TOWN OF SOUTH HADLEY MASSACHUSETTS

FORM SWP

APPLICATION FOR STORMWATER PERMIT

Date January 23, ,2026

Pursuant to the provisions of Chapter 200 of the Bylaws of the Town of South Hadley, the undersigned herewith submits the accompanying application for a Stormwater Management Permit as described below and detailed in the supporting documentation which is incorporated into and made part of this application.

PROJECT/SITE INFORMATION

1. Project/Site Name: 577 Granby Road
2. Project/Site Location (Street Address): 577 Granby Road
3. Assessor's Map # 32 Parcel # 43
4. The subject property is presently in zoning district(s) – Sec 255-11: Business A-1
5. Is the property in an Overlay District(s) (Sect 255-15)? No If so, what Overlay District(s): N/A
6. Total Parcel Size (square feet): 121,394
7. Estimated Amount of Area to be Disturbed (square feet): 65,000
8. Total Area of Impervious Surfaces (square feet):
   a. Existing: 20,911 b. Proposed: 48,302
9. Date Site Plan, Special Permit, or Definitive Subdivision Plan was approved: N/A
   a. If approved, please attach a copy of Planning Board Approval. N/A
   b. ***Or***, Is Application for Site Plan, Special Permit, or Definitive Subdivision Plan Approval being submitted concurrent with this application? Yes
10. General Description of Project Construct two (2) 3,500 square-foot office/business buildings at back of property, to be rented out.

APPLICANT INFORMATION

Name: James Falcone c/o TJF Properties LLP

Address: 577 Granby Road

Telephone: [redacted]

Email: [redacted]

OWNER INFORMATION *(if different from Applicant)*

Name:

Address:

Telephone:

Email:

CONSULTING ENGINEER INFORMATION

Name: Christopher Chamberland

Address 4 Allen Place

Telephone [redacted] Email Address: [redacted]

I, as applicant, certify that the application and all attachments are correct and complete.

_____ _____

Signature of Applicant **Date**

FOR PLANNING DEPARTMENT OFFICE USE:

Amount of Application Fee: _____ Fee Paid? Yes ____ No _____

Town Clerk:

Date of Submission _____

Signature _____

Berkshire Design Group

January 23, 2026

South Hadley Planning Board
South Hadley Town Hall
116 Main Street, Room 109
South Hadley, MA 01075

RE: 577 Granby Road
Stormwater Permit

To the Planning Board:

On behalf of Jim Falcone of Taylor Rentals, Berkshire Design Group respectfully submits this Stormwater Permit Application for the project located at 577 Granby Road. This application is submitted in conjunction with a Site Plan Review permit for the same project. Pursuant to Chapter 200 of South Hadley's Bylaws, the project will disturb more than 1-acre of land and therefore is required to obtain a Stormwater Permit.

This letter details how the project's proposed stormwater management system complies with the performance standards of South Hadley's Stormwater Bylaw (Chapter 200).

Soil Data & Site Limits

NRCS Web Soil Survey reporting for the site consists entirely of Merrimac fine sandy loam which has a Hydraulic Soil Group (HSG) A. Three test pits were performed on September 26, 2025, to evaluate subsurface conditions. All test pits confirmed medium-to-fine sandy loam at various depths throughout the site. The southernmost pit, TP-1, which was closest to the existing detention basin, found medium-to-fine sand almost 9-ft below grade. This location was the only test pit to find seasonal high groundwater (about 5.5-ft below grade). The other two test pits found glacial till comprised of the fine sandy loam with no trace of seasonal high groundwater.

The test pits indicate the ideal location for a stormwater infiltration BMP is in the vicinity of the existing detention basin, in the sandiest soils on-site.

The site limits for the project were based on the subject property line, just under 2.79 acres. The property is relatively flat, with a very gentle slope from the northwest corner to the southeast property line. Excess runoff from the site flows to the neighboring property to the east.

Existing & Proposed Conditions

The existing site was previously developed in 2005, when the existing detention basin was constructed to capture runoff from the existing building (Taylor Rental) and parking lot. Runoff from a small portion of the site access drives at the front of the site, and the entire rear wooded/grassed area of the property, is allowed to flow uninterrupted off site. The existing hydrology was modeled as two drainage areas flowing to a single control point. A summary of the drainage areas is shown below in **Table 1**.

Table 1. Summary of Existing Drainage Areas

Drainage Area	Total Area (sq-ft)	% Impervious	Curve Number*	Control Point
E-1A	31,092	57%	79	E-CP1
E-1B	90,302	3%	51	E-CP1
SUM E	121,394	17%	-	-

*Curve Number shown is the average for each Drainage Area, see attached Hydrology Calculations for breakdown of surface conditions and their respective curve numbers.

An existing condition drainage area map, **FIG-1**, is attached to this letter.

The proposed site makes no changes to the front of the existing site, but adds two (2) 3,500 SF buildings with surrounding paved parking and drive access at the rear of the site. The project proposes to expand the existing detention basin and re-grade the back of the site to direct runoff from most impervious surfaces toward the basin. The proposed hydrology was modeled as two drainage areas flowing to a single control point. A summary of the drainage areas is shown below in **Table 2**.

Table 2. Summary of Proposed Drainage Areas

Drainage Area	Total Area (sq-ft)	% Impervious	Curve Number*	Control Point
P-1A	100,556	44%	69	P-CP1
P-1B	20,838	18%	45	P-CP1
SUM P	121,394	40%	-	-

*Curve Number shown is the average for each Drainage Area, see attached Hydrology Calculations for breakdown of surface conditions and their respective curve numbers.

A proposed condition drainage area map, **FIG-2**, is attached to this letter.

Stormwater Standards Compliance

Standard 1: Stormwater Conveyance

All new discharges have been designed to protect downstream surfaces and structures and will only discharge treated stormwater.

Standard 2: Peak Discharge

Calculations were performed using HydroCAD Stormwater Modeling System version 10.20 using the Soil Conservation Service (SCS) TR-20 methodology to compare peak runoff from the site in the existing and proposed conditions for the 2-year, 10-year, and 100-year storms. The results of the calculations are shown in Table 1, below.

Condition & Point of Analysis	2-YR Storm (3.02")	10-YR Storm (4.86")	100-YR Storm (7.78")
	Peak Flow (cfs)		
Existing E-CP1	0.02	1.36	5.81
Proposed P-CP1	0.00	0.08	2.52

Runoff from the site shows a decrease in peak flow for all storms between existing and proposed conditions.

Standard 3: Groundwater Recharge

The proposed site includes 48,302 sf of impervious area (existing and new). Test pits indicated a mixture of fine sandy loam and sand at various locations throughout the site. For conservative purposes, a target depth factor associated with sand was used (0.6 inches). Therefore, the required groundwater recharge volume is calculated to be 48,302 sf * 0.6 inches * (1 ft/12inch) = **2,415 cf**.

The project proposes continuing to use the existing detention basin as an infiltration BMP. The existing basin provides **4,862 cf** of recharge volume, which far exceeds the required recharge volume. The project proposes to add a sediment forebay to pre-treat runoff from the new impervious parking and roof areas at the rear of the site, before flowing into the basin.

In the event of a storm that exceeds the capacity of the detention basin, the proposed site has been designed to allow excess runoff to flow to the existing downstream design point, the grassy field in the neighboring property to the east.

Standard 4: Water Quality Volume and Total Suspended Solids (TSS) Removal

The proposed detention basin provides water quality volume for the site. Using a water quality volume factor of 1-inch, the water quality volume required for the total impervious area (48,302 sf) is calculated to be **4,025 cf**. The infiltration basins provide **4,862 cf** of water quality volume, thereby meeting the volume requirements of this standard.

The proposed site includes a sediment forebay to pre-treat runoff from the new impervious area at the back of the site. Required pre-treatment volume is 0.1-inches across impervious areas. The sediment forebay receives runoff from 28,768 sf of impervious area. Therefore the required volume of the sediment forebay is calculated to be **240 cf**. The sediment forebay provides **1,298** cf of pre-treatment volume.

Standard 5: Land uses with Higher Potential Pollutant Load (LUHPPL)

The project is not expected to yield high potential pollutant loads.

