

October 10, 2016

Master Plan

Stoney Hill
Bristol, Vermont
GME Project # 25-029



Prepared for:

Town of Bristol
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MASTER PLAN
STONEY HILL
BRISTOL, VERMONT

October 5, 2016

TABLE OF CONTENTS

	<u>PAGE NO.</u>
1.0 EXECUTIVE SUMMARY	3
1.1 INTRODUCTION	3
1.2 STUDY AREA	3
2.0 TOWN PLANNING AND ZONING	4
3.0 CONCEPTUAL ALTERNATIVES	6
4.0 ENVIRONMENTAL CONCERNS.....	7
5.0 SITE ACCESS	9
6.0 UTILITIES.....	10
7.0 STORMWATER MANAGEMENT.....	11
8.0 PROPOSED PROJECT & COSTS.....	12
9.0 PERMITS REQUIRED	14
10.0 PROJECT TIMELINE.....	15

APPENDICES

Appendix A - Figures

Appendix B – Detailed Cost Estimates

1.0 EXECUTIVE SUMMARY

This document is the conceptual development of a master plan for the Town of Bristol Stoney Hill parcel. As such, its intended use is to aid the Town of Bristol in developing the proposed parcel in such a way as to attract potential housing development, commercial and light industrial uses that are needed to support the town. The concept is to use this parcel as a gateway to the community to provide housing in the lower portion, a business park in the 10 acre piece and to connect the entire area with trails and sidewalks to the existing village area. A “college campus” arrangement is appropriate for the business park area and has been used as the central theme for this master plan. Access is provided by a boulevard with a circle at the end to depict a streetscape atmosphere. Green areas are dispersed throughout the Park and the streets resemble a “small town” atmosphere. The key to successful development of this type of park is often dependent on employee wellbeing. To address employee needs, amenities such as walking trails and green areas are dispersed throughout the Park to aid in relieving work related stress and tension. Areas of conserved forest land also provide buffers to the river and neighboring lands.

1.1 INTRODUCTION

This project is funded through the Vermont Community Development Program via Grant #PG-2014-Bristol-00009 and matching funds provided by Stoney Hill, LLC, and in-kind labor from the Town of Bristol. The Stoney Hill parcel consists of approximately 30 acres of land. In response to a need for land development suitable for attracting housing, commercial and light industrial uses to support the town, the Town commissioned Green Mountain Engineering, Inc. to study and develop a master plan for the proposed development of the Stoney Hill parcel. We would like to acknowledge the financial support and guidance received from both the Town of Bristol as well as Stoney Hill, LLC and its advisors. The results of this study are included in this report. Included in Appendix A of this report are site schematics depicting the overall layout of the Park and renderings of what the Park may resemble when fully developed.

1.2 STUDY AREA

The study comprises the approximately 30 acre property (now or formally owned by the Town of Bristol) on Stoney Hill as shown on the location plan as Figure No. 1 in Appendix A. The area is bordered by West Street to the north and west, Lover’s Lane to the south and the New Haven River to the east.

Figure No. 2 in Appendix A provides an existing condition base map of the project area.

2.0 TOWN PLANNING AND ZONING

Figure No. 3 shows the project area on the current Town Zoning Map. The entire project area is located within Zoning District RC-1 (Residential Commercial) although the current regulations are in the process of being re-written. This district is located near the Village as has access to public roads and good capacity for on-site sewage. The district is intended to provide higher density residential opportunities and allow for a variety of commercial uses. Planned Residential Development is permitted and encouraged following Planning Commission approval.

Table 1 provides a list of permitted and conditional uses within the RC-1 District.

**Table 1
List of Permitted and Conditional Uses**

Permitted Uses	Conditional Uses
One family dwelling	Personal service
Home occupation	Professional office
Agriculture, horticulture, and silviculture	Motor lodge
	Recreation, outdoor or indoor
	Community center
	Fire station
	Retirement facility
	Boarding house
	Campground
	Hospice
	Clinic
	Multi-family dwelling
	Residential health care facility
	Mobile home park
	Two-family dwelling
	Light industrial
	Kennels
	Auto repair shop
	Laundromat
	Car wash

Table 2 provides a summary of specific standards for RC-1.

**Table 2
Specific Standards**

Criteria	Residential Uses	Non-Residential Uses
Lot Area Minimum	1 Acre	
Minimum Area Required	½ Acre	
Lot Frontage Minimum	200 Feet	200 Feet
Lot Depth Minimum	125 Feet	200 Feet
Front Yard Set Back Minimum	60 Feet	80 Feet
Side Yard (Minimum)	25 Feet	50 Feet
Rear yard Minimum	25 Feet	50 Feet
Lot Coverage Maximum	20%	20 %
Building Height Maximum	35 Feet	35 Feet

The parking requirement is one parking space per 200 s.f. of building area. Table 3 provides a summary of the latest proposed Town of Bristol Parking Requirements from Section 711 of the zoning regulations.

**Table 3
Parking Space Requirements**

Use	Parking Space Requirement
Household Uses	1 pr dwelling unit; 1 per employee and 0.5 per client for care facilities; 1 per dwelling unit, plus 1 per employee for home occupations and businesses
Civic Uses	1 per employee, plus 1 per 4 seats in places of cultural or religious gathering places
Office and Service Uses	1 per 600 sq. ft. of gross floor area
Food, Lodging and Entertainment Uses	1 per 3 seats; 1 per room rented
Sales Uses	1 per employee, plus 1 per every 450 sq. ft. of gross floor area
Automotive Uses	See sales uses, plus spaces to accommodate sales or servicing of vehicles
Industrial Uses	1 per 1.25 employees based upon highest average employee occupancy
Agriculture, forestry and resource	1 per employee, plus one per facility vehicle

3.0 CONCEPTUAL ALTERNATIVES

Four (4) Conceptual Alternatives were developed for the 10 acre parcel. These different alternatives include alternatives for meeting existing parking space requirements, varied numbers of buildings and uses, and alternative layout to achieve a campus style development and a neighborhood streetscape.

3.1 Alternative No. 1

Alternative No. 1 as shown on Figure No. 4 in Appendix A, depicts maximizing the size for parking to meet the current Town parking requirement of 1 space per 200 sq. ft. of building area. Two (2) buildings with a total of 40,000 s.f. of commercial/light industrial is provided. The existing treed ridge line to the west is kept in place as a buffer.

3.2 Alternative No. 2

Alternative No. 2 as shown on Figure No. 5 in Appendix A, depicts a layout for using the current parking requirement of 1 space per 200 sq. ft. of building. This alternative includes three (3) buildings with a total of 50,000 s.f. of commercial/light industrial provided. The existing treed ridge line to the west is removed to accommodate the needed parking.

3.3 Alternative No. 3

Alternative No. 3 as shown on Figure No. 6 in Appendix A, depicts maximizing the size for parking to meet parking of 1 space per 300 sq. ft. of building. This alternative includes four (4) buildings with a total of 60,000 s.f. of commercial/light industrial provided. There is also one (1) building for an 8 unit residential component. The existing treed ridge line to the west is removed to accommodate the needed parking.

3.4 Alternative No. 4

Alternative No. 4 as shown on Figure No. 7 in Appendix A, is basically the same as Alternative No. 3, but additional parking is provided along the boulevard to attempt to achieve a neighborhood streetscape.

The Town plans to sell the remaining developable lands in the lower portion of the property to a developer that will develop the sites into housing.

4.0 ENVIRONMENTAL CONCERNS

4.1 Water Bodies

The receiving water for this project is the New Haven River which is part of the Lake Champlain Basin. The New Haven River then flows into the Otter Creek which ultimately drains into Lake Champlain. The project meets all setbacks to the river and proper sediment and erosion control measures will be designed and implemented.

4.2 Wetlands

As shown on the Wetlands Map (Figure No. 8 in Appendix A), there are no wetlands within the project area.

4.3 Soils

A Soil Survey Map is provided as Figure No. 9 in Appendix A. The soils report evaluated the area soils for suitability and limitations with regard to Vermont soil-based residential on-site wastewater disposal.

The ratings are represented by symbols for five interpretive groups and their subgroups. These groups and subgroups are described in the following paragraphs.

Group I soils are well suited to soil-based wastewater disposal systems. Good performance and low maintenance can be expected. The soils in this group are sandy and gravelly soils that have rapid permeability and well drained soils. These are suitable for conventional systems.

Group II soils are moderately suited to soil-based wastewater disposal systems. This group includes soils with moderately slow to very slow permeability; complexes in which one or more of the soils have bedrock at a moderate depth (20 to 40 inches); soils that would qualify for inclusion in group I but have slopes of more than 20 percent; and soils that have a seasonal high water table at a depth of 18 inches or more. These area encompassing these soils typically require a mound system.

Group III map units are marginally suited to soil-based wastewater disposal systems. Intensive onsite investigation may be needed to locate suitable areas, or special design, extra maintenance, or costly alteration may be needed to overcome the soil related limitations. In areas where the water table is at a shallow depth, seasonal onsite monitoring of the water table may be needed to determine whether the site is suitable. These areas typically require a mound system along with a pre-treatment system, a hydrogeological study, mounding analysis, enhanced prescriptive or performance based system design. Some areas of any of the map units in group III may not be suitable for soil based wastewater disposal systems.

Group IV map units are generally not suited to soil-based wastewater disposal systems because of such limitations as wetness, depth to bedrock, restricted permeability, and slope.

Group V map units are not rated for soil-based wastewater disposal systems. This group includes miscellaneous areas that have been filled, excavated, regraded, or otherwise disturbed by human activities; areas that are mapped above the series level; and areas of water. The miscellaneous areas and the areas mapped above the series level have a wide range of soil properties. Onsite investigation is needed to determine the suitability of these areas for soil-based wastewater disposal.

