLDG. FOORPRINT	EDW	6/28/24

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5534-REV1.DWG

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FLIPPIN BERGERS, LLC
71 BRACKETT ROAD
PORTSMOUTH, NH 03801
ASSESSOR'S PARCEL 201-8
RCRD 6530/243

PROJECT/LOCATION:
PROPOSED SINGLE-FAMILY RESIDENCE
1 SAGAMORE GROVE
PORTSMOUTH, N.H.
ASSESSOR'S PARCEL 201-8

TITLE:
POST-DEVELOPMENT WATERSHED PLAN

SHEET NUMBER:
WS - 2

P5534

THIS DRAWING SET HAS NOT BEEN RELEASED FOR CONSTRUCTION

FLIPPIN BERGERS, LLC
SINGLE-FAMILY RESIDENCE

1 Sagamore Grove
Portsmouth, New Hampshire

Assessor's Parcel 201, Lot 8

ISSUED FOR CUP APPROVAL

Plan Issue Date:

May 29, 2024 — *CUP Submission*
June 28, 2024 — *CUP Re-submission*

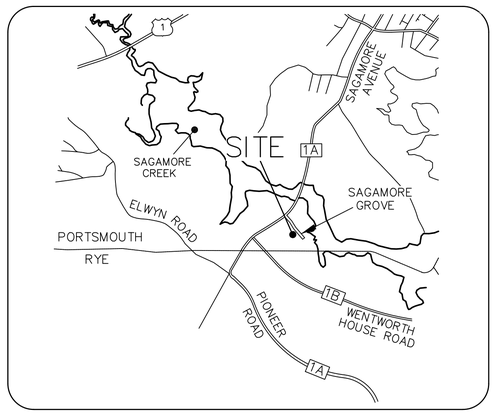
Owner/Applicant:
FLIPPIN BERGERS, LLC

71 Brackett Road
Portsmouth, NH 03801
(603) 299–4438

Civil Engineer:
ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

Surveyor:
James Verra
& Associates Inc.
LAND SURVEYORS
101 SHATTUCK WAY, SUITE 8
Newington, New Hampshire
03801–7876
Tel 603–436–3557

Wetland Scientist:
MICHAEL CUOMO, CWS
6 York Pond Road
York, ME 03909
(207) 363–4532