Standard 6: Critical Areas

There are no Critical Areas in the surrounding site, therefore this standard is not applicable.

Standard 7: Redevelopment Project

The project would be considered a redevelopment project. However, the project meets the design standards of a new development for the entire site.

Standard 8: Erosion & Sediment Control

Erosion and sediment controls have been incorporated into the project design to prevent erosion, control sediments, and stabilize exposed soils during construction and land disturbance.

Standard 9: Operation & Maintenance Plan

An Operation & Maintenance Plan is included with this letter.

Standard 10: Prohibition of Illicit Discharges

An Illicit Discharge Compliance Statement will be provided before any water is discharged to the system.

Conclusion

The proposed stormwater improvements meet the requirements imposed upon the project given the site conditions.

Please do not hesitate to contact me at ([redacted] or [redacted] if you have any questions about the information contained in this letter.

Sincerely,

Berkshire Design Group, Inc.

Liam McCann

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 Hampshire County, Massachusetts, Central Part

October 7, 2025

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

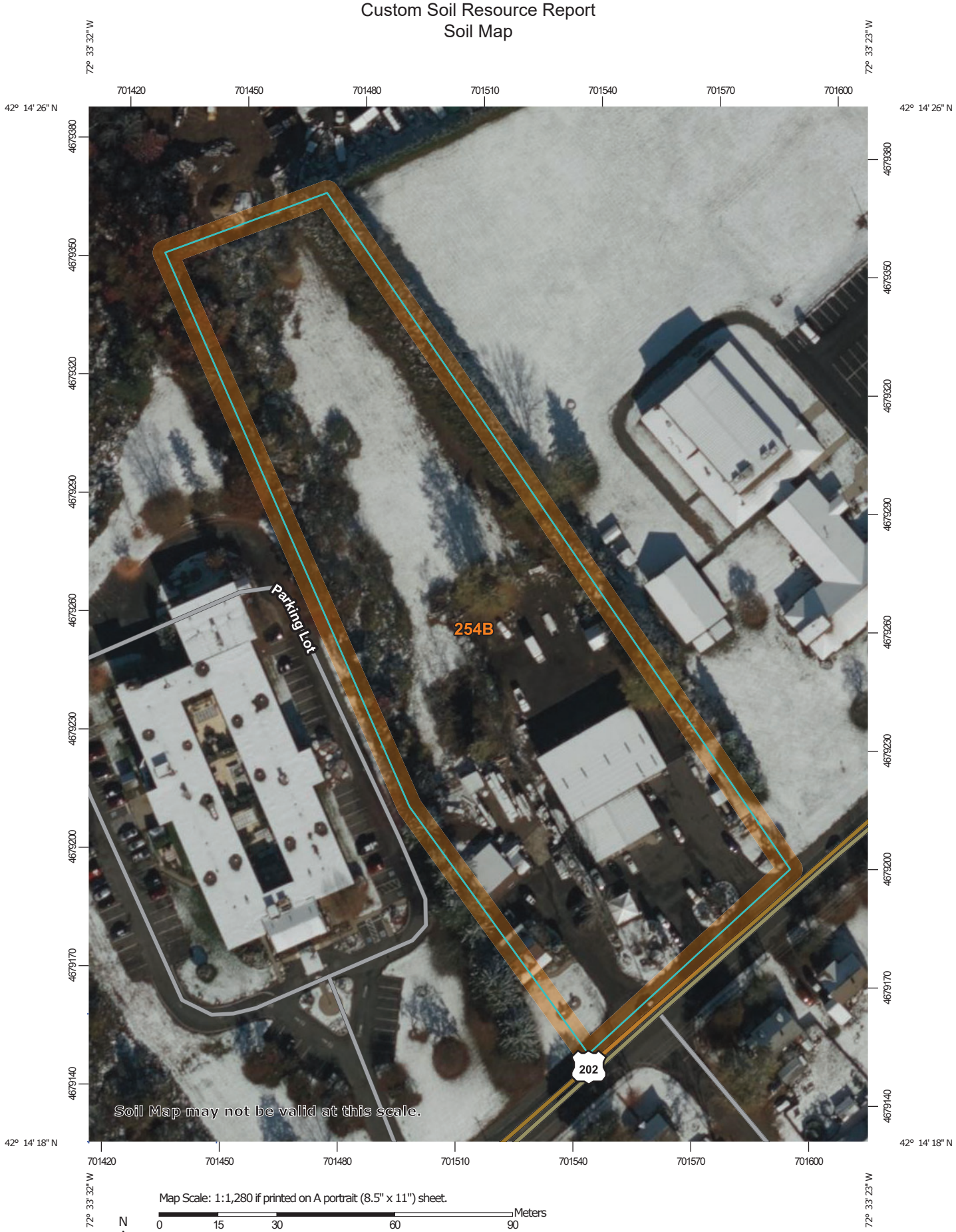
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,280 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N 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 1:15,800.

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: Hampshire County, Massachusetts, Central Part
Survey Area Data: Version 20, Sep 5, 2025

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

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
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	3.3	100.0%
Totals for Area of Interest		**3.3**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Hampshire County, Massachusetts, Central Part

254B—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Sudbury

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

Hinckley

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

Windsor

Percent of map unit: 3 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Walpole

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission

rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

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.

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.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Hampshire County, Massachusetts, Central Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
254B—Merrimac fine sandy loam, 3 to 8 percent slopes														
Merrimac	86	A	0-10	Fine sandy loam, sandy loam, very fine sandy loam, gravelly fine sandy loam, gravelly sandy loam, gravelly very fine sandy loam	SM, ML	A-2-4, A-4	0- 0- 0	0- 0- 0	69-84-100	68-83-100	53-72-97	29-44-62	0-26 -34	NP-2 -4
			10-22	Fine sandy loam, sandy loam, very fine sandy loam, coarse sandy loam, gravelly fine sandy loam, gravelly sandy loam, gravelly very fine sandy loam, gravelly coarse sandy loam	SM	A-1-b, A-2-4, A-4	0- 0- 0	0- 0- 0	70-78-100	68-77-100	50-62-93	24-31-54	0-16 -24	NP-1 -4

Engineering Properties–Hampshire County, Massachusetts, Central Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
			22-26	Stratified gravel to loamy sand, stratified gravel to sandy loam, stratified gravel to gravelly loamy coarse sand, stratified gravel to gravelly loamy fine sand, stratified gravel to gravelly loamy sand, stratified gravel to gravelly sandy loam, stratified gravel to loamy coarse sand, stratified gravel to loamy fine sand, stratified gravel to coarse sandy loam, stratified gravel to gravelly coarse sandy loam	SM, SC-SM	A-1-b, A-2-4, A-4	0- 0- 0	0- 0- 0	58-76-100	56-75-100	38-56-88	14-24-45	0-17 -24	NP-1 -4

Engineering Properties–Hampshire County, Massachusetts, Central Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
			26-65	Gravel, stratified gravel to cobbles, stratified gravel to coarse sand, stratified gravel to gravelly coarse sand, stratified gravel to gravelly sand, stratified gravel to very gravelly coarse sand, stratified gravel to very gravelly sand, stratified gravel to extremely gravelly coarse sand, stratified gravel to extremely gravelly sand, stratified gravel to sand	SP, SP-SM, GP, GP-GM, SM	A-1-a, A-2-4	0- 0- 0	0-12- 31	13-44-78	9-41- 77	5-25- 58	1- 5- 15	0-0 -14	NP

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

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Berkshire Design Group

Soil Evaluation

Location Address or Lot No. 577 Granby Road, South Hadley, MA

Performed By Liam McCann

Deep Hole Number TP-1 Date 9/26/25 Time 1:00 PM Weather Mostly Cloudy

Location Description (See Plan) ~40-ft north of existing stormwater basin

Land Use Field Slope (%) 0-2 Surface Elevation at Hole 239.6

Vegetation Grass Surface Stones 0-5% Soil Parent Material Outwash deposits

Landform Plain Position on Landscape (SU, SH, BS, FS, TS) Plain

Distances from:

Open Water Body	40	Feet	Drainage way		Feet
Wetlands		Feet	Property Line	70	Feet
Drinking Water Well		Feet	Other		

Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil/Fill ☐ Weathered/Fractured Rock ☐ Bedrock

Soil Log

Depth (in)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling			Coarse Fragments % by Volume		Soil Structure	Soil Consistence	Other
				Depth	Color	%	Gravel	Cobbles & Stones			
0-9	Ap	Loamy Sand	10 YR 3/3	-	-	-	-	-	Massive	Friable	
9-33	Bw	Loamy Sand	10 YR 5/6	-	-	-	-	-	Massive	Friable	
33-67	C	Medium Sand	10 YR 6/6	-	-	-	-	-	Single Grain	Loose	
67-92	C2	Fine Sand	10 YR 5/3	67	5 YR 7/8	50	-	-	Single Grain	Loose	
92-100	C3	Very Fine Sandy Loam	10 YR 6/4				-	-	Massive	Firm	

Additional Notes:

Existing stormwater basin nearby has standing water at depth similar to observed weeping (86”). Clear “bathtub ring” topping at upper bound of C2 layer.