The 10 acre development area and the lower developable area are both within Group I soils that are well suited to soil based wastewater disposal systems

4.4 Important Farmland

As shown in Figure No. 10 in Appendix A, there are prime agricultural soils within the project area. Discussions with USDA will need to be made during the Act 250 process.

4.5 Floodplain

The project is located outside of any floodplain or floodway.

4.6 Rare, Threatened & Endangered Species

As shown in Figure No. 11 in Appendix A, there is an area identified with rare, threatened & endangered species within the lower portion of the study area. This area will need to be studied further.

4.7 Historic Preservation

Scott Dillon of the State of Vermont, Division of Historic Preservation has been to the site and identified areas that need to be studied for historic preservation. This area is shown on Figure 12 in Appendix A.

5.0 SITE ACCESS

Vehicular access to the 10 acre park will be from the new access road off West Main Street. A single boulevard will be constructed with a circle at the end. Access to the lower developable areas will be from Lover's Lane.

The new road has been designed to accommodate turning radii for emergency vehicles, as well as standard delivery vehicles for the intended uses.

Pedestrian access is provided and connected to the existing village area sidewalk infrastructure via West Street.

Public transportation access will also be provided via Addison County Transit Resources (ACTR) a local non-profit that provides a network of community transportation alternatives in Addison County.

6.0 UTILITIES

At the present time, adequate utilities needed for the ultimate development of the project area are not available on-site.

The Town of Bristol has plans to extend the waterline from the new fire station across the project area to Lover's Lane below. A new waterline can be connected for this future water main to the project.

The project area has sufficient soil capacity to construct a subsurface wastewater disposal system with capacity for 4,000 to 6,000 gallons per day. Sewerlines will need to be run from the buildings to the new subsurface disposal system. Because the area is relatively flat, the use of a Septic Tank Effluent Pumping System is recommended.

The underground telephone and electrical lines will be installed from the existing power pole near the fire station along the boulevard. Site lighting will be required for the boulevard and each of the parking areas.

7.0 STORMWATER MANAGEMENT

The existing gravel pit area will be utilized for a storm water retention pond. Overland flow of storm water will be utilized as much as possible. Catch basins and storm drain lines will be utilized where needed.

8.0 RECOMMENDED PROJECT & COSTS

The study committee chose Alternative No. 4 as the recommended alternative for the 10 acre lot. The Proposed project is shown on Figure 13 in Appendix A. The proposed conditions Site Plan is shown on Figure 14 in Appendix A.

See Figure No An opinion of probable construction cost of approximately \$12,556,000 was developed for the recommended alternative and is summarized in Table 4. Detailed breakdown of the cost estimate is provided in Appendix B. Prior to development of the construction cost estimates, quantity take-offs were completed to establish unit quantities for projected project unit price bid items. Construction costs were generated using unit price bids on recent construction projects in the area. The construction costs are based on the assumption that work will be performed by an independent general contractor. The construction costs also include a 10% contingency.

Table 4
Opinion of Probable Construction Cost Summary

Task	Cost
Site Work	\$195,300
Roadways, Walkways & Trails	\$314,200
Utilities	\$767,106
Building Costs	\$9,290,000
Preparation of Site and Miscellaneous Work (8%)	\$845,488
Contingency (10%)	\$1,141,409
Probable Construction Cost	\$12,556,000

* Rounded to Nearest \$1,000

Total project costs include construction, architectural and engineering final design, permitting and construction engineering costs. Table 5 provides a summary of the total project cost of \$14,179,000. Final design and construction engineering service cost estimates are based on 10% of the construction costs.

Table 5
Opinion of Total Project Cost Summary

Task	Cost
Construction Cost	\$12,555,504
Architect/Engineering Costs (10%)	\$1,255,550
Archeological Investigations (Estimated)	\$20,000
Land Acquisition	\$252,700
Permitting	\$94,911
Probable Total Project Cost	\$14,179,000

* Rounded to Nearest \$1,000

9.0 PERMITS REQUIRED

The following permits and approvals are anticipated for the project:

- State of Vermont, Act 250 Permit
- State of Vermont, Indirect Discharge Permit
- State of Vermont, Potable Water Supply and Wastewater Disposal Permit
- State of Vermont, Water Supply Permit to Construct
- State of Vermont, Storm Water Permit
- State of Vermont, Storm Water Construction Permit
- State of Vermont, Division of Fire Safety Permits
- State of Vermont, Archeological approval
- Review and write off from USDA for agricultural soils
- Town of Bristol, Local Permits (Zoning, DRB, Building)

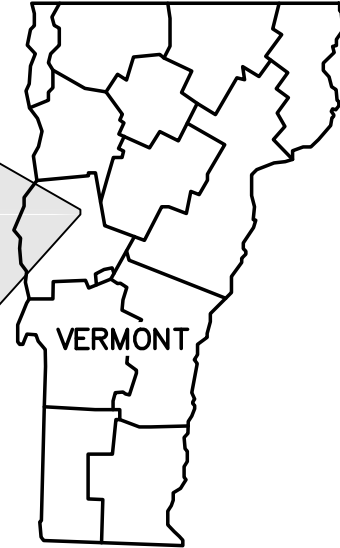
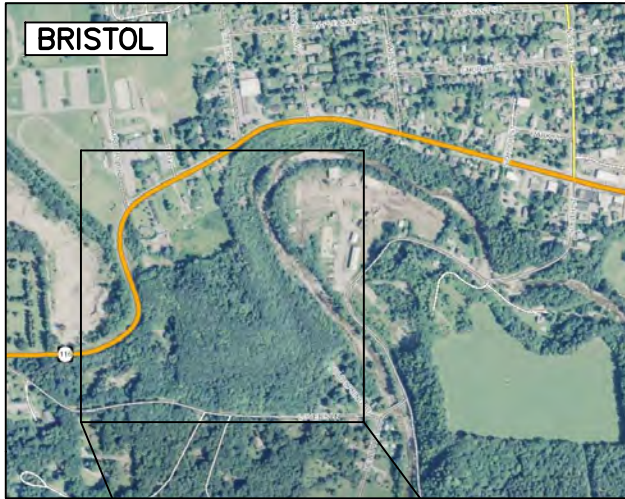
10.0 PROJECT TIMELINE

Table 6 provides a projected timeline for the Project:

Table 6
Projected Project Timeline

Task	Dates
Final Master Plan Complete	10/5/16
Public Informational Meeting	9/20/16
Final Design	9/21/16 – 12/30/16
Permitting	11/1/16 – 1/30/17
Bid Phase	2/1/17 - 3/15/17
Construction	5/1/17 – 7/1/18

Appendix A
Figures



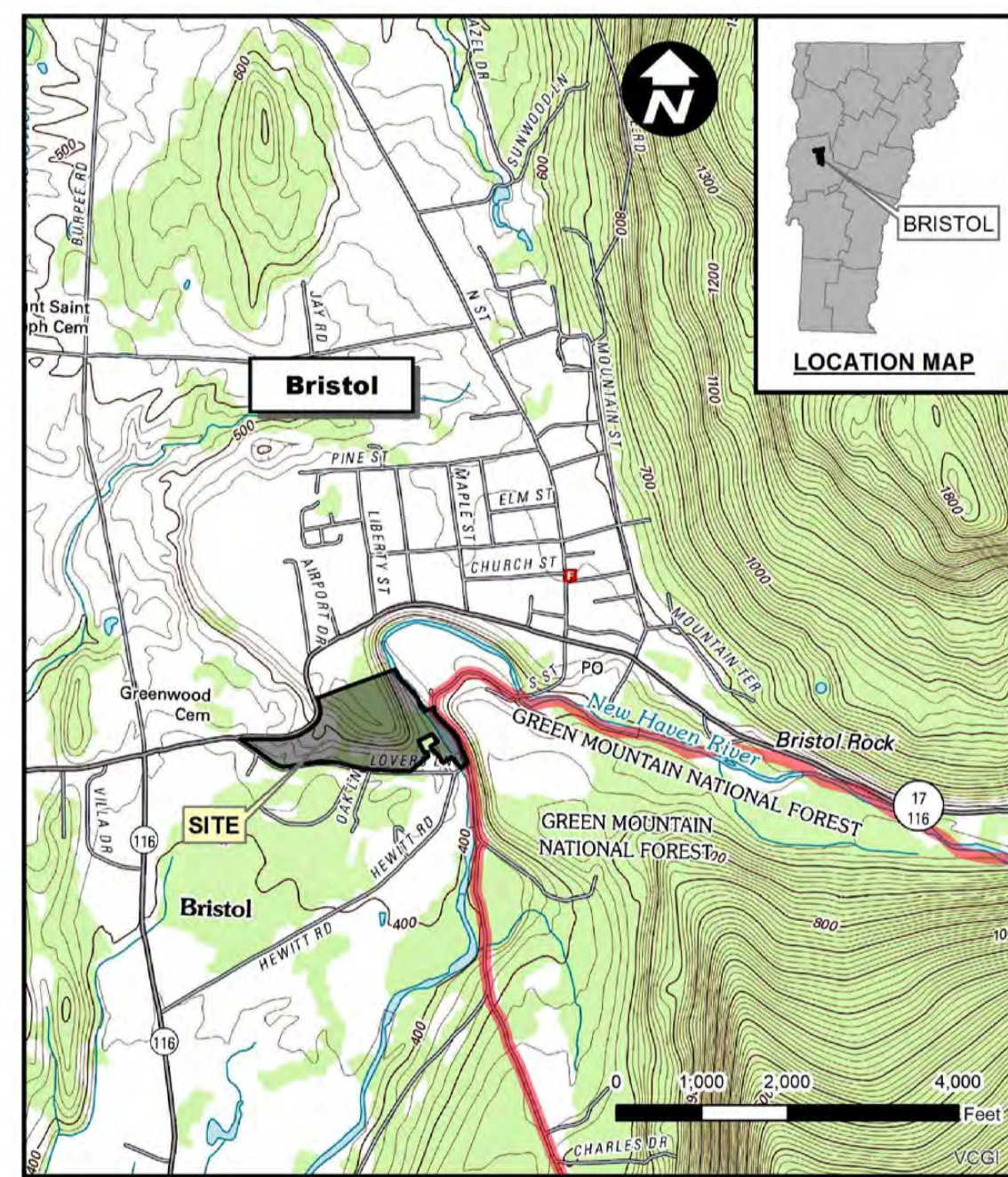
1438 SOUTH BROWNELL ROAD
 WILLISTON, VERMONT 05495
 PHONE: (802)862-5590
 FAX: (802)862-7598