LOCUS — NOT TO SCALE

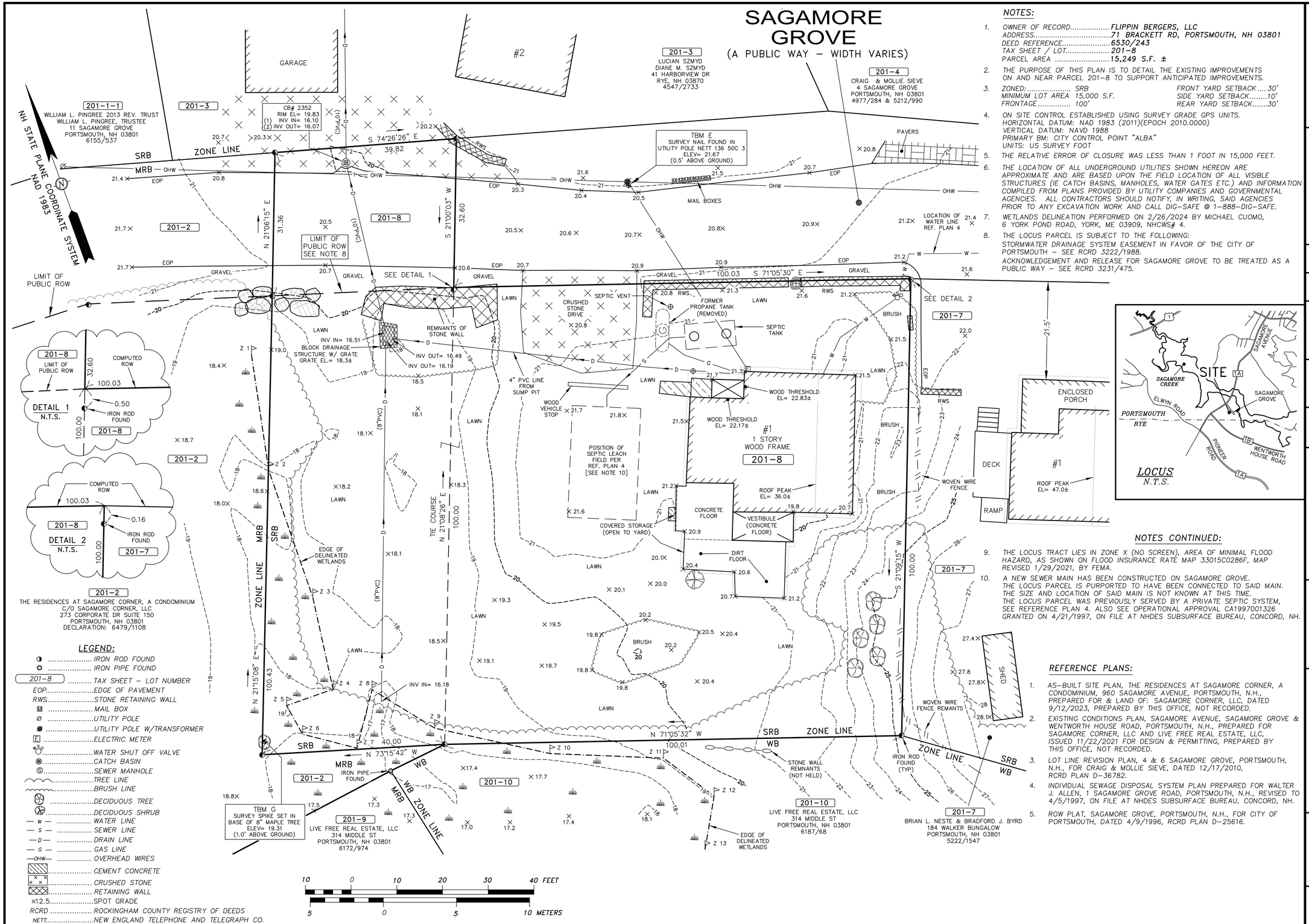
Sheet Index

Title	***Sheet No.:***	***Rev.***	***Date***
Existing Conditions Plan (by JVA)	1 OF 1	0	03/28/24
Site Plan	C–1	1	06/28/24
Wetlands Conditional Use Permit Plan	C–2	1	06/28/24
Detail Sheet	C–3	0	06/28/24
Detail Sheet	C–4	0	06/28/24

P5225

SAGAMORE GROVE

(A PUBLIC WAY – WIDTH VARIES)



NOTES:

1. OWNER OF RECORD.....FLIPPIN BERGERS, LLC
   ADDRESS.....71 BRACKETT RD, PORTSMOUTH, NH 03801
   DEED REFERENCE.....6530/243
   TAX SHEET / LOT.....201-8
   PARCEL AREA .....15,249 S.F. ±
2. THE PURPOSE OF THIS PLAN IS TO DETAIL THE EXISTING IMPROVEMENTS ON AND NEAR PARCEL 201-8 TO SUPPORT ANTICIPATED IMPROVEMENTS.
3. ZONED:..... SRB
   MINIMUM LOT AREA 15,000 S.F.
   FRONTAGE..... 100'
   FRONT YARD SETBACK....30'
   SIDE YARD SETBACK.....10'
   REAR YARD SETBACK.....30'
4. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
   HORIZONTAL DATUM: NAD 1983 (2011)(EPOCH 2010.0000)
   VERTICAL DATUM: NAVD 1988
   PRIMARY BM: CITY CONTROL POINT "ALBA"
   UNITS: US SURVEY FOOT
5. THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.
6. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.
7. WETLANDS DELINEATION PERFORMED ON 2/26/2024 BY MICHAEL CUOMO, 6 YORK POND ROAD, YORK, ME 03909, NHCWS# 4.
8. THE LOCUS PARCEL IS SUBJECT TO THE FOLLOWING:
   STORMWATER DRAINAGE SYSTEM EASEMENT IN FAVOR OF THE CITY OF PORTSMOUTH – SEE RCRD 3222/1988.
   ACKNOWLEDGEMENT AND RELEASE FOR SAGAMORE GROVE TO BE TREATED AS A PUBLIC WAY – SEE RCRD 3231/475.

NOTES CONTINUED:

9. THE LOCUS TRACT LIES IN ZONE X (NO SCREEN), AREA OF MINIMAL FLOOD HAZARD, AS SHOWN ON FLOOD INSURANCE RATE MAP 33015C0286F, MAP REVISED 1/29/2021, BY FEMA.
10. A NEW SEWER MAIN HAS BEEN CONSTRUCTED ON SAGAMORE GROVE. THE LOCUS PARCEL IS PURPORTED TO HAVE BEEN CONNECTED TO SAID MAIN. THE SIZE AND LOCATION OF SAID MAIN IS NOT KNOWN AT THIS TIME. THE LOCUS PARCEL WAS PREVIOUSLY SERVED BY A PRIVATE SEPTIC SYSTEM, SEE REFERENCE PLAN 4. ALSO SEE OPERATIONAL APPROVAL CA1997001326 GRANTED ON 4/21/1997, ON FILE AT NHDES SUBSURFACE BUREAU, CONCORD, NH.

LEGEND:

- ◑ ..... IRON ROD FOUND
- ○ ..... IRON PIPE FOUND
- 201-8 ..... TAX SHEET – LOT NUMBER
- EOP..... EDGE OF PAVEMENT
- RWS..... STONE RETAINING WALL
- M ..... MAIL BOX
- ⌀ ..... UTILITY POLE
- ◉ ..... UTILITY POLE W/TRANSFORMER
- E ..... ELECTRIC METER
- WSO ..... WATER SHUT OFF VALVE
- CB ..... CATCH BASIN
- S ..... SEWER MANHOLE
- ~~~ ..... TREE LINE
- ~~~ ..... BRUSH LINE
- ..... DECIDUOUS TREE
- ..... DECIDUOUS SHRUB
- — W — ..... WATER LINE
- — S — ..... SEWER LINE
- — D — ..... DRAIN LINE
- — G — ..... GAS LINE
- —OHW— ..... OVERHEAD WIRES
- ..... CEMENT CONCRETE
- ..... CRUSHED STONE
- ..... RETAINING WALL
- ×12.5..... SPOT GRADE
- RCRD ..... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- NETT..... NEW ENGLAND TELEPHONE AND TELEGRAPH CO.