Depth to Groundwater

Weeping from Pit Face 86” Standing Water Mottling 67”

ESHGW Depth ESHGW Elev. 234.0

Note: This soil evaluation has been performed for the purpose of stormwater management design, and shall not be used for purposes related to Title 5 and/or soil suitability assessments for on-site sewage disposal.

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Berkshire Design Group

Soil Evaluation

Location Address or Lot No. 577 Granby Road, South Hadley, MA

Performed By Liam McCann

Deep Hole Number TP-2 Date 9/26/25 Time 1:30 PM Weather Mostly Cloudy

Location Description (See Plan) Middle/west of rear site

Land Use Field Slope (%) 0-2 Surface Elevation at Hole 241.6

Vegetation Grass Surface Stones 0-5% Soil Parent Material Outwash deposits over lodgement till

Landform Plain Position on Landscape (SU, SH, BS, FS, TS) Plain

Distances from:

Open Water Body		Feet	Drainage way		Feet
Wetlands		Feet	Property Line	~70	Feet
Drinking Water Well		Feet	Other		

Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil/Fill ☐ Weathered/Fractured Rock ☐ Bedrock

Soil Log

Depth (in)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling			Coarse Fragments % by Volume		Soil Structure	Soil Consistence	Other
				Depth	Color	%	Gravel	Cobbles & Stones			
0-12	Ap	Loamy Sand	10 YR 3/3	-	-	-	-	-	Massive	Friable	
12-36	Bw	Loamy Sand	10 YR 4/6	-	-	-	-	-	Massive	Friable	
36-57	2C	Sandy Loam	10 YR 3/4	-	-	-	40-50	10-15	Massive	Firm in place	*
57-84	2C2	Medium Sandy Loam	10 YR 3/3	-	-	-	40-50	20-25	Massive	Firm in place	*

Additional Notes:

* Dense lodgement till

No mottling/redox features observed

Depth to Groundwater

Weeping from Pit Face Standing Water Mottling

ESHGW Depth ESHGW Elev. 234.6

Note: This soil evaluation has been performed for the purpose of stormwater management design, and shall not be used for purposes related to Title 5 and/or soil suitability assessments for on-site sewage disposal.

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Berkshire Design Group

Soil Evaluation

Location Address or Lot No. 577 Granby Road, South Hadley, MA

Performed By Liam McCann

Deep Hole Number TP-3 Date 9/26/25 Time 2:15 PM Weather Mostly Sunn

Location Description (See Plan) Back of site (north)

Land Use Field Slope (%) 0-2 Surface Elevation at Hole 242.1

Vegetation Grass Surface Stones 0-5% Soil Parent Material Outwash deposits over lodgement till

Landform Plain Position on Landscape (SU, SH, BS, FS, TS) Plain

Distances from:

Open Water Body		Feet	Drainage way		Feet
Wetlands		Feet	Property Line	~60	Feet
Drinking Water Well		Feet	Other		

Unsuitable Materials Present: ☐ Yes ☒ No

If Yes: ☐ Disturbed Soil/Fill ☐ Weathered/Fractured Rock ☐ Bedrock

Soil Log

Depth (in)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling			Coarse Fragments % by Volume		Soil Structure	Soil Consistence	Other
				Depth	Color	%	Gravel	Cobbles & Stones			
0-11	Ap	Loamy Sand	10 YR 4/3	-	-	-	-	-	Massive	Friable	
11-21	Bw	Loamy Sand	10 YR 5/6	-	-	-	-	-	Massive	Friable	
21-28	C	Fine Sand	10 YR 7/4	-	-	-	10	10	Single Grain	Loose	*
28-70	2C	Sandy Loam	10 YR 4/6	28	2.5 YR 6/8	5	50	50	Massive	Firm in place	**

Additional Notes:

*Gravel/cobbles have plate-like structure and observed in middle of layer.

**Mottling/redox features observed in various locations at top of dense layer (lodgement till). Observations indicate perched water in certain conditions, but not indicative of seasonal groundwater

Depth to Groundwater

Weeping from Pit Face _____ Standing Water _____ Mottling _____

ESHGW Depth _____ ESHGW Elev. 236.3

Note: This soil evaluation has been performed for the purpose of stormwater management design, and shall not be used for purposes related to Title 5 and/or soil suitability assessments for on-site sewage disposal.

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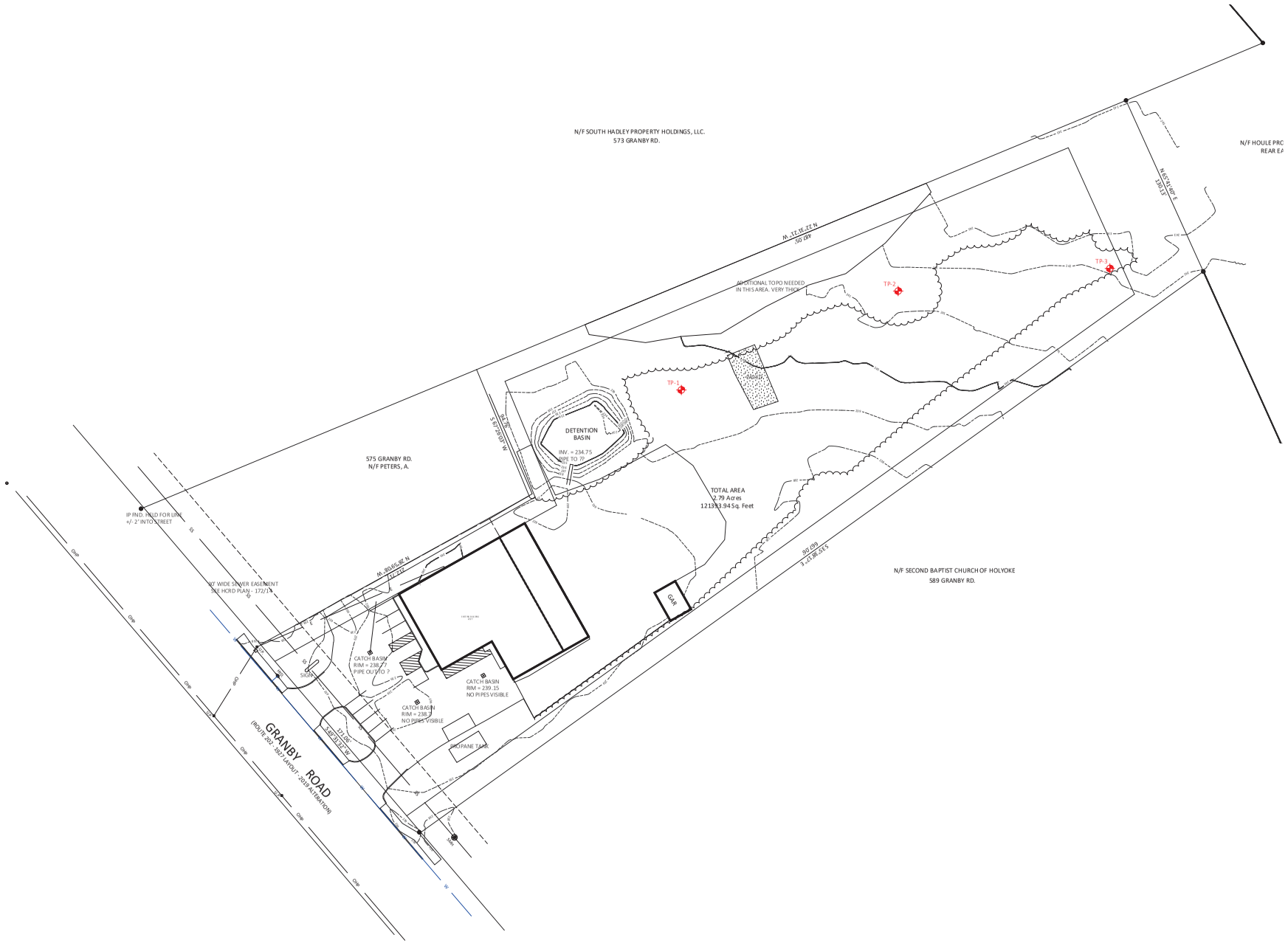