**GREEN
 MOUNTAIN
 ENGINEERING**

CIVIL
 WATER
 WASTEWATER

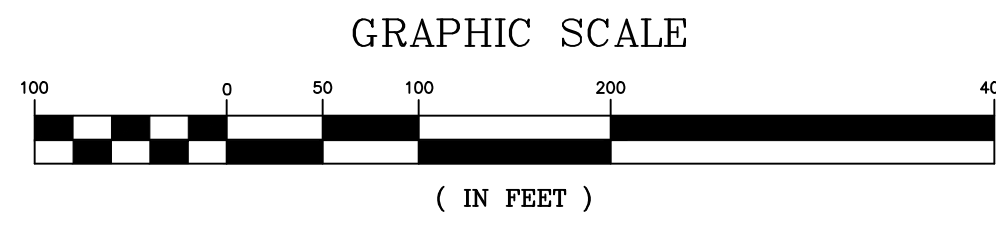
DRAWING TITLE	LOCATION MAP
PROJECT	STONEY HILL MASTER PLAN
CLIENT	TOWN OF BRISTOL, VERMONT
DESIGNED	KJC
DRAWN	PH
CHECKED	KJC
PLOT DATE	08/16/16
SCALE	NONE
DATE	FEB. 2016

PROJECT NO.	25-029
FIGURE NO.	1



- NOTE:**
1. PARCEL GEOMETRY PROVIDED BY THE ADDISON COUNTY REGIONAL PLANNING COMMISSION AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI).
 2. ELEVATION AND CONTOUR INFORMATION DERIVED FROM LIDAR DATA PROVIDED BY VCGI, AS WELL AS TOPOGRAPHIC SURVEYS PERFORMED BY GREEN MOUNTAIN ENGINEERING USING NIKON DTM521 TOTAL STATION AND LEICA GS14 GPS. SITE PLAN GEOREFERENCED TO VT STATE PLANE NAD 1983 COORDINATES.
 3. WELL HEAD PROTECTION INFORMATION FROM A WELL HEAD PROTECTION ANALYSIS PERFORMED BY LINCOLN APPLIED GEOLOGY ON JANUARY 2004.
 4. BOUNDARY INFORMATION FOR TOWN OF BRISTOL PARCEL (DEED REFERENCE 93:11) DERIVED FROM SURVEY PERFORMED BY OTHERS, DATED FEBRUARY 10, 2016.

- LEGEND**
- PROPERTY LINE
 - - - VAOT EASEMENT
 - · - · - · - DEVELOPABLE REGION
 - CONTOUR
 - WATER MAIN
 - CONCRETE SIDEWALK
 - PAVED ROAD
 - IRON PIN FOUND
 - IRON PIN SET
 - ⊙ WELL
 - ⊕ UTILITY POLE



REV.	DATE	DESCRIPTION

1438 SOUTH BROWNELL ROAD
BRISTOL, VT 05430
PHONE: (802) 862-5590
FAX: (802) 862-7598

GREEN MOUNTAIN ENGINEERING
CIVIL WATER WASTEWATER

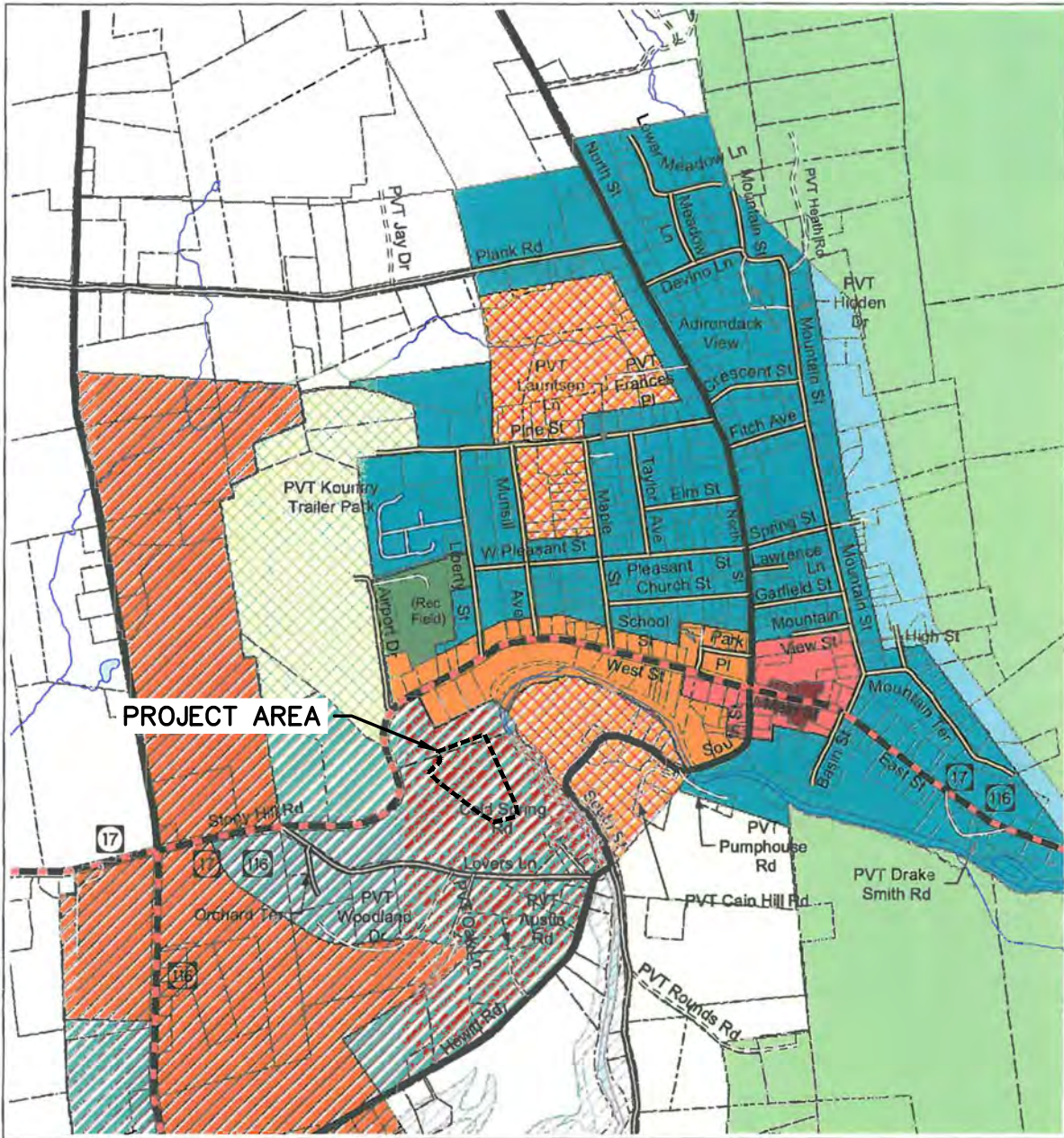
DESIGNED	KJC	PLOT DATE	08/17/16
DRAWN	RSO	SCALE	AS SHOWN
CHECKED	KJC	DATE	FEB. 2016

EXISTING CONDITIONS BASE MAP

PROJECT: STONEY HILL MASTER PLAN
CLIENT: TOWN OF BRISTOL, VERMONT

PROJECT NO. 25-029
FIGURE NO. 2

Zoning Districts - Bristol Downtown



PROJECT AREA

Legend

- BC/Block Commercial
- C-1/Commercial
- NC/Neighborhood Commercial
- ROC/Residential, Office, Commercial
- MIX/Mixed
- RC-1/Residential Commercial
- HDR/High Density Residential
- LDR/Low Density Residential
- RA-1/Rural Agriculture 1
- RA-2/Rural Agriculture 2
- RA-5/Rural Agriculture 5
- MUN/Municipal
- REC/Recreational
- CON/Conservation
- FHA/Flood Hazard Area

Zoning Districts: As adopted by town vote, March, 2006

Selectboard Signature:

Date:

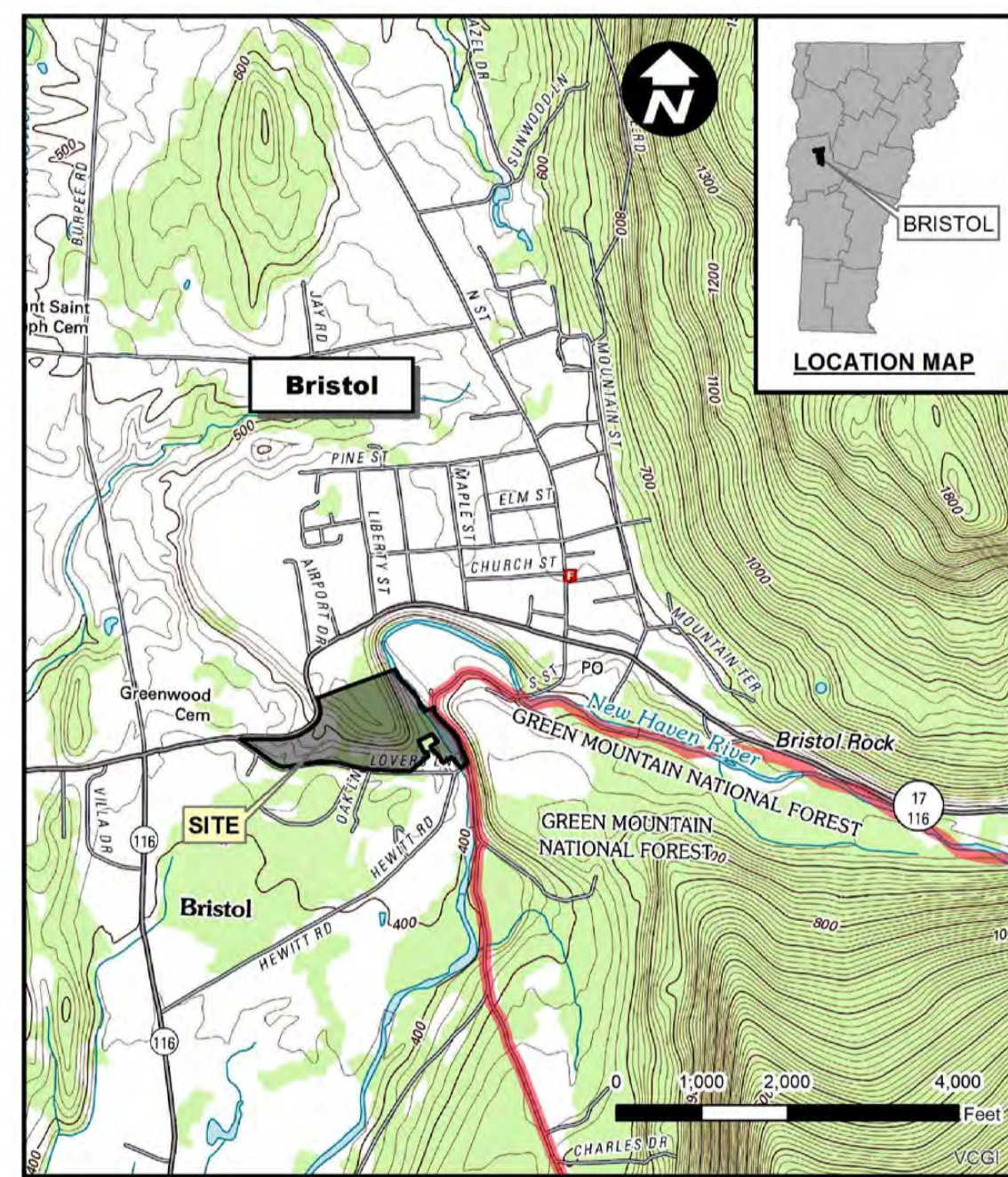


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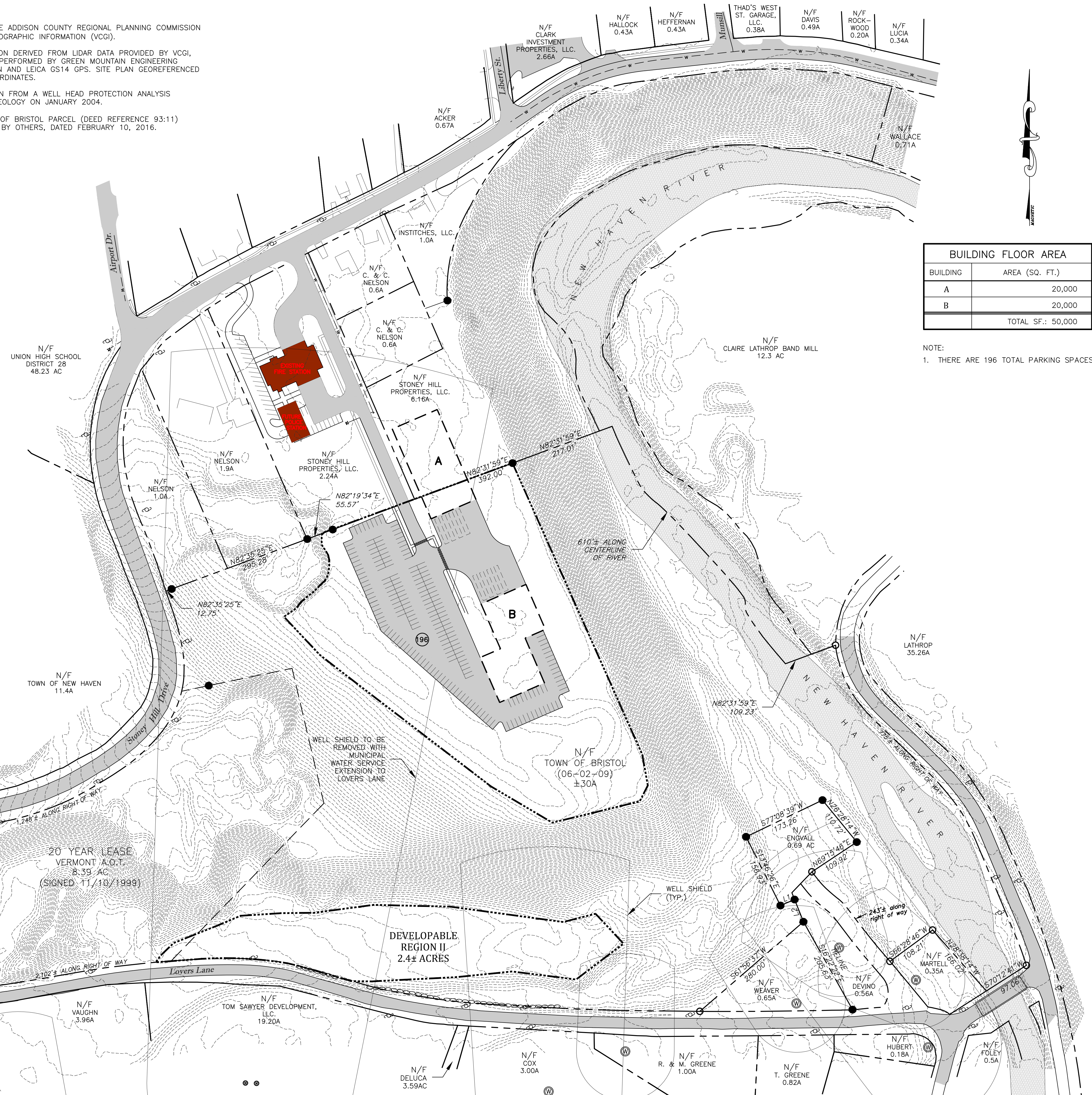
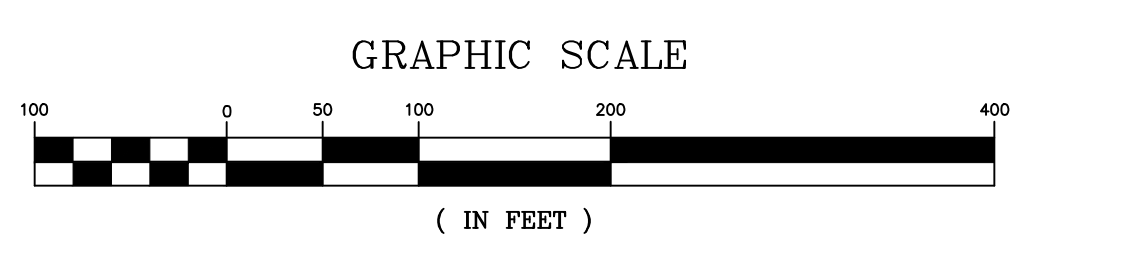
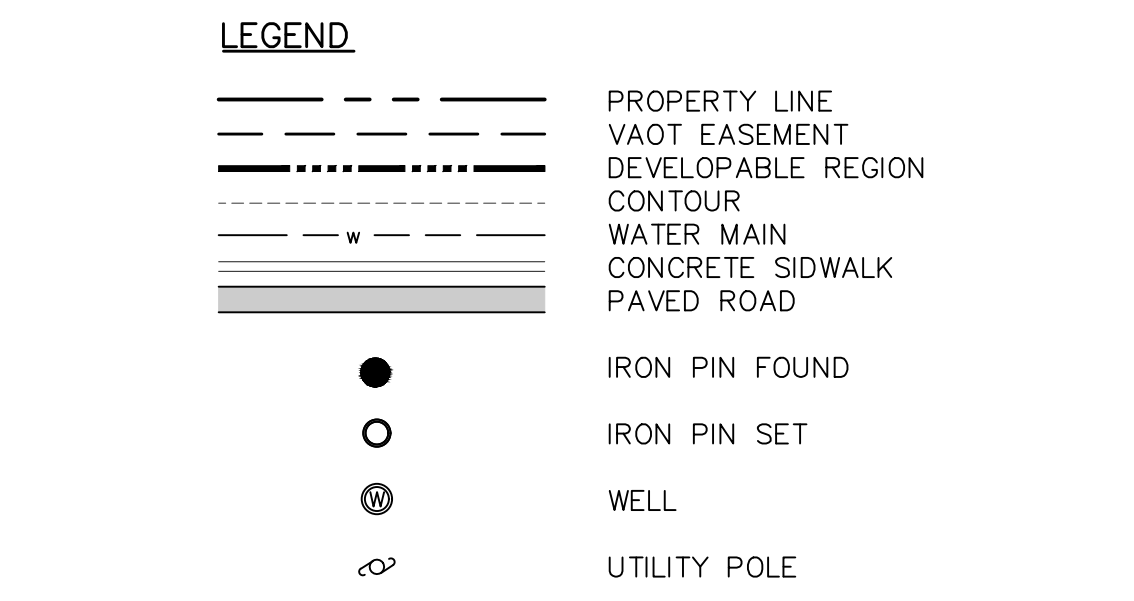
GREEN MOUNTAIN ENGINEERING

CIVIL WATER WASTEWATER

DRAWING TITLE	ZONING MAP	DESIGNED	KJC	PROJECT NO.	25-029
PROJECT	STONEY HILL MASTER PLAN	DRAWN	PH	FIGURE NO.	3
CLIENT	TOWN OF BRISTOL, VERMONT	CHECKED	KJC		
		PLOT DATE	08/16/16		
		SCALE	NONE		
		DATE	FEB. 2016		



- NOTE:**
1. PARCEL GEOMETRY PROVIDED BY THE ADDISON COUNTY REGIONAL PLANNING COMMISSION AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI).
 2. ELEVATION AND CONTOUR INFORMATION DERIVED FROM LIDAR DATA PROVIDED BY VCGI, AS WELL AS TOPOGRAPHIC SURVEYS PERFORMED BY GREEN MOUNTAIN ENGINEERING USING NIKON DTM521 TOTAL STATION AND LEICA GS14 GPS. SITE PLAN GEOREFERENCED TO VT STATE PLANE NAD 1983 COORDINATES.
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 4. BOUNDARY INFORMATION FOR TOWN OF BRISTOL PARCEL (DEED REFERENCE 93:11) DERIVED FROM SURVEY PERFORMED BY OTHERS, DATED FEBRUARY 10, 2016.