REFERENCE PLANS:

1. AS-BUILT SITE PLAN, THE RESIDENCES AT SAGAMORE CORNER, A CONDOMINIUM, 960 SAGAMORE AVENUE, PORTSMOUTH, N.H., PREPARED FOR & LAND OF: SAGAMORE CORNER, LLC, DATED 9/12/2023, PREPARED BY THIS OFFICE, NOT RECORDED.
2. EXISTING CONDITIONS PLAN, SAGAMORE AVENUE, SAGAMORE GROVE & WENTWORTH HOUSE ROAD, PORTSMOUTH, N.H., PREPARED FOR SAGAMORE CORNER, LLC AND LIVE FREE REAL ESTATE, LLC, ISSUED 11/22/2021 FOR DESIGN & PERMITTING, PREPARED BY THIS OFFICE, NOT RECORDED.
3. LOT LINE REVISION PLAN, 4 & 6 SAGAMORE GROVE, PORTSMOUTH, N.H., FOR CRAIG & MOLLIE SIEVE, DATED 12/17/2010, RCRD PLAN D-36782.
4. INDIVIDUAL SEWAGE DISPOSAL SYSTEM PLAN PREPARED FOR WALTER J. ALLEN, 1 SAGAMORE GROVE ROAD, PORTSMOUTH, N.H., REVISED TO 4/5/1997, ON FILE AT NHDES SUBSURFACE BUREAU, CONCORD, NH.
5. ROW PLAT, SAGAMORE GROVE, PORTSMOUTH, N.H., FOR CITY OF PORTSMOUTH, DATED 4/9/1996, RCRD PLAN D-25616.

SURVEYOR:

JAMES VERRA & ASSOCIATES, INC.
101 SHATTUCK WAY, SUITE 8
NEWINGTON, N.H., 03801-7876
603-436-3557
JOB NO: 24-2004
PLAN NO: 24-2004

ENGINEER:

ALTUS ENGINEERING
133 Court Street, Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ISSUED FOR:
ENGINEERING DESIGN

ISSUE DATE:
MARCH 28, 2024

REVISIONS

NO.	DESCRIPTION	BY	DATE
1	ENGINEERING DESIGN	JCS	3/27/24
2	ADD ABUTTING RESIDENCE	JCS	3/28/24

DRAWN BY: JCS
APPROVED BY: JCS
DRAWING FILE: 24-2004.DWG

SCALE:
22" x 34" – 1" = 10'
11" x 17" – 1" = 20'

PROJECT/LOCATION:

PROPOSED SITE IMPROVEMENTS
1 SAGAMORE GROVE
PORTSMOUTH, N.H.
ASSESSOR'S PARCEL 201-8

OWNER/APPLICANT:
FLIPPIN BERGERS, LLC
71 BRACKETT ROAD
PORTSMOUTH, NH 03801
ASSESSOR'S PARCEL 201-8
RCRD 6530/243

STATE OF NEW HAMPSHIRE NO. 924 JOHN C. SALTER LICENSED LAND SURVEYOR
SIGNATURE

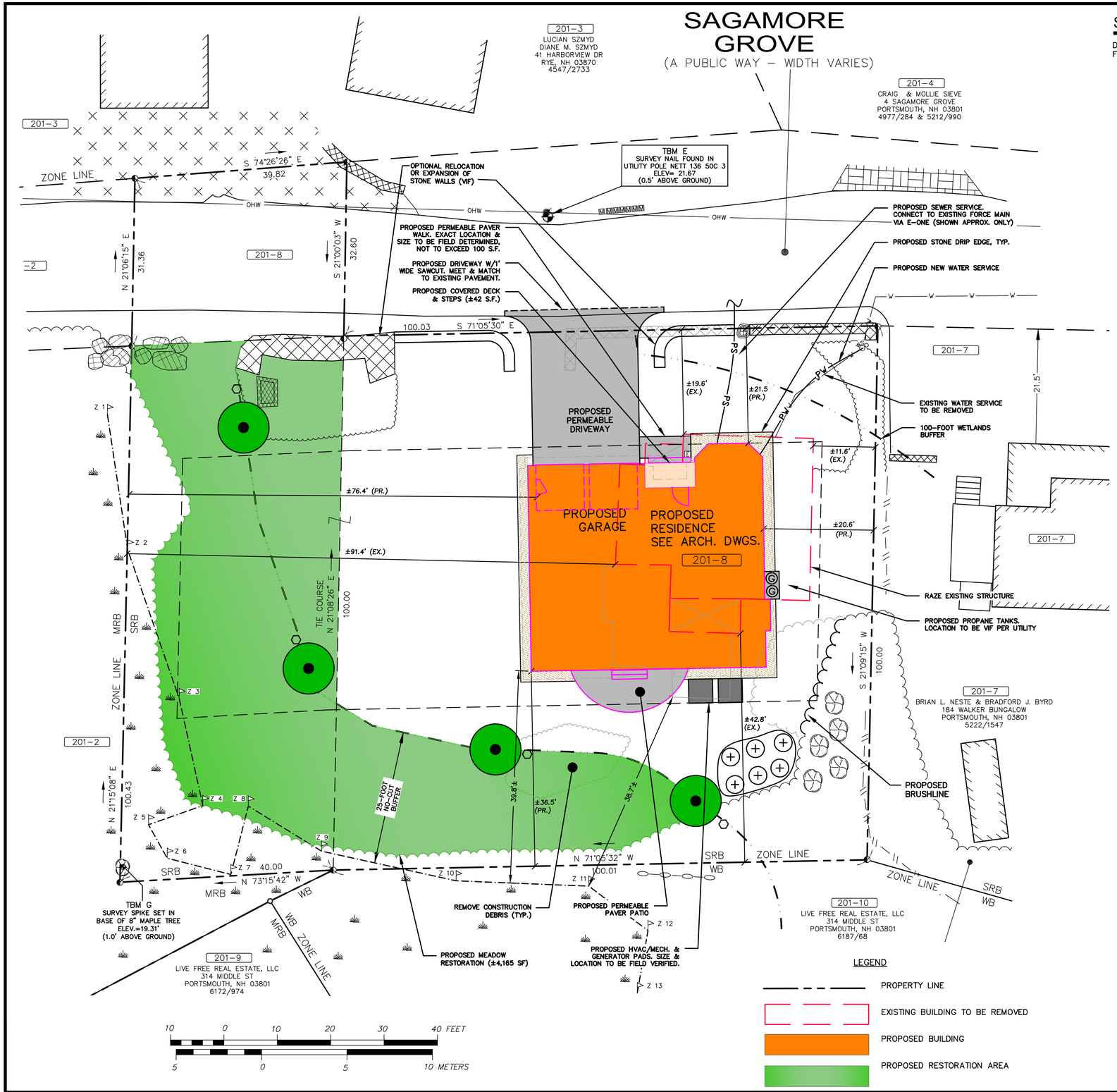
TITLE:
EXISTING CONDITIONS PLAN

SHEET NUMBER:
1 OF 1

P5534

SAGAMORE GROVE

(A PUBLIC WAY – WIDTH VARIES)



SITE NOTES

DESIGN INTENT – THIS PLAN SET IS INTENDED TO DEPICT THE REPLACEMENT OF A SINGLE FAMILY RESIDENCE.

1. APPROXIMATE LOT AREA: 15,249 S.F.± (0.36 AC.±)
2. ZONE: (SRB) SINGLE RESIDENCE B
3. DIMENSIONAL REQUIREMENTS – (SRB) SINGLE RESIDENCE B

	REQUIRED	EXISTING	PROVIDED
MIN. LOT AREA:	15,000 S.F.	±15,249 SF	±15,249 SF
MIN. STREET FRONTAGE:	100'	100'	100'
MIN. LOT DEPTH:	100'	100'	100'
FRONT SETBACK: *	30' (21.5')	±19.6'	±21.5'
SIDE SETBACK (RIGHT):	10'	±91.4'	±76.4'
SIDE SETBACK (LEFT):	10'	±11.6'	±20.6'
REAR SETBACK:	30'	±42.8'	±36.5'
MAX. BUILDING HEIGHT:	35'	<35'	<35'
MAX. BUILDING COVERAGE:	20%	1,095 SF 7.2%)	1,758 SF (11.5%)
MIN. OPEN SPACE:	40%	13,219 SF (86.7%)	12,709 SF (83.3%)

* FRONT SETBACK CAN BE AN AVERAGE OF ABUTTING PARCELS IN THE SAME' ZONE. TAX MAP 201/7 IS 21.5' = 21.5' ALLOWED

4. PARCEL LIES IN ZONE X (NO SCREEN), AREA OF MINIMAL FLOOD HAZARD PER FEMA FIRM MAP NUMBER 33015C0286F, MAP REVISED 1/29/21 BY FEMA.
5. ALL CONSTRUCTION SHALL MEET THE MINIMUM STANDARDS OF THE CITY OF PORTSMOUTH & NHDOT'S STANDARD SPECIFICATION FOR ROAD & BRIDGE CONSTRUCTION, LATEST EDITIONS. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
6. PARKING SPACES REQUIREMENTS:

   1.3 SPACES/UNIT X 1 UNIT = 1.3 SPACES REQUIRED

   2 SPACES PROVIDED (IN GARAGE)
7. BASE PLAN: "EXISTING CONDITIONS PLAN" BY JAMES VERRA & ASSOCIATES, INC., DATED 3/28/2024.
8. BUILDING COVERAGE COMPUTATIONS:
   EXISTING BUILDING COVERAGE:
   HOUSE (±980 S.F.) + VESTIBULE/THRESHOLD/STEPS (±115 S.F.)
   = ±1,095 S.F. / 15,249 S.F. = ±7.2%

   PROPOSED BUILDING COVERAGE:
   HOUSE, GARAGE & STEPS (±1,698 S.F.) + COVERED DECK/STEPS (±60 S.F.)
   = ±1,758 S.F./15,249 S.F. = (±11.5%)
9. OPEN SPACE COMPUTATIONS:
   EXISTING OPEN SPACE:
   TOTAL AREA (15,249 S.F.– EXISTING BLDG., VESTIBULE, THRESHOLD & STEPS (±1,095 S.F.) – COVERED STORAGE/CONCRETE FLOOR/DIRT FLOOR & STEP (±365 S.F.) – CONC. WALKS (±40 S.F.) – CRUSHED STONE DRIVE/PARKING (±530 S.F.)
   = OPEN SPACE OF ±13,219 S.F. / 15,249 S.F. = (±86.7%)

   PROPOSED OPEN SPACE:
   TOTAL AREA (15,249 S.F. – PROP. RESIDENCE W/ATTACHED GARAGE, PORCH & STEPS (±1,758 S.F.) – PAVER DRIVEWAY (±568 S.F.) – PROP. PATIO (±118 S.F.) – PROP. CONC. PADS (±58 S.F.) – PROP. WALKS/STEP (±38 S.F.) = OPEN SPACE = ±12,709 S.F. (±83.3%)
10. PARCEL LIES WITHIN 250 FEET OF SAGAMORE CREEK; A NHDES SHORELAND PERMIT WILL BE REQUIRED.