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577 Granby Rd
South Hadley, MA

Feasibility Study

STORMWATER TEST PIT LOCATIONS

SCALE 1"=30'-0" (if printed full size @ 24" x 36")

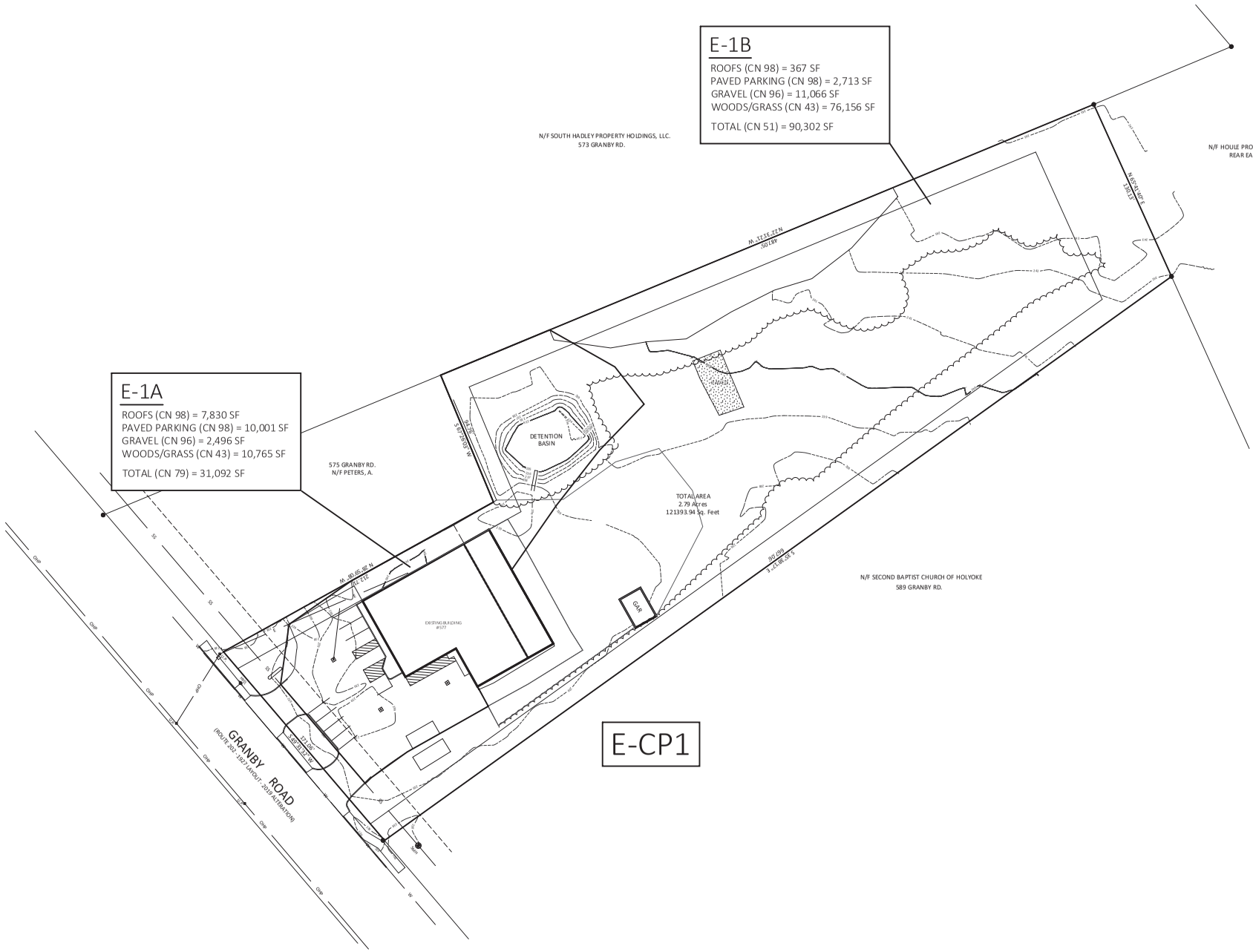
0 15' 30' 60' 90'

Revisions

Date:	Sept 26, 2025
Scale:	1"=30'
Drawn By:	LM
Checked By:	JDS

Sheet Number

LC-100



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577 Granby Rd
South Hadley, MA

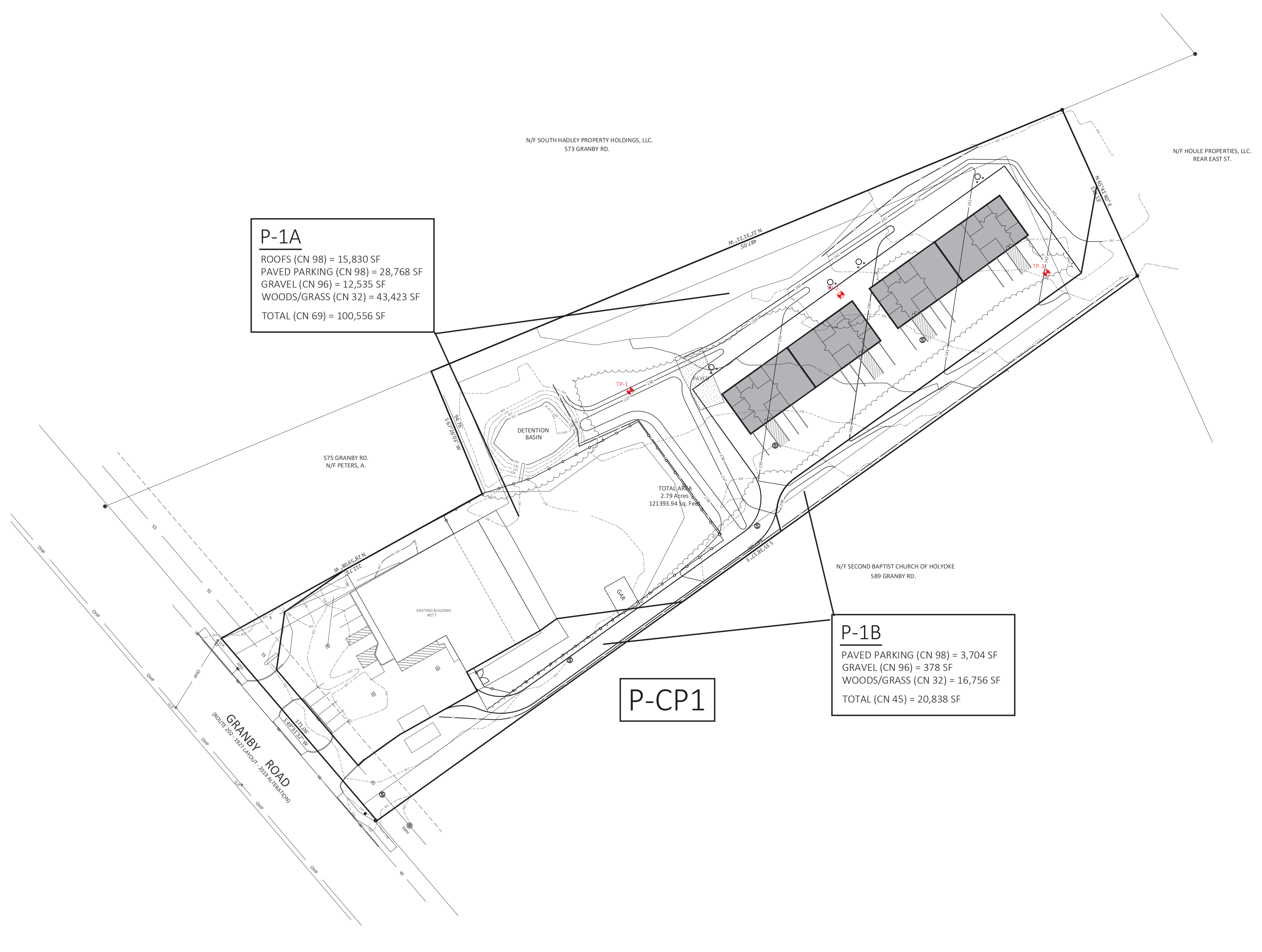
Stormwater Management System

DRAINAGE AREAS – EXISTING CONDITION

SCALE 1"=30'-0" (if printed full size @ 24" x 36")
0 15' 30' 60' 90'