BUILDING FLOOR AREA

BUILDING	AREA (SQ. FT.)
A	20,000
B	20,000
TOTAL SF.: 50,000	

NOTE:
1. THERE ARE 196 TOTAL PARKING SPACES.

REV.	DATE	DESCRIPTION	BY

1438 SOUTH BROWNELL ROAD
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PHONE: (802) 862-5590
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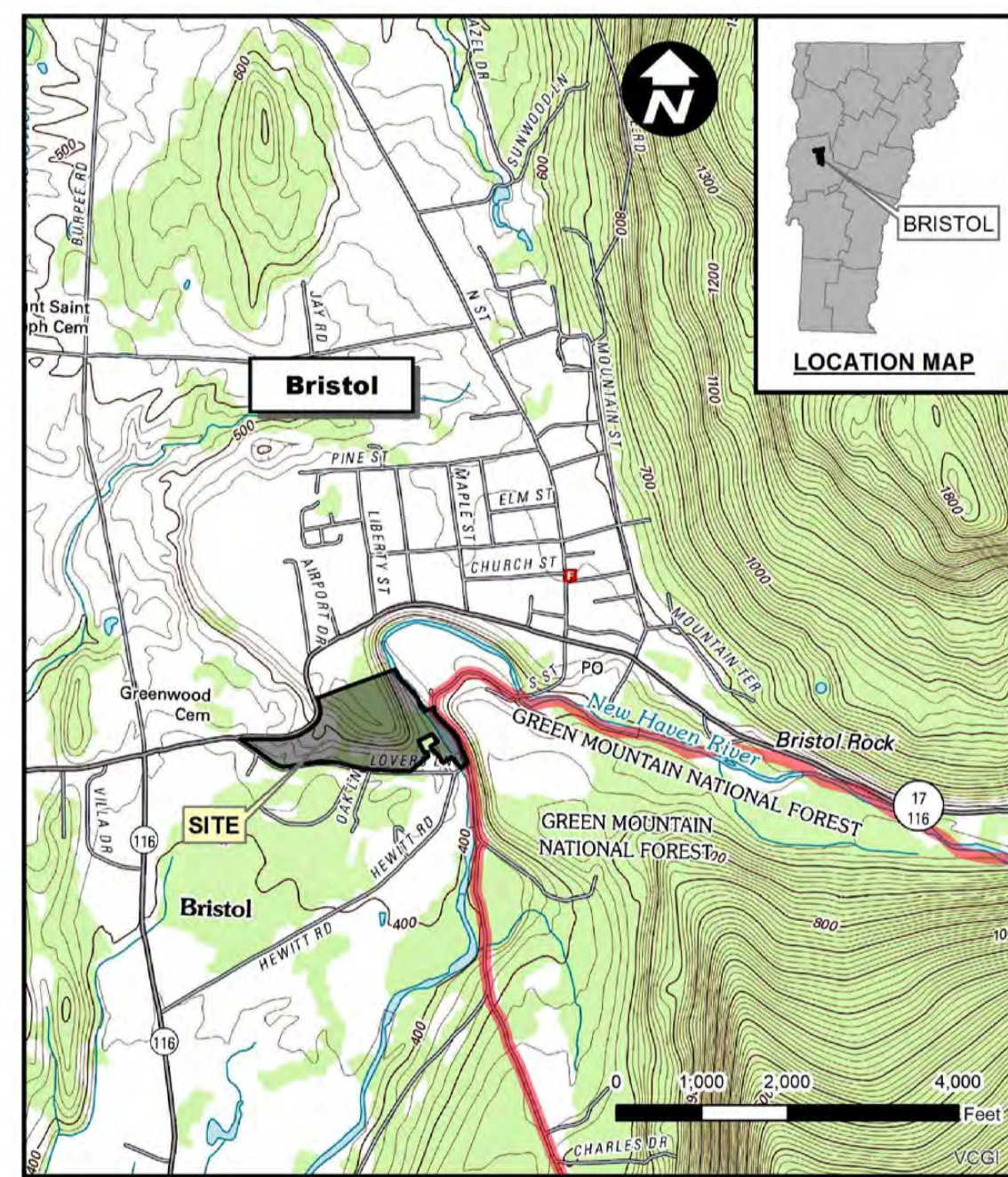
CIVIL
WATER
WASTEWATER

CONCEPTUAL ALTERNATIVE #1

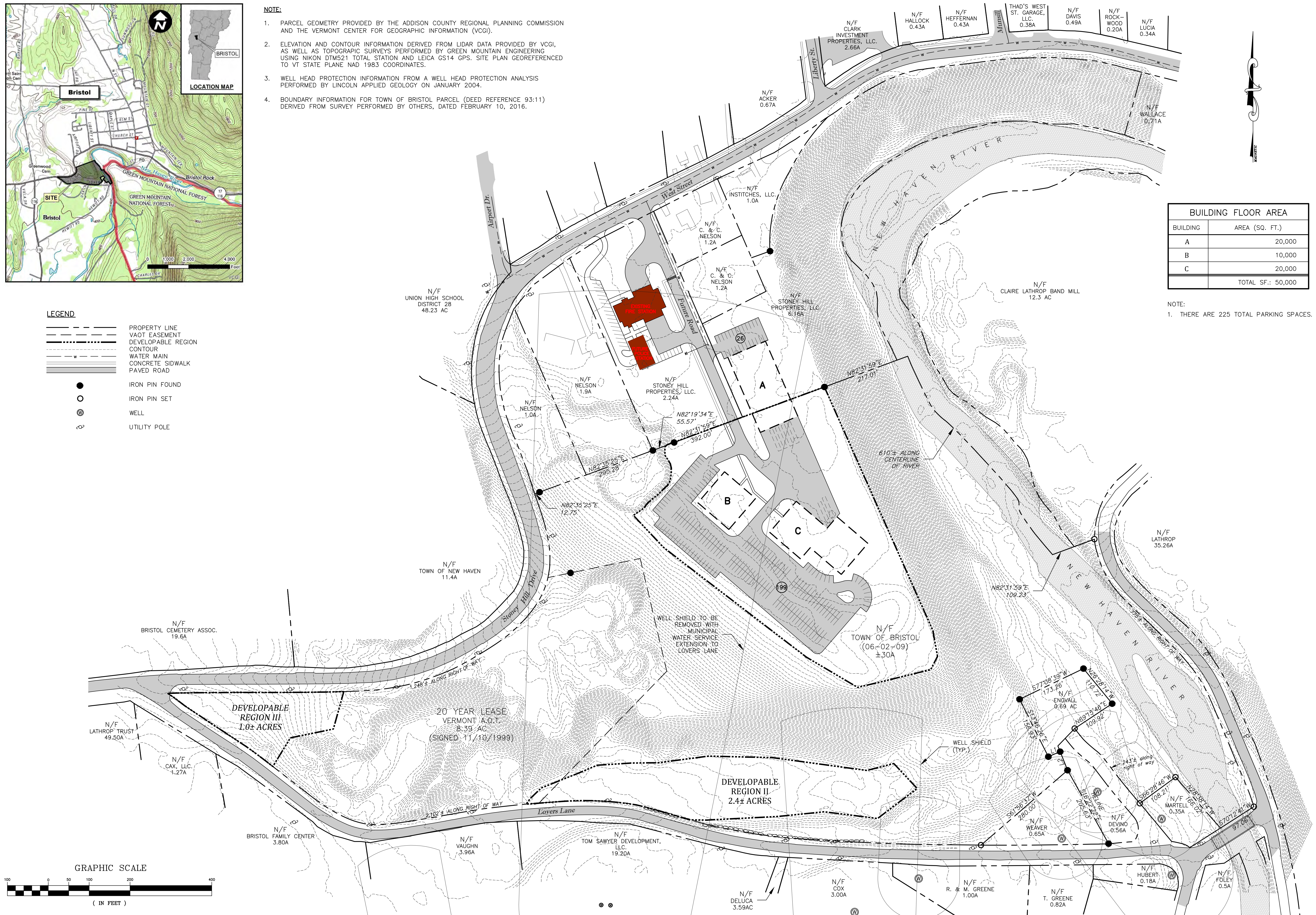
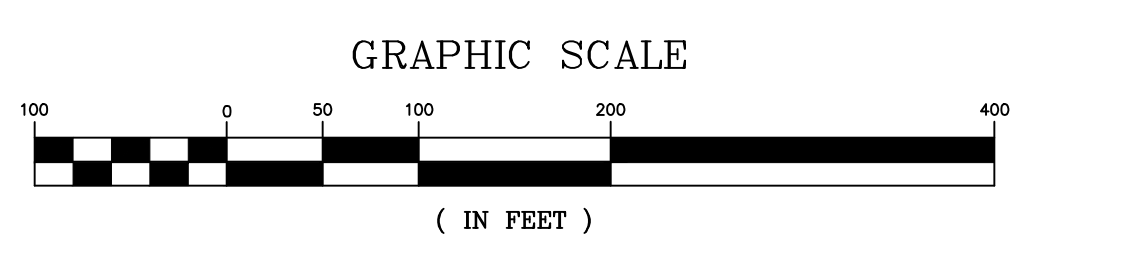
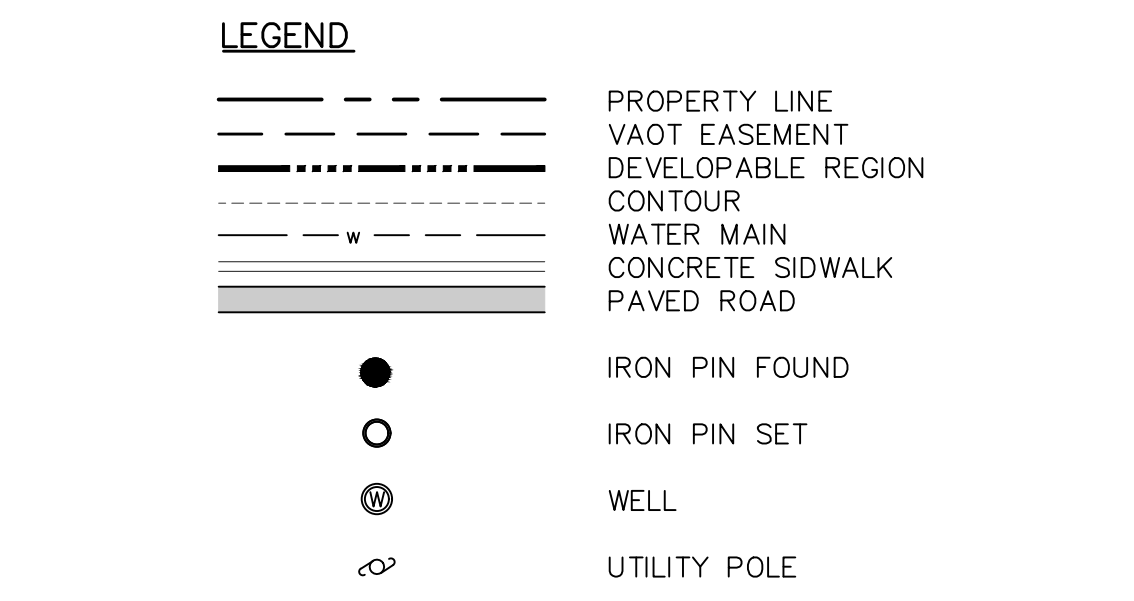
PROJECT: STONEY HILL MASTER PLAN
CLIENT: TOWN OF BRISTOL, VERMONT