ENGINEER:
ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

ISSUED FOR: APPROVAL

ISSUE DATE: JUNE 28, 2024

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	5/29/24
1	REV. BLDG. FOORPRINT	EDW	6/28/24

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5534–REV1.DWG

SCALE:
22" x 34" – 1" = 10'
11" x 17" – 1" = 20'

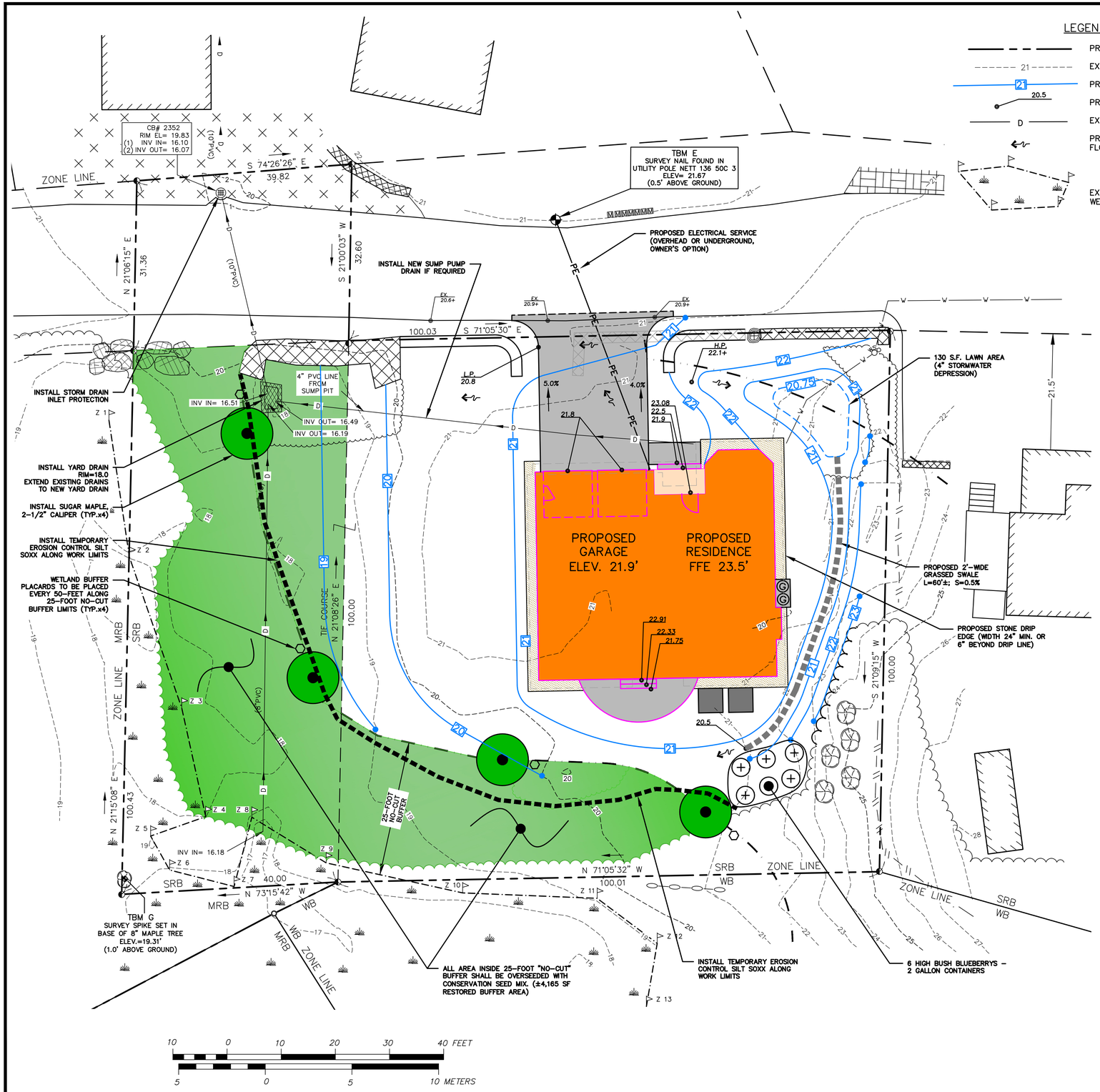
OWNER/APPLICANT:
FLIPPIN BERGERS, LLC
71 BRACKETT ROAD
PORTSMOUTH, NH 03801
ASSESSOR'S PARCEL 201–8
RCRD 6530/243

PROJECT/LOCATION:
PROPOSED SINGLE-FAMILY RESIDENCE
1 SAGAMORE GROVE
PORTSMOUTH, N.H.
ASSESSOR'S PARCEL 201–8

TITLE:
SITE PLAN

SHEET NUMBER:
C - 1

P5534



LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT GRADE
- EXISTING DRAIN LINE
- PROPOSED DRAINAGE FLOW PATH
- EXISTING FLAGGED WETLANDS

CONDITIONAL USE AREAS:

LOT AREA:	±15,249 S.F.
WETLANDS AREA:	±750 S.F. (±4.9% OF LOT AREA)
WETLANDS & 100-FOOT WETLANDS BUFFER:	±14,700 S.F. (±96.4% OF LOT AREA)
AREA OF LOT OUTSIDE 100-FOOT WETLAND BUFFER	±549 S.F. (±3.6% OF LOT AREA)
WETLAND BUFFER RESTORATION AREA:	±4,165 S.F. (±27.3% OF LOT AREA)
EXISTING NATURAL BUFFER AREA	±2,700 S.F.
TOTAL AREA TO BE NATURALIZED AND/OR REMAINING NATURAL	±6,385 S.F. (±41.9% OF LOT AREA)
EXISTING BUFFER AREA IMPERVIOUS	± 2,030 S.F.
PROPOSED BUFFER AREA IMPERVIOUS	± 2,540 S.F. (INCLUDING 757 S.F OF PERMEABLE SURFACES)
EXISTING BUILDING DISTANCE TO WETLAND	± 38.7 FT
PROPOSED BUILDING DISTANCE TO WETLAND	± 39.8 FT
BUFFER DISTURBANCE AREA	±7,900 SF
SITE DISTURBANCE TO WETLAND	± 25 S.F.