Revisions

Date:	October 20, 2025
Scale:	1"=30'
Drawn By:	LM
Checked By:	CC
Sheet Number	FIG-1



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577 Granby Rd
South Hadley, MA

Stormwater Management System

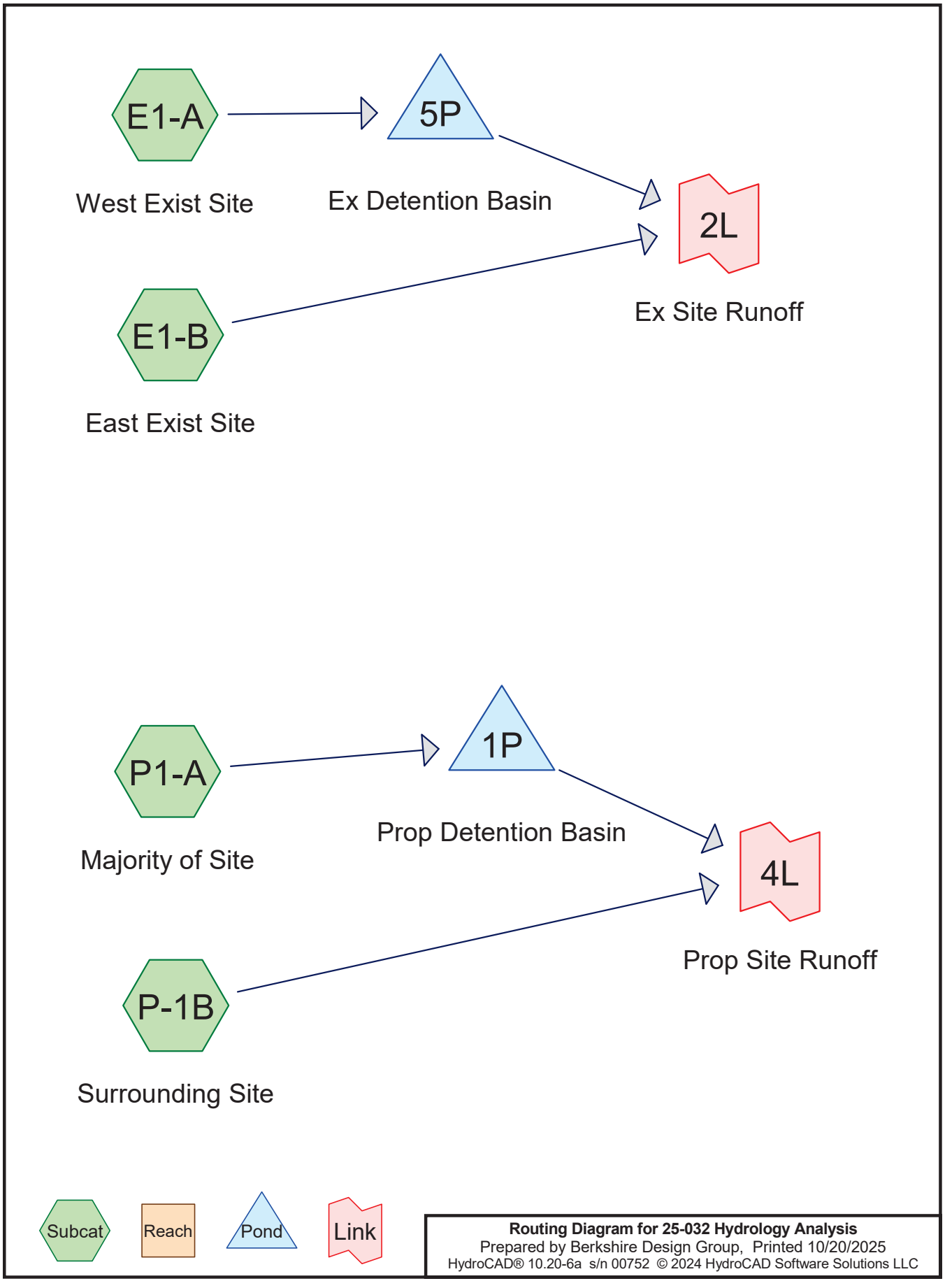
DRAINAGE AREAS - PROPOSED CONDITION

SCALE 1"=30'-0" (if printed full size @ 24" x 36")
0 15' 30' 60' 90'

Revisions

Date:	October 20, 2025
Scale:	1"=30'
Drawn By:	LM
Checked By:	CC

Sheet Number
FIG-2



Routing Diagram for 25-032 Hydrology Analysis
Prepared by Berkshire Design Group, Printed 10/20/2025

Project Notes

Rainfall events imported from "NRCS2-Rain.txt" for 6682 MA South Hadley Hampshire Co Ne

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NOAA10 24-hr	D	Default	24.00	1	3.02	2
2	10-Year	NOAA10 24-hr	D	Default	24.00	1	4.86	2
3	100-Year	NOAA10 24-hr	D	Default	24.00	1	7.78	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.608	96	Gravel surface, HSG A (E1-A, E1-B, P-1B, P1-A)
1.037	98	Paved parking, HSG A (E1-A, E1-B, P-1B, P1-A)
0.552	98	Roofs, HSG A (E1-A, E1-B, P1-A)
1.995	43	Woods/grass comb., Fair, HSG A (E1-A, E1-B)
1.382	32	Woods/grass comb., Good, HSG A (P-1B, P1-A)
5.574	**62**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.608	0.000	0.000	0.000	0.000	0.608	Gravel surface	E1-A, E1-B, P-1B, P1-A
1.037	0.000	0.000	0.000	0.000	1.037	Paved parking	E1-A, E1-B, P-1B, P1-A
0.552	0.000	0.000	0.000	0.000	0.552	Roofs	E1-A, E1-B, P1-A
1.995	0.000	0.000	0.000	0.000	1.995	Woods/grass comb., Fair	E1-A, E1-B
1.382	0.000	0.000	0.000	0.000	1.382	Woods/grass comb., Good	P-1B, P1-A
5.574	**0.000**	**0.000**	**0.000**	**0.000**	**5.574**	**TOTAL AREA**	

Time span=0.00-32.00 hrs, dt=0.01 hrs, 3201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1-A: West Exist Site Runoff Area=31,092 sf 57.35% Impervious Runoff Depth=1.20"
Tc=5.0 min CN=79 Runoff=1.13 cfs 0.072 af

Subcatchment E1-B: East Exist Site Runoff Area=90,302 sf 3.41% Impervious Runoff Depth=0.11"
Tc=5.0 min CN=51 Runoff=0.02 cfs 0.019 af

Subcatchment P-1B: Surrounding Site Runoff Area=20,838 sf 17.78% Impervious Runoff Depth=0.03"
Tc=5.0 min CN=45 Runoff=0.00 cfs 0.001 af

Subcatchment P1-A: Majority of Site Runoff Area=100,556 sf 44.35% Impervious Runoff Depth=0.68"
Tc=5.0 min CN=69 Runoff=1.88 cfs 0.131 af

Pond 1P: Prop Detention Basin Peak Elev=235.17' Storage=1,106 cf Inflow=1.88 cfs 0.131 af
Discarded=0.32 cfs 0.131 af Primary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.131 af