DESIGNED	KJC	PLOT DATE	08/17/16
DRAWN	RSO	SCALE	AS SHOWN
CHECKED	KJC	DATE	FEB. 2016

PROJECT NO. 25-029
FIGURE NO. 4



- NOTE:**
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BUILDING FLOOR AREA

BUILDING	AREA (SQ. FT.)
A	20,000
B	10,000
C	20,000
TOTAL SF.: 50,000	

NOTE:
1. THERE ARE 225 TOTAL PARKING SPACES.

REV.	DATE	DESCRIPTION	BY

1438 SOUTH BROWNELL ROAD
BRISTOL, VT 05632
PHONE: (802) 862-5590
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GREEN MOUNTAIN ENGINEERING

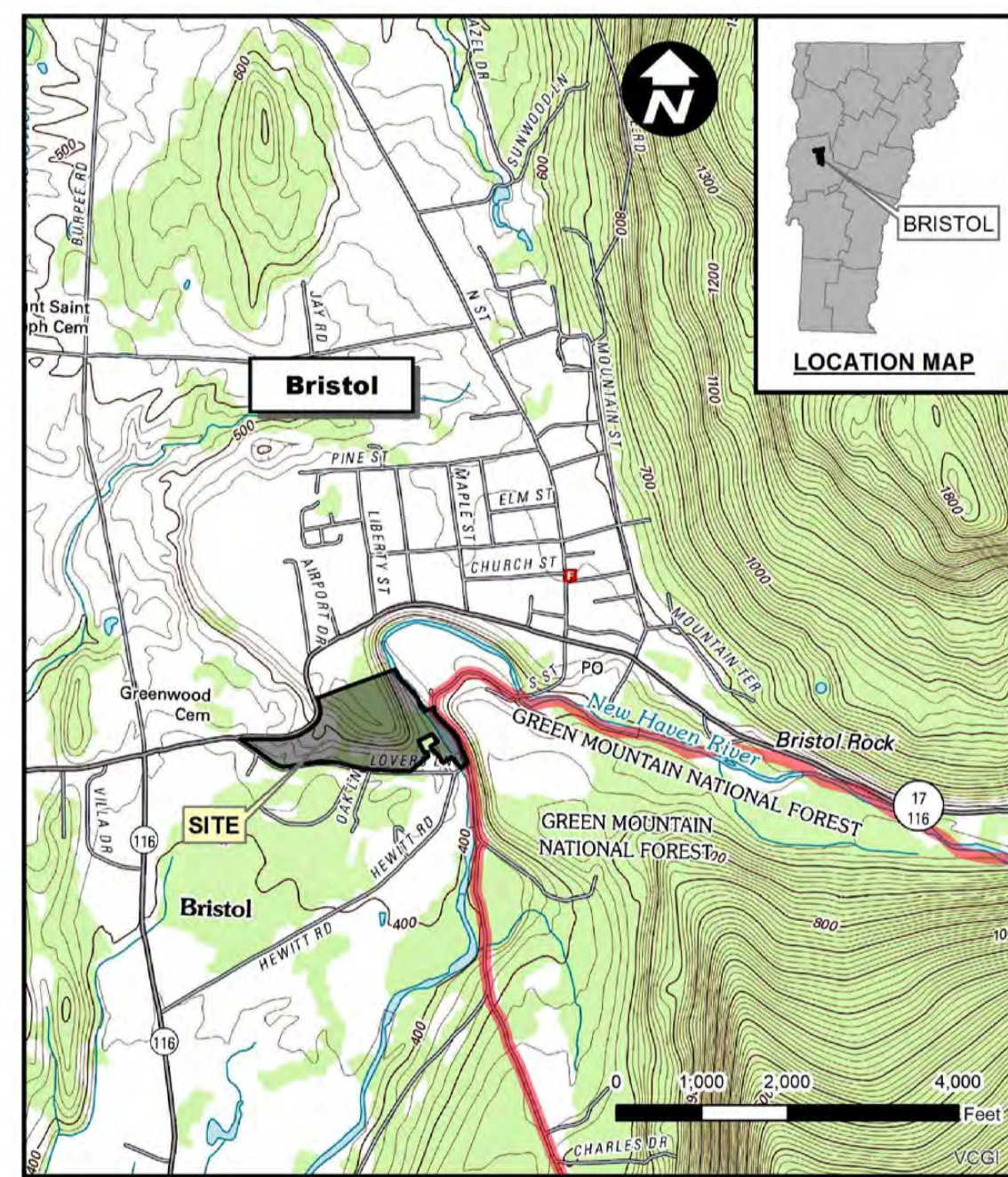
CIVIL WATER WASTEWATER

CONCEPTUAL ALTERNATIVE #2

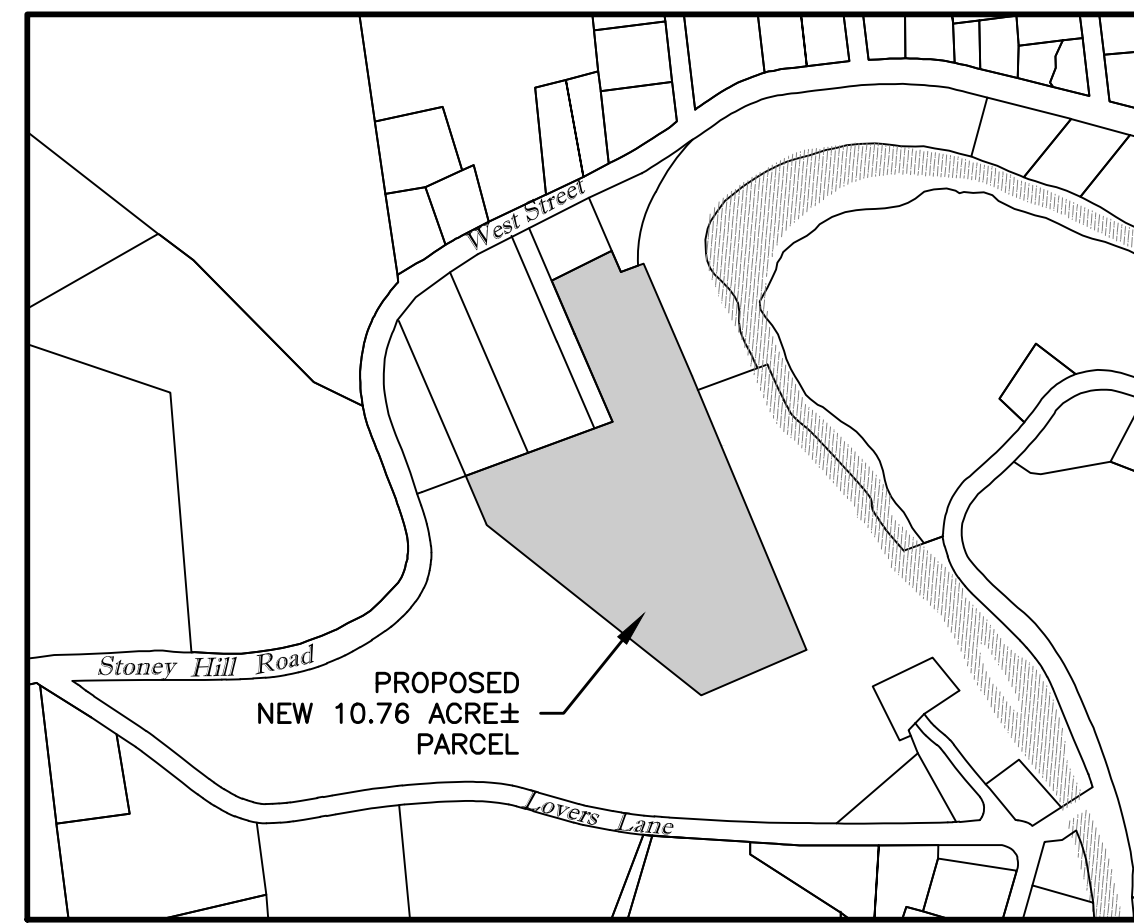
PROJECT: STONEY HILL MASTER PLAN
CLIENT: TOWN OF BRISTOL, VERMONT

DESIGNED	KJC	PLOT DATE	08/17/16
DRAWN	RSO	SCALE	AS SHOWN
CHECKED	KJC	DATE	FEB. 2016

PROJECT NO. 25-029
FIGURE NO. 5



LOCATION PLAN
SCALE: 1"=2,000'



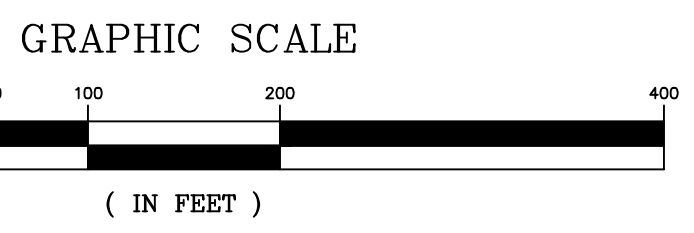
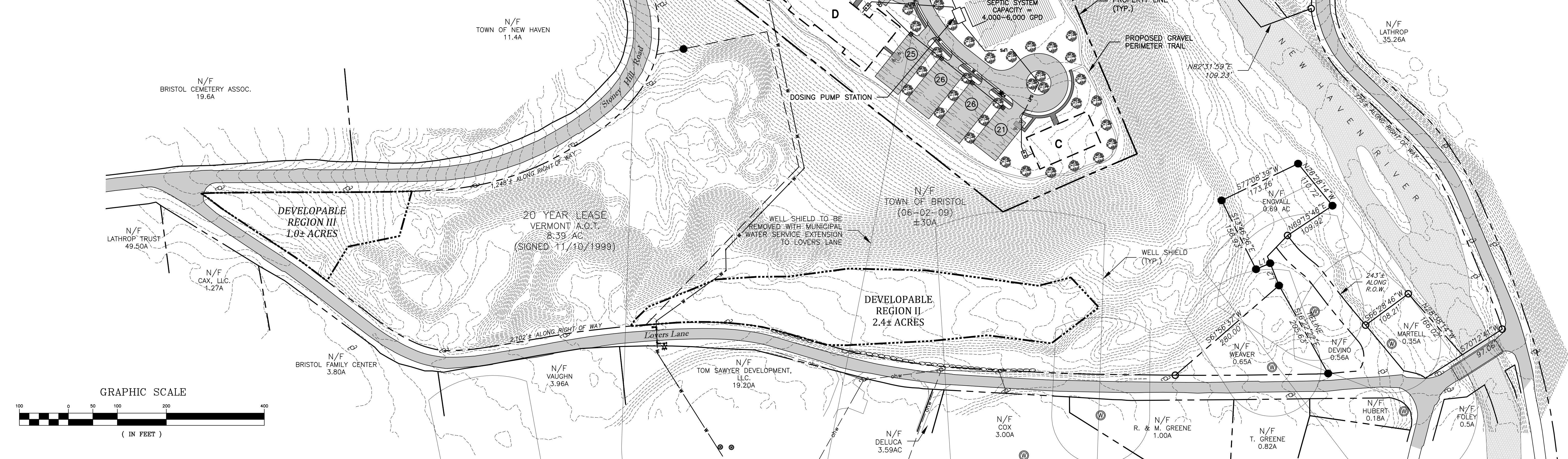
PARCEL PLAN
SCALE: 1"=500'

NOTES

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5. DESIGN VEHICLES USED TO DETERMINE PAVEMENT GEOMETRY INCLUDE:
A) WB-40 INTERMEDIATE SEMI TRAILER (45'-6"L x 8'-0"W)
B) ET-1 TOWN OF BRISTOL FIRE ENGINE (37'-4"L x 10'-1"W)

LEGEND

- EXISTING**
- PROPERTY LINE
 - VAOT EASEMENT
 - ELEV. CONTOUR (2FT)
 - WATER MAIN
 - SIDEWALK
 - PAVED ROAD
 - IRON PIN FOUND
 - IRON PIN SET
 - WELL
 - UTILITY POLE
- PROPOSED**
- PROPERTY LINE
 - GRAVEL PATH
 - SIDEWALK
 - PAVED ROAD
 - TREE
 - WATER
 - SEWER
 - LOW PRESSURE SEWER
 - STORM SEWER
 - DRAIN/CULVERT
 - CATCH BASIN
 - STORM SEWER MANHOLE
 - FIRE HYDRANT
 - SEPTIC/EFFLUENT PUMPING SYSTEM



NON-RESIDENTIAL BUILDING FLOOR AREA	
BUILDING	AREA (SQ. FT.)
A	13,390
B	12,650
C	9,450
D	24,200
TOTAL SF.: 59,690	

RESIDENTIAL BUILDING UNITS	
BUILDING	No. OF UNITS
E	8
TOTAL UNITS: 8	

NOTE:
1. THERE ARE 240 TOTAL PARKING SPACES, 12 OF WHICH ARE HANDICAP SPACES.