* USE OF FERTILIZERS OTHER THAN SLOW RELEASE NITROGEN FERTILIZERS IS PROHIBITED ON THE SITE

* USE OF PESTICIDES OR HERBICIDES ARE PROHIBITED ON THE PROPERTY

STORMWATER MANANGEMENT NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
4. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
5. UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBM) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
6. PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
7. TEMPORARY INLET PROTECTION MEASURES SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASINS WITHIN 100' OF THE PROJECT SITE WHEN SITE WORK WITHIN CONTRIBUTING AREAS IS ACTIVE OR SAID AREAS HAVE NOT BEEN STABILIZED.
8. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
9. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
10. IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZING AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.
11. NO EARTHWORK, STUMPING OR GRUBBING SHALL COMMENCE UNTIL ALL APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE PROPERLY MAINTAINED IN GOOD WORKING ORDER FOR THE DURATION OF CONSTRUCTION AND THE SITE IS STABILIZED.
12. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DESIGN STANDARDS AND SPECIFICATIONS SET FORTH IN THE NHDES NH STORMWATER MANUALS, VOL. 1-3, DATED DECEMBER 2008 AS AMENDED.
13. CONTRACTOR SHALL CONTROL DUST BY SPRAYING WATER, SWEEPING PAVED SURFACES, PROVIDING TEMPORARY VEGETATION, AND/OR MULCHING EXPOSED AREAS AND STOCKPILES.
14. THE CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO PREVENT EROSION, PREVENT SEDIMENT FROM LEAVING THE SITE AND/OR ENTERING WETLANDS AND ENSURE PERMANENT SOIL STABILIZATION.
15. ALL EROSION CONTROL BLANKETS AND FASTENERS SHALL BE BIODEGRADEABLE.
16. ALL SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
17. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE SIX (6") INCHES OF COMPACTED LOAM, LIMESTONE, ORGANIC FERTILIZER, SEED, AND MULCH USING APPROPRIATE SOIL STABILIZATION TECHNIQUES.
18. UPON COMPLETION OF CONSTRUCTION, ALL DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT AND ALL TEMPORARY EROSION AND SEDIMENT CONTROLS REMOVED AND ANY AREAS DISTURBED BY THE REMOVAL SMOOTHED AND REVEGETATED.
19. SLOW RELEASE FERTILIZER SHALL BE USED IN THE 100-FOOT BUFFER.

ENGINEER:
ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

STATE OF NEW HAMPSHIRE - ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER

ISSUED FOR: APPROVAL

ISSUE DATE: JUNE 28, 2024

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	5/29/24
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ASSESSOR'S PARCEL 201-8
RCRD 6530/243

PROJECT/LOCATION:
PROPOSED SINGLE-FAMILY RESIDENCE
1 SAGAMORE GROVE
PORTSMOUTH, N.H.
ASSESSOR'S PARCEL 201-8

TITLE:
WETLANDS CONDITIONAL USE PERMIT APPLICATION PLAN

SHEET NUMBER:
C - 2

P5534

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

PROPOSED SITE IMPROVEMENTS
1 SAGAMORE GROVE
PORTSMOUTH, NEW HAMPSHIRE
TAX MAP 201 LOT 8

LONGITUDE: 70°44'48" W
LATITUDE: 43°03'13" N

OWNER / APPLICANT:

FLIPPIN BERGERS, LLC.
71 BRACKETT ROAD
PORTSMOUTH, NH 038001

DESCRIPTION

The project consists of the development of the lot for the construction of a single–family residential home along with associated site improvements.

DISTURBED AREA

The total area to be disturbed for the redevelopment improvements is approximately 7,900 S.F. (±0.18 acres).

PROJECT PHASING

The proposed project will be completed in one phase.

NAME OF RECEIVING WATER

The site drains overland to the Piscataqua River.

SEQUENCE OF MAJOR ACTIVITIES

1. Install temporary erosion control measures including silt fences, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
2. Raze existing structures,
3. Strip loam and stockpile.
4. Site features as shown on plan.
5. Rough grade site including placement of borrow materials.
6. Construct drainage structures, culverts, utilities, swales & pavement base course materials.
7. Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized.
8. Install pavers.
9. When all construction activity is complete and site is stabilized, remove all temporary erosion control measures and any sediment that has been trapped by these devices.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 – 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, & level spreaders prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.25 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built–up sediment shall be removed from silt fence or other barriers when it has reached one–third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. An area shall be considered stable if one of the following has occurred:
   a. Base coarse gravels have been installed in areas to be paved;
   b. A minimum of 85% vegetated growth as been established;
   c. A minimum of 3 inches of non–erosive material such as stone of riprap has been installed; – or –
   d. Erosion control blankets have been properly installed.
9. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing – In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
   a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
   b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

2. Guidelines for Winter Mulch Application –

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1–1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100% dry weight basis. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance – All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation –
   Apply fertilizer at the rate of 600 pounds per acre of 10–10–10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.