Pond 5P: Ex Detention Basin Peak Elev=234.86' Storage=633 cf Inflow=1.13 cfs 0.072 af
Discarded=0.26 cfs 0.072 af Primary=0.00 cfs 0.000 af Outflow=0.26 cfs 0.072 af

Link 2L: Ex Site Runoff Inflow=0.02 cfs 0.019 af
Primary=0.02 cfs 0.019 af

Link 4L: Prop Site Runoff Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af

Total Runoff Area = 5.574 ac Runoff Volume = 0.223 af Average Runoff Depth = 0.48"
71.49% Pervious = 3.985 ac 28.51% Impervious = 1.589 ac

Summary for Subcatchment E1-A: West Exist Site

Runoff = 1.13 cfs @ 12.13 hrs, Volume= 0.072 af, Depth= 1.20"
Routed to Pond 5P : Ex Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.02"

Area (sf)	CN	Description
7,830	98	Roofs, HSG A
10,001	98	Paved parking, HSG A
2,496	96	Gravel surface, HSG A
10,765	43	Woods/grass comb., Fair, HSG A
31,092	79	Weighted Average
13,261		42.65% Pervious Area
17,831		57.35% Impervious Area

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

Summary for Subcatchment E1-B: East Exist Site

Runoff = 0.02 cfs @ 15.01 hrs, Volume= 0.019 af, Depth= 0.11"
Routed to Link 2L : Ex Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.02"

Area (sf)	CN	Description
367	98	Roofs, HSG A
2,713	98	Paved parking, HSG A
11,066	96	Gravel surface, HSG A
76,156	43	Woods/grass comb., Fair, HSG A
90,302	51	Weighted Average
87,222		96.59% Pervious Area
3,080		3.41% Impervious Area

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

Summary for Subcatchment P-1B: Surrounding Site

Runoff = 0.00 cfs @ 21.33 hrs, Volume= 0.001 af, Depth= 0.03"
Routed to Link 4L : Prop Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.02"

Area (sf)	CN	Description
3,704	98	Paved parking, HSG A
378	96	Gravel surface, HSG A
16,756	32	Woods/grass comb., Good, HSG A
20,838	45	Weighted Average
17,134		82.22% Pervious Area
3,704		17.78% Impervious Area

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

Summary for Subcatchment P1-A: Majority of Site

Runoff = 1.88 cfs @ 12.13 hrs, Volume= 0.131 af, Depth= 0.68"
Routed to Pond 1P : Prop Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 2-Year Rainfall=3.02"

Area (sf)	CN	Description
15,830	98	Roofs, HSG A
28,768	98	Paved parking, HSG A
12,535	96	Gravel surface, HSG A
43,423	32	Woods/grass comb., Good, HSG A
100,556	69	Weighted Average
55,958		55.65% Pervious Area
44,598		44.35% Impervious Area

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

Summary for Pond 1P: Prop Detention Basin

Inflow Area = 2.308 ac, 44.35% Impervious, Inflow Depth = 0.68" for 2-Year event
Inflow = 1.88 cfs @ 12.13 hrs, Volume= 0.131 af
Outflow = 0.32 cfs @ 12.46 hrs, Volume= 0.131 af, Atten= 83%, Lag= 20.0 min
Discarded = 0.32 cfs @ 12.46 hrs, Volume= 0.131 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 4L : Prop Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 235.17' @ 12.46 hrs Surf.Area= 1,653 sf Storage= 1,106 cf

Plug-Flow detention time= 28.6 min calculated for 0.131 af (100% of inflow)
Center-of-Mass det. time= 28.6 min (958.7 - 930.1)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	6,217 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	237.00'	1,298 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#3	237.50'	3,256 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		10,771 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	91	0	0
235.00	1,583	837	837
236.00	2,002	1,793	2,630
237.00	2,462	2,232	4,862
237.50	2,960	1,356	6,217

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
237.00	2,343	0	0
237.50	2,850	1,298	1,298

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
237.50	5,810	0	0
238.00	7,212	3,256	3,256

Device	Routing	Invert	Outlet Devices
#1	Discarded	234.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	237.75'	**30.0' long x 40.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.32 cfs @ 12.46 hrs HW=235.17' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=234.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Ex Detention Basin

Inflow Area = 0.714 ac, 57.35% Impervious, Inflow Depth = 1.20" for 2-Year event
Inflow = 1.13 cfs @ 12.13 hrs, Volume= 0.072 af
Outflow = 0.26 cfs @ 12.31 hrs, Volume= 0.072 af, Atten= 77%, Lag= 11.2 min
Discarded = 0.26 cfs @ 12.31 hrs, Volume= 0.072 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Ex Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 234.86' @ 12.31 hrs Surf.Area= 1,378 sf Storage= 633 cf

Plug-Flow detention time= 17.7 min calculated for 0.072 af (100% of inflow)
Center-of-Mass det. time= 17.6 min (902.1 - 884.5)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	10,533 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	91	0	0
235.00	1,583	837	837
236.00	2,002	1,793	2,630
237.00	2,462	2,232	4,862
238.00	2,960	2,711	7,573
239.00	2,960	2,960	10,533

Device	Routing	Invert	Outlet Devices
#1	Discarded	234.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	238.10'	**40.0' long x 40.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.26 cfs @ 12.31 hrs HW=234.86' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=234.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 2L: Ex Site Runoff

Inflow Area = 2.787 ac, 17.23% Impervious, Inflow Depth = 0.08" for 2-Year event
Inflow = 0.02 cfs @ 15.01 hrs, Volume= 0.019 af
Primary = 0.02 cfs @ 15.01 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Prop Site Runoff

Inflow Area = 2.787 ac, 39.79% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 21.33 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 21.33 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Time span=0.00-32.00 hrs, dt=0.01 hrs, 3201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1-A: West Exist Site Runoff Area=31,092 sf 57.35% Impervious Runoff Depth=2.68"
Tc=5.0 min CN=79 Runoff=2.51 cfs 0.159 af

Subcatchment E1-B: East Exist Site Runoff Area=90,302 sf 3.41% Impervious Runoff Depth=0.69"
Tc=5.0 min CN=51 Runoff=1.36 cfs 0.119 af

Subcatchment P-1B: Surrounding Site Runoff Area=20,838 sf 17.78% Impervious Runoff Depth=0.40"
Tc=5.0 min CN=45 Runoff=0.08 cfs 0.016 af

Subcatchment P1-A: Majority of Site Runoff Area=100,556 sf 44.35% Impervious Runoff Depth=1.86"
Tc=5.0 min CN=69 Runoff=5.61 cfs 0.357 af

Pond 1P: Prop Detention Basin Peak Elev=236.97' Storage=4,785 cf Inflow=5.61 cfs 0.357 af
Discarded=0.57 cfs 0.357 af Primary=0.00 cfs 0.000 af Outflow=0.57 cfs 0.357 af

Pond 5P: Ex Detention Basin Peak Elev=235.59' Storage=1,844 cf Inflow=2.51 cfs 0.159 af
Discarded=0.35 cfs 0.159 af Primary=0.00 cfs 0.000 af Outflow=0.35 cfs 0.159 af

Link 2L: Ex Site Runoff Inflow=1.36 cfs 0.119 af
Primary=1.36 cfs 0.119 af

Link 4L: Prop Site Runoff Inflow=0.08 cfs 0.016 af
Primary=0.08 cfs 0.016 af

Total Runoff Area = 5.574 ac Runoff Volume = 0.651 af Average Runoff Depth = 1.40"
71.49% Pervious = 3.985 ac 28.51% Impervious = 1.589 ac

Summary for Subcatchment E1-A: West Exist Site

Runoff = 2.51 cfs @ 12.12 hrs, Volume= 0.159 af, Depth= 2.68"
Routed to Pond 5P : Ex Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=4.86"

Area (sf)	CN	Description
7,830	98	Roofs, HSG A
10,001	98	Paved parking, HSG A
2,496	96	Gravel surface, HSG A
10,765	43	Woods/grass comb., Fair, HSG A
31,092	79	Weighted Average
13,261		42.65% Pervious Area
17,831		57.35% Impervious Area

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

Summary for Subcatchment E1-B: East Exist Site

Runoff = 1.36 cfs @ 12.14 hrs, Volume= 0.119 af, Depth= 0.69"
Routed to Link 2L : Ex Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=4.86"