REV.	DATE	DESCRIPTION	BY

1438 SOUTH BROWNELL ROAD
BRISTOL, VT 05602
PHONE: (802) 862-5590
FAX: (802) 862-7598

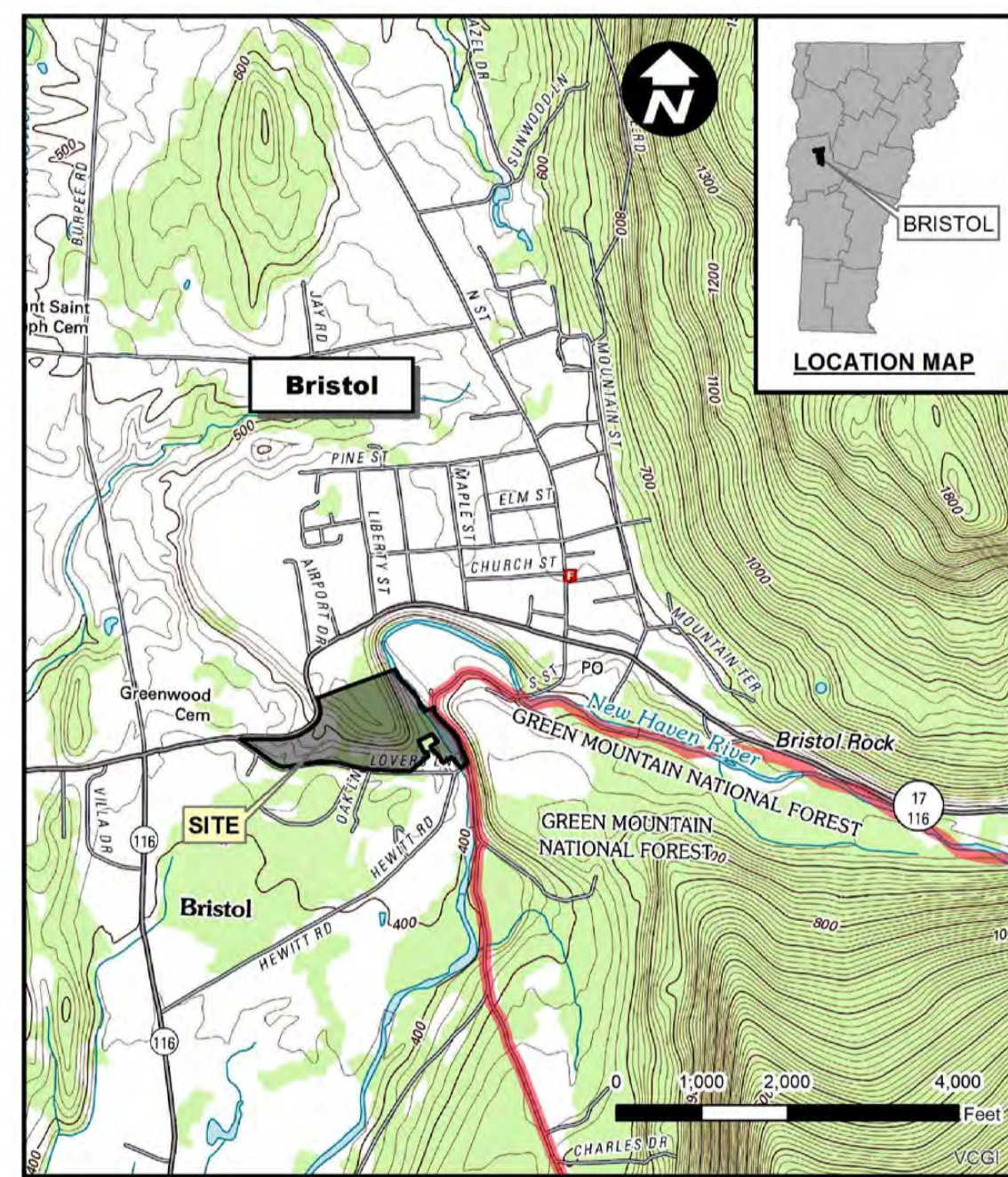
CIVIL
WATER
WASTEWATER

CONCEPTUAL ALTERNATIVE #3

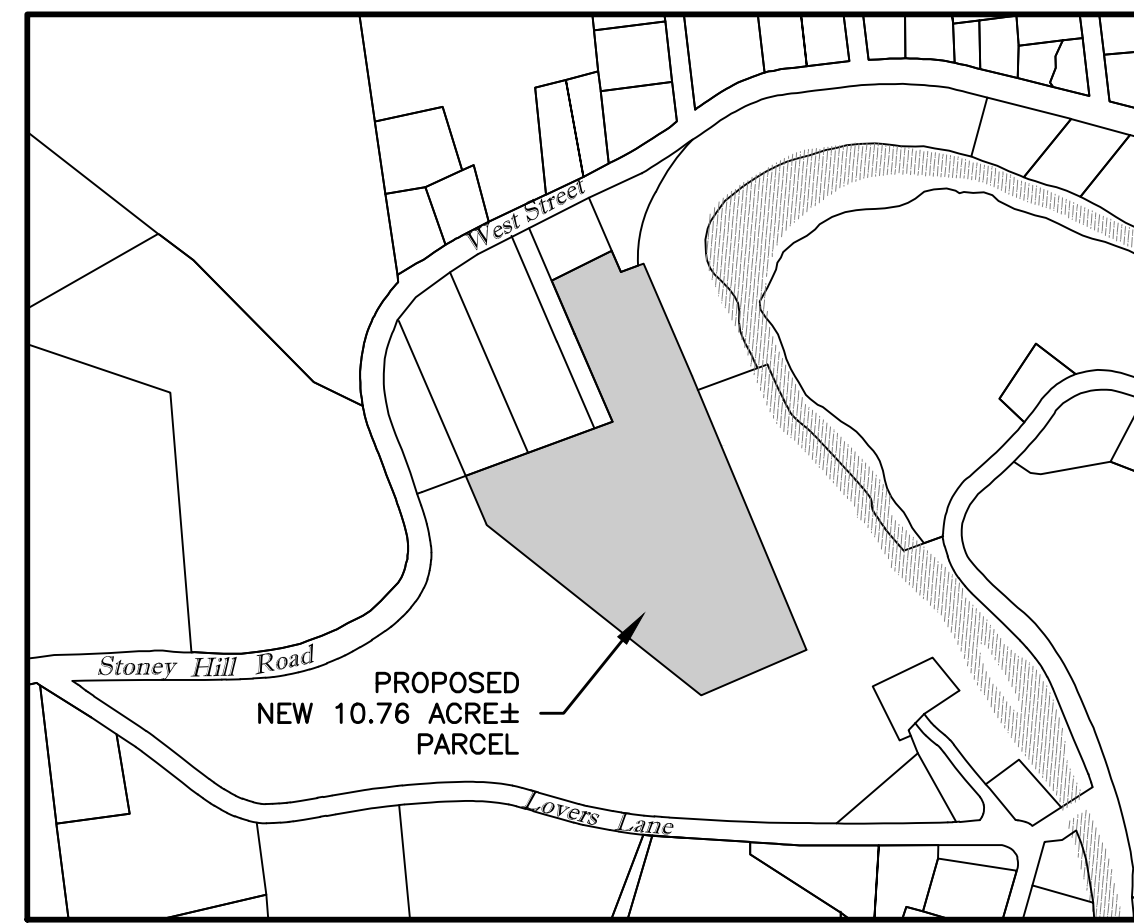
PROJECT: STONEY HILL MASTER PLAN
CLIENT: TOWN OF BRISTOL, VERMONT

DESIGNED: KJC	PLOT DATE: 08/17/16
DRAWN: RSO	SCALE: AS SHOWN
CHECKED: KJC	DATE: FEB. 2016

PROJECT NO. 25-029
FIGURE NO. 6



LOCATION PLAN
SCALE: 1"=2,000'



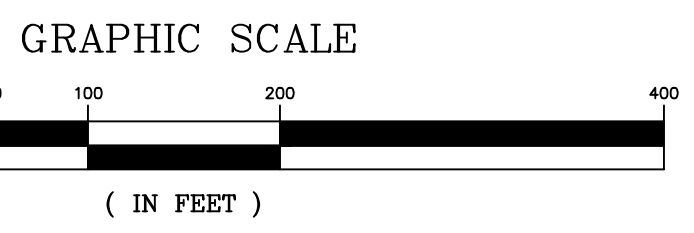
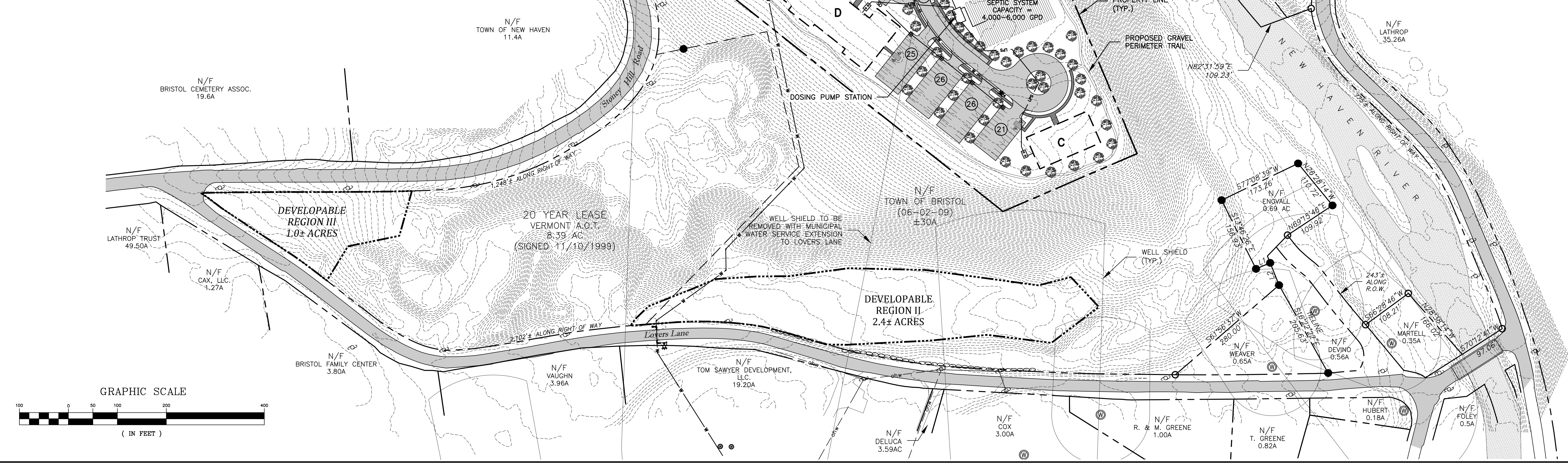
PARCEL PLAN
SCALE: 1"=500'

NOTES

1. PARCEL GEOMETRY PROVIDED BY THE ADDISON COUNTY REGIONAL PLANNING COMMISSION AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI).
2. ELEVATION AND CONTOUR INFORMATION DERIVED FROM LIDAR DATA PROVIDED BY VCGI, AS WELL AS TOPOGRAPHIC SURVEYS PERFORMED BY GREEN MOUNTAIN ENGINEERING USING NIKON DTM521 TOTAL STATION AND LEICA GS14 GPS. SITE PLAN GEOREFERENCED TO VT STATE PLANE NAD 1983 COORDINATES.