2. Seeding –
   a. Utilize annual rye grass at a rate of 40 lbs/acre.
   b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
   c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance –
   Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Sequence of Installation –
   Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

2. Maintenance –
   a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.
   b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
   a. Sediment deposits must be removed when deposits reach approximately one–third (1/3) the height of the barrier.
   b. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.
   c. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

E. PERMANENT SEEDING –

1. Bedding – stones larger than 1½", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.

2. Fertilizer – lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:

   Agricultural Limestone @ 100 lbs. per 1,000 s.f.
   10–20–20 fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (recommended):

Type	Lbs. / Acre	Lbs. / 1,000 sf
Tall Fescue	24	0.55
Creeping Red Fescue	24	0.55
Total	48	1.10

Seed Mixture (For slope embankments):
Grass Seed: Provide fresh, clean, new–crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified:

Type	Min. Purity (%)	Min. Germination (%)	Kg./Hectare (lbs/Acre)
Creeping Red Fescue (c)	96	85	45 (40)
Perennial Rye Grass (a)	98	90	35 (30)
Redtop	95	80	5 (5)
Alsike Clover	97	90(e)	5 (5)
		Total	90 (80)

a. Ryegrass shall be a certified fine–textured variety such as Pennfine, Fiesta, Yorktown, Diplomat, or equal.
b. Fescue varieties shall include – Creeping Red and/or Hard Reliant, Scaldis, Koket, or Jamestown.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

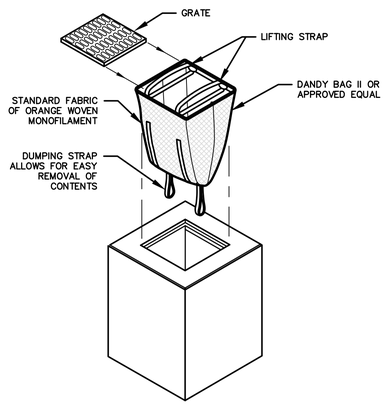
4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding on area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;

2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and

3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.



INSTALLATION AND MAINTENANCE:

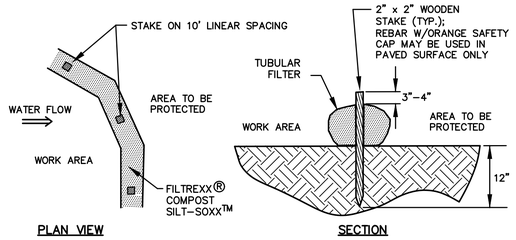
INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

UNACCEPTABLE INLET PROTECTION METHOD:

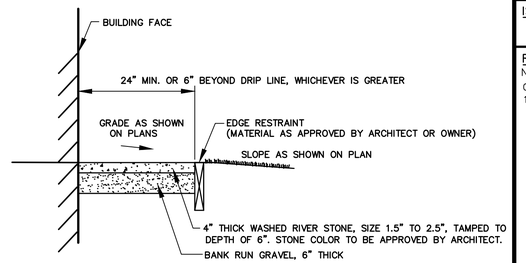
A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

STORM DRAIN INLET PROTECTION NOT TO SCALE

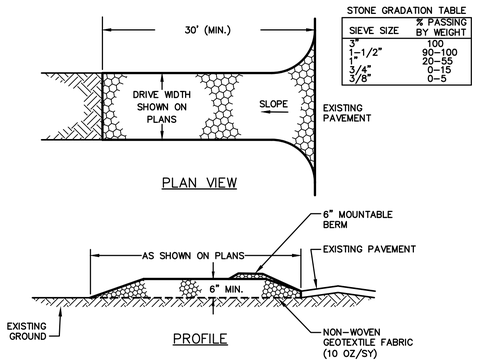


NOTES:
1. SILTSOXX OR APPROVED EQUAL SHALL BE USED FOR TUBULAR SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY BARRIER SHALL BE DISPOSED OF PROPERLY.

TUBULAR SEDIMENT BARRIER DETAIL NOT TO SCALE



DRIP EDGE DETAIL NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – NHDOT STANDARD STONE SIZE #4 – SECTION 703 OF NHDOT STANDARD.
2. LENGTH – DETAILED ON PLANS (50 FOOT MINIMUM).
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. WIDTH – FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
5. FILTER FABRIC – MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
6. SURFACE WATER CONTROL – ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS–OF–WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.

STABILIZED CONSTRUCTION EXIT NOT TO SCALE

P5534

ENGINEER:
ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

ISSUED FOR: APPROVAL

ISSUE DATE: JUNE 28, 2024

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	EDW	5/29/24
1	REV. BLDG. FOORPRINT	EDW	6/28/24