Area (sf)	CN	Description
367	98	Roofs, HSG A
2,713	98	Paved parking, HSG A
11,066	96	Gravel surface, HSG A
76,156	43	Woods/grass comb., Fair, HSG A
90,302	51	Weighted Average
87,222		96.59% Pervious Area
3,080		3.41% Impervious Area

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

Summary for Subcatchment P-1B: Surrounding Site

Runoff = 0.08 cfs @ 12.15 hrs, Volume= 0.016 af, Depth= 0.40"
Routed to Link 4L : Prop Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=4.86"

Area (sf)	CN	Description
3,704	98	Paved parking, HSG A
378	96	Gravel surface, HSG A
16,756	32	Woods/grass comb., Good, HSG A
20,838	45	Weighted Average
17,134		82.22% Pervious Area
3,704		17.78% Impervious Area

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

Summary for Subcatchment P1-A: Majority of Site

Runoff = 5.61 cfs @ 12.13 hrs, Volume= 0.357 af, Depth= 1.86"
Routed to Pond 1P : Prop Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 10-Year Rainfall=4.86"

Area (sf)	CN	Description
15,830	98	Roofs, HSG A
28,768	98	Paved parking, HSG A
12,535	96	Gravel surface, HSG A
43,423	32	Woods/grass comb., Good, HSG A
100,556	69	Weighted Average
55,958		55.65% Pervious Area
44,598		44.35% Impervious Area

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

Summary for Pond 1P: Prop Detention Basin

Inflow Area = 2.308 ac, 44.35% Impervious, Inflow Depth = 1.86" for 10-Year event
Inflow = 5.61 cfs @ 12.13 hrs, Volume= 0.357 af
Outflow = 0.57 cfs @ 12.80 hrs, Volume= 0.357 af, Atten= 90%, Lag= 40.2 min
Discarded = 0.57 cfs @ 12.80 hrs, Volume= 0.357 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 4L : Prop Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 236.97' @ 12.80 hrs Surf.Area= 2,448 sf Storage= 4,785 cf

Plug-Flow detention time= 103.2 min calculated for 0.357 af (100% of inflow)
Center-of-Mass det. time= 103.2 min (991.3 - 888.1)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	6,217 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	237.00'	1,298 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#3	237.50'	3,256 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		10,771 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	91	0	0
235.00	1,583	837	837
236.00	2,002	1,793	2,630
237.00	2,462	2,232	4,862
237.50	2,960	1,356	6,217

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
237.00	2,343	0	0
237.50	2,850	1,298	1,298

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
237.50	5,810	0	0
238.00	7,212	3,256	3,256

Device	Routing	Invert	Outlet Devices
#1	Discarded	234.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	237.75'	**30.0' long x 40.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.47 cfs @ 12.80 hrs HW=236.97' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=234.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Ex Detention Basin

Inflow Area = 0.714 ac, 57.35% Impervious, Inflow Depth = 2.68" for 10-Year event
Inflow = 2.51 cfs @ 12.12 hrs, Volume= 0.159 af
Outflow = 0.35 cfs @ 12.45 hrs, Volume= 0.159 af, Atten= 86%, Lag= 19.8 min
Discarded = 0.35 cfs @ 12.45 hrs, Volume= 0.159 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Ex Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 235.59' @ 12.45 hrs Surf.Area= 1,830 sf Storage= 1,844 cf

Plug-Flow detention time= 39.6 min calculated for 0.159 af (100% of inflow)
Center-of-Mass det. time= 39.6 min (892.2 - 852.6)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	10,533 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	91	0	0
235.00	1,583	837	837
236.00	2,002	1,793	2,630
237.00	2,462	2,232	4,862
238.00	2,960	2,711	7,573
239.00	2,960	2,960	10,533

Device	Routing	Invert	Outlet Devices
#1	Discarded	234.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	238.10'	**40.0' long x 40.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.35 cfs @ 12.45 hrs HW=235.59' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=234.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 2L: Ex Site Runoff

Inflow Area = 2.787 ac, 17.23% Impervious, Inflow Depth = 0.51" for 10-Year event
Inflow = 1.36 cfs @ 12.14 hrs, Volume= 0.119 af
Primary = 1.36 cfs @ 12.14 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Prop Site Runoff

Inflow Area = 2.787 ac, 39.79% Impervious, Inflow Depth = 0.07" for 10-Year event
Inflow = 0.08 cfs @ 12.15 hrs, Volume= 0.016 af
Primary = 0.08 cfs @ 12.15 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Time span=0.00-32.00 hrs, dt=0.01 hrs, 3201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1-A: West Exist Site Runoff Area=31,092 sf 57.35% Impervious Runoff Depth=5.30"
Tc=5.0 min CN=79 Runoff=4.83 cfs 0.315 af

Subcatchment E1-B: East Exist Site Runoff Area=90,302 sf 3.41% Impervious Runoff Depth=2.22"
Tc=5.0 min CN=51 Runoff=5.81 cfs 0.383 af

Subcatchment P-1B: Surrounding Site Runoff Area=20,838 sf 17.78% Impervious Runoff Depth=1.62"
Tc=5.0 min CN=45 Runoff=0.91 cfs 0.065 af

Subcatchment P1-A: Majority of Site Runoff Area=100,556 sf 44.35% Impervious Runoff Depth=4.16"
Tc=5.0 min CN=69 Runoff=12.60 cfs 0.801 af

Pond 1P: Prop Detention Basin Peak Elev=237.84' Storage=9,646 cf Inflow=12.60 cfs 0.801 af
Discarded=2.41 cfs 0.775 af Primary=2.14 cfs 0.026 af Outflow=4.55 cfs 0.801 af

Pond 5P: Ex Detention Basin Peak Elev=236.79' Storage=4,362 cf Inflow=4.83 cfs 0.315 af
Discarded=0.45 cfs 0.315 af Primary=0.00 cfs 0.000 af Outflow=0.45 cfs 0.315 af

Link 2L: Ex Site Runoff Inflow=5.81 cfs 0.383 af
Primary=5.81 cfs 0.383 af

Link 4L: Prop Site Runoff Inflow=2.52 cfs 0.091 af
Primary=2.52 cfs 0.091 af

Total Runoff Area = 5.574 ac Runoff Volume = 1.564 af Average Runoff Depth = 3.37"
71.49% Pervious = 3.985 ac 28.51% Impervious = 1.589 ac

Summary for Subcatchment E1-A: West Exist Site

Runoff = 4.83 cfs @ 12.12 hrs, Volume= 0.315 af, Depth= 5.30"
Routed to Pond 5P : Ex Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
7,830	98	Roofs, HSG A
10,001	98	Paved parking, HSG A
2,496	96	Gravel surface, HSG A
10,765	43	Woods/grass comb., Fair, HSG A
31,092	79	Weighted Average
13,261		42.65% Pervious Area
17,831		57.35% Impervious Area

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

Summary for Subcatchment E1-B: East Exist Site

Runoff = 5.81 cfs @ 12.13 hrs, Volume= 0.383 af, Depth= 2.22"
Routed to Link 2L : Ex Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
367	98	Roofs, HSG A
2,713	98	Paved parking, HSG A
11,066	96	Gravel surface, HSG A
76,156	43	Woods/grass comb., Fair, HSG A
90,302	51	Weighted Average
87,222		96.59% Pervious Area
3,080		3.41% Impervious Area

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

Summary for Subcatchment P-1B: Surrounding Site

Runoff = 0.91 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 1.62"
Routed to Link 4L : Prop Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
3,704	98	Paved parking, HSG A
378	96	Gravel surface, HSG A
16,756	32	Woods/grass comb., Good, HSG A
20,838	45	Weighted Average
17,134		82.22% Pervious Area
3,704		17.78% Impervious Area

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

Summary for Subcatchment P1-A: Majority of Site

Runoff = 12.60 cfs @ 12.12 hrs, Volume= 0.801 af, Depth= 4.16"
Routed to Pond 1P : Prop Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
NOAA10 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
15,830	98	Roofs, HSG A
28,768	98	Paved parking, HSG A
12,535	96	Gravel surface, HSG A
43,423	32	Woods/grass comb., Good, HSG A
100,556	69	Weighted Average
55,958		55.65% Pervious Area
44,598		44.35% Impervious Area

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

Summary for Pond 1P: Prop Detention Basin

Inflow Area = 2.308 ac, 44.35% Impervious, Inflow Depth = 4.16" for 100-Year event
Inflow = 12.60 cfs @ 12.12 hrs, Volume= 0.801 af
Outflow = 4.55 cfs @ 12.23 hrs, Volume= 0.801 af, Atten= 64%, Lag= 6.5 min
Discarded = 2.41 cfs @ 12.23 hrs, Volume= 0.775 af
Primary = 2.14 cfs @ 12.23 hrs, Volume= 0.026 af
Routed to Link 4L : Prop Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 237.84' @ 12.23 hrs Surf.Area= 12,571 sf Storage= 9,646 cf

Plug-Flow detention time= 98.8 min calculated for 0.801 af (100% of inflow)
Center-of-Mass det. time= 98.8 min (954.8 - 856.0)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	6,217 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	237.00'	1,298 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#3	237.50'	3,256 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		10,771 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	91	0	0
235.00	1,583	837	837
236.00	2,002	1,793	2,630
237.00	2,462	2,232	4,862
237.50	2,960	1,356	6,217

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
237.00	2,343	0	0
237.50	2,850	1,298	1,298

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
237.50	5,810	0	0
238.00	7,212	3,256	3,256

Device	Routing	Invert	Outlet Devices
#1	Discarded	234.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	237.75'	**30.0' long x 40.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=2.41 cfs @ 12.23 hrs HW=237.84' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 2.41 cfs)

Primary OutFlow Max=2.13 cfs @ 12.23 hrs HW=237.84' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.13 cfs @ 0.80 fps)

Summary for Pond 5P: Ex Detention Basin

Inflow Area = 0.714 ac, 57.35% Impervious, Inflow Depth = 5.30" for 100-Year event
Inflow = 4.83 cfs @ 12.12 hrs, Volume= 0.315 af
Outflow = 0.45 cfs @ 12.66 hrs, Volume= 0.315 af, Atten= 91%, Lag= 32.2 min
Discarded = 0.45 cfs @ 12.66 hrs, Volume= 0.315 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Ex Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 236.79' @ 12.66 hrs Surf.Area= 2,367 sf Storage= 4,362 cf

Plug-Flow detention time= 83.8 min calculated for 0.315 af (100% of inflow)
Center-of-Mass det. time= 83.8 min (909.5 - 825.7)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	10,533 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	91	0	0
235.00	1,583	837	837
236.00	2,002	1,793	2,630
237.00	2,462	2,232	4,862
238.00	2,960	2,711	7,573
239.00	2,960	2,960	10,533

Device	Routing	Invert	Outlet Devices
#1	Discarded	234.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	238.10'	**40.0' long x 40.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.45 cfs @ 12.66 hrs HW=236.79' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.45 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=234.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link 2L: Ex Site Runoff

Inflow Area = 2.787 ac, 17.23% Impervious, Inflow Depth = 1.65" for 100-Year event
Inflow = 5.81 cfs @ 12.13 hrs, Volume= 0.383 af
Primary = 5.81 cfs @ 12.13 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Prop Site Runoff

Inflow Area = 2.787 ac, 39.79% Impervious, Inflow Depth = 0.39" for 100-Year event
Inflow = 2.52 cfs @ 12.23 hrs, Volume= 0.091 af
Primary = 2.52 cfs @ 12.23 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Stormwater Management System
Operation & Maintenance Plan

During Construction

The Contractor shall be responsible for inspection and maintenance during construction.

At all times, siltation fabric fencing, stakes and straw bales/wattles, sufficient to construct a sedimentation control barrier a minimum of 50 feet long, shall be stockpiled on the site in order to repair established barriers which may be damaged or breached.

An inspection of all erosion control and stormwater management systems shall be conducted by the Contractor at least once a week and during all rainstorms until the completion of construction. In case of any noted breach or failure, the Contractor shall immediately make appropriate repairs to any erosion control system and notify the engineer of any problems involving stormwater management systems.

A rainstorm shall be defined as any of the following:

- A storm in which rain is predicted to last for twelve consecutive hours or more.
- A storm for which a flash flood watch or warning is issued.
- A single storm predicted to have a cumulative rainfall of greater than one-half inch.
- A storm not meeting the previous three thresholds, but which would mark a third consecutive day of measurable rainfall.

The Contractor shall also inspect the erosion control and stormwater management systems at times of significant increase in surface water runoff due to rapid thawing when the risk of failure of erosion control measures is elevated.

In such instances as remedial action is necessary, the Contractor shall repair any and all significant deficiencies in erosion control systems within two days.

The local Department of Public Works shall be notified of any significant failure of stormwater management systems or erosion and sediment control measures and shall be notified of any release of pollutants to a water body (stream, brook, pond, etc.).

The Contractor shall remove the sediment from behind the fence of the sedimentation control barrier when the accumulated sediment has reached one-half of the original installed height of the barrier.

Post-Construction

Stormwater Management System Owner:

Taylor Rentals (Owner of 577 Granby Road)

Party Responsible for Operation & Maintenance:

Taylor Rentals (Owner of 577 Granby Road)

Inspection & Maintenance Schedule & Log:

1) Infiltration Basin

The infiltration basin shall be inspected as needed, during and following construction, and once per year thereafter. Annually verify dewatering of the basin. Sediment or debris shall be cleaned out as needed. Note and repair any erosion around the edge of the basins. Vegetation shall be replaced as needed.

2) Sediment Forebay

The sediment forebay shall be inspected as needed, during and following construction, and twice per year thereafter. Sediment or debris shall be cleaned out as needed. Note and repair any erosion around the edges of the forebay. Vegetation shall be replaced as needed.

3) Check Dam

Inspect check dam multiple times in the first few months after construction and twice per year thereafter. Clean out any debris or sediment when 50% capacity of dam has been filled. This level is reached when half of the normally exposed stone is covered in sediment. Note and repair any erosion or low spots at the ends of the stone of the dam.

TOWN OF SOUTH HADLEY MASSACHUSETTS

FORM SWP

APPLICATION FOR STORMWATER PERMIT

Date January 23, ,2026

Pursuant to the provisions of Chapter 200 of the Bylaws of the Town of South Hadley, the undersigned herewith submits the accompanying application for a Stormwater Management Permit as described below and detailed in the supporting documentation which is incorporated into and made part of this application.

PROJECT/SITE INFORMATION

1. Project/Site Name: 577 Granby Road
2. Project/Site Location (Street Address): 577 Granby Road
3. Assessor's Map #32 Parcel #43
4. The subject property is presently in zoning district(s) – Sec 255-11: Business A-1
5. Is the property in an Overlay District(s) (Sect 255-15)? No If so, what Overlay District(s): N/A
6. Total Parcel Size (square feet): 121,394
7. Estimated Amount of Area to be Disturbed (square feet): 65,000
8. Total Area of Impervious Surfaces (square feet):
   a. Existing: 20,911 b. Proposed: 48,302
9. Date Site Plan, Special Permit, or Definitive Subdivision Plan was approved: N/A
   a. If approved, please attach a copy of Planning Board Approval. N/A
   b. ***Or***, Is Application for Site Plan, Special Permit, or Definitive Subdivision Plan Approval being submitted concurrent with this application? Yes
10. General Description of Project Construct two (2) 3,500 square-foot office/business buildings at back of property, to be rented out.

APPLICANT INFORMATION

Name: James Falcone c/o TJF Properties LLP

Address: 577 Granby Road

Telephone: 413-584-4184

Email: rentmister@charter.net

OWNER INFORMATION ***(if different from Applicant)***

Name:

Address:

Telephone:

Email:

CONSULTING ENGINEER INFORMATION

Name: Christopher Chamberland

Address 4 Allen Place

Telephone (413) 582-7000 Email Address: chrisc@berkshiredesign.com

I, as applicant, certify that the application and all attachments are correct and complete.

Signature of Applicant — Date 10/24/25

FOR PLANNING DEPARTMENT OFFICE USE:

Amount of Application Fee: _____ Fee Paid? Yes ____ No ____

Town Clerk:

Date of Submission _____

Signature _____