DRAWN BY: RLH
APPROVED BY: EDW
DRAWING FILE: 5534–REV1.DWG

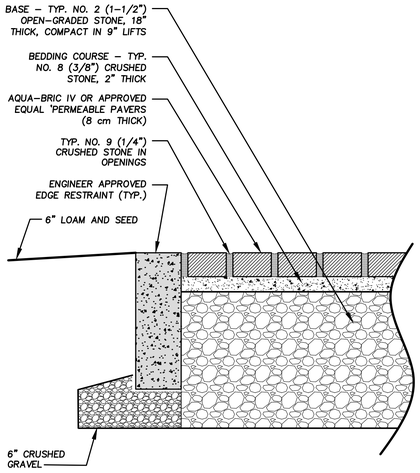
SCALE: NOT TO SCALE

OWNER/APPLICANT:
FLIPPIN BERGERS, LLC
71 BRACKETT ROAD
PORTSMOUTH, NH 03801
ASSESSOR'S PARCEL 201–8
RCRD 6530/243

PROJECT/LOCATION:
PROPOSED SINGLE-FAMILY RESIDENCE
1 SAGAMORE GROVE
PORTSMOUTH, N.H.
ASSESSOR'S PARCEL 201–8

TITLE: DETAIL SHEET

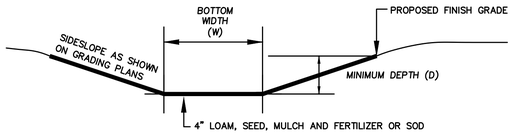
SHEET NUMBER: C - 3



SIEVE SIZE	PERCENT PASSING		
	No. 9 (1/4")	No. 8 (3/8")	No. 2 (1 1/2")
3 in	–	–	100
2 1/2 in	–	–	90 – 100
2 in	–	–	35 – 70
1 1/2 in	–	–	0 – 15
3/4 in	–	–	0 – 5
1/2 in	100	100	–
3/8 in	90 – 100	85 – 100	–
No. 4	20 – 55	10 – 30	–
No. 8	5 – 30	0 – 10	–
No. 16	0 – 10	0 – 5	–
No. 50	0 – 5	–	–

PERMEABLE PAVERS DETAIL

NOT TO SCALE

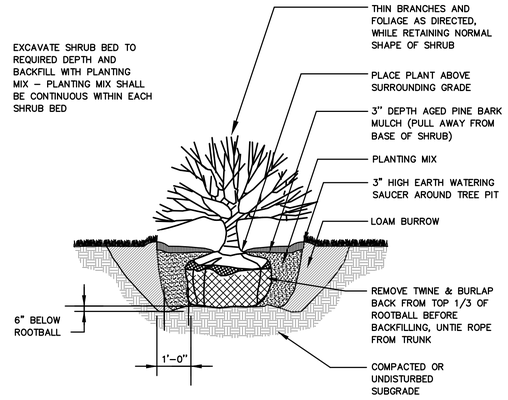


NOTES

1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED WATERWAY. EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION.
5. VEGETATION SHALL BE ESTABLISHED IN THE SWALE PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.
6. MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY.
7. THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.
8. PERIODIC APPLICATIONS OF LIME AND FERTILIZER MAY BE NEEDED TO MAINTAIN VIGOROUS GROWTH.

GRASSED SWALE

NOT TO SCALE

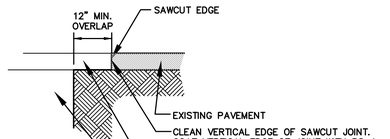


NOTES:

1. PLANT TREE SUCH THAT TOP OF ROOT BALL IS FLUSH WITH GRADE (1" – 2" HIGHER IN SLOW DRAINING SOIL). TRUNK FLARE MUST BE VISIBLE AT THE TOP OF THE ROOT BALL.
2. THREE FLAGGED GUY WIRES TO BE EQUALLY SPACED ABOUT TREE. WOODEN STAKES (24" LENGTH) MAY BE SUBSTITUTED FOR METAL ANCHORS. EITHER OPTION SHALL BE DRIVEN OUTSIDE THE ROOT BALL, PREFERABLY IN UNEXCAVATED SOIL AND REMOVED AT THE END OF THE FIRST GROWING SEASON OR WHEN TREE IS STABILIZED.
3. COORDINATE PRUNING WITH LANDSCAPE ARCHITECT WHEN POSSIBLE. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN. PRUNING OF DEAD OR BROKEN BRANCHES OR CO–DOMINANT LEADERS IS PERMITTED.

SHRUB PLANTING

NOT TO SCALE

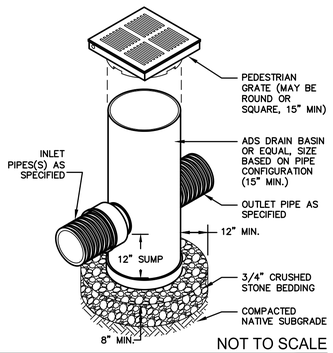


TYPICAL PAVEMENT SAWCUT

NOT TO SCALE

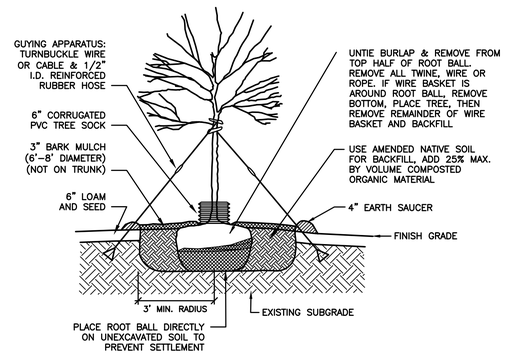
NOTES:

1. FRAMES AND GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN AND DETAILS.
3. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE, N–12HP AND PVC SEWER.
4. INLINE DRAIN TO BE PVC, DIAMETER AS SPECIFIED AND AS MANUFACTURED BY ADS OR APPROVED EQUAL.
5. THE CONTRACTOR SHALL INSTALL THE DRAIN BASIN PER THE MANUFACTURER'S RECOMMENDATIONS AND AS SHOWN ON THE DRAWINGS.
6. FOR INSTALLATION IN PEDESTRIAN AND LANDSCAPE AREAS ONLY.



YARD DRAIN

NOT TO SCALE



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DECIDUOUS TREE PLANTING

NOT TO SCALE

P5534

ENGINEER:
ALTUS ENGINEERING
133 Court Street Portsmouth, NH 03801
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STATE OF NEW HAMPSHIRE – ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER

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