3. WELL HEAD PROTECTION INFORMATION FROM A WELL HEAD PROTECTION ANALYSIS PERFORMED BY LINCOLN APPLIED GEOLOGY ON JANUARY 2004.
4. BOUNDARY INFORMATION FOR TOWN OF BRISTOL PARCEL (DEED REFERENCE 93:11) DERIVED FROM SURVEY PERFORMED BY OTHERS, DATED FEBRUARY 10, 2016.
5. DESIGN VEHICLES USED TO DETERMINE PAVEMENT GEOMETRY INCLUDE:
A) WB-40 INTERMEDIATE SEMI TRAILER (45'-6"L x 8'-0"W)
B) ET-1 TOWN OF BRISTOL FIRE ENGINE (37'-4"L x 10'-1"W)

LEGEND

- EXISTING**
- PROPERTY LINE
 - VAOT EASEMENT
 - ELEV. CONTOUR (2FT)
 - WATER MAIN
 - SIDEWALK
 - PAVED ROAD
 - IRON PIN FOUND
 - IRON PIN SET
 - WELL
 - UTILITY POLE
- PROPOSED**
- PROPERTY LINE
 - GRAVEL PATH
 - SIDEWALK
 - PAVED ROAD
 - TREE
 - WATER
 - SEWER
 - LOW PRESSURE SEWER
 - STORM SEWER
 - DRAIN/CULVERT
 - CATCH BASIN
 - STORM SEWER MANHOLE
 - FIRE HYDRANT
 - SEPTIC/EFFLUENT PUMPING SYSTEM



NON-RESIDENTIAL BUILDING FLOOR AREA	
BUILDING	AREA (SQ. FT.)
A	13,390
B	12,650
C	9,450
D	24,200
TOTAL SF.: 59,690	

RESIDENTIAL BUILDING UNITS	
BUILDING	No. OF UNITS
E	8
TOTAL UNITS: 8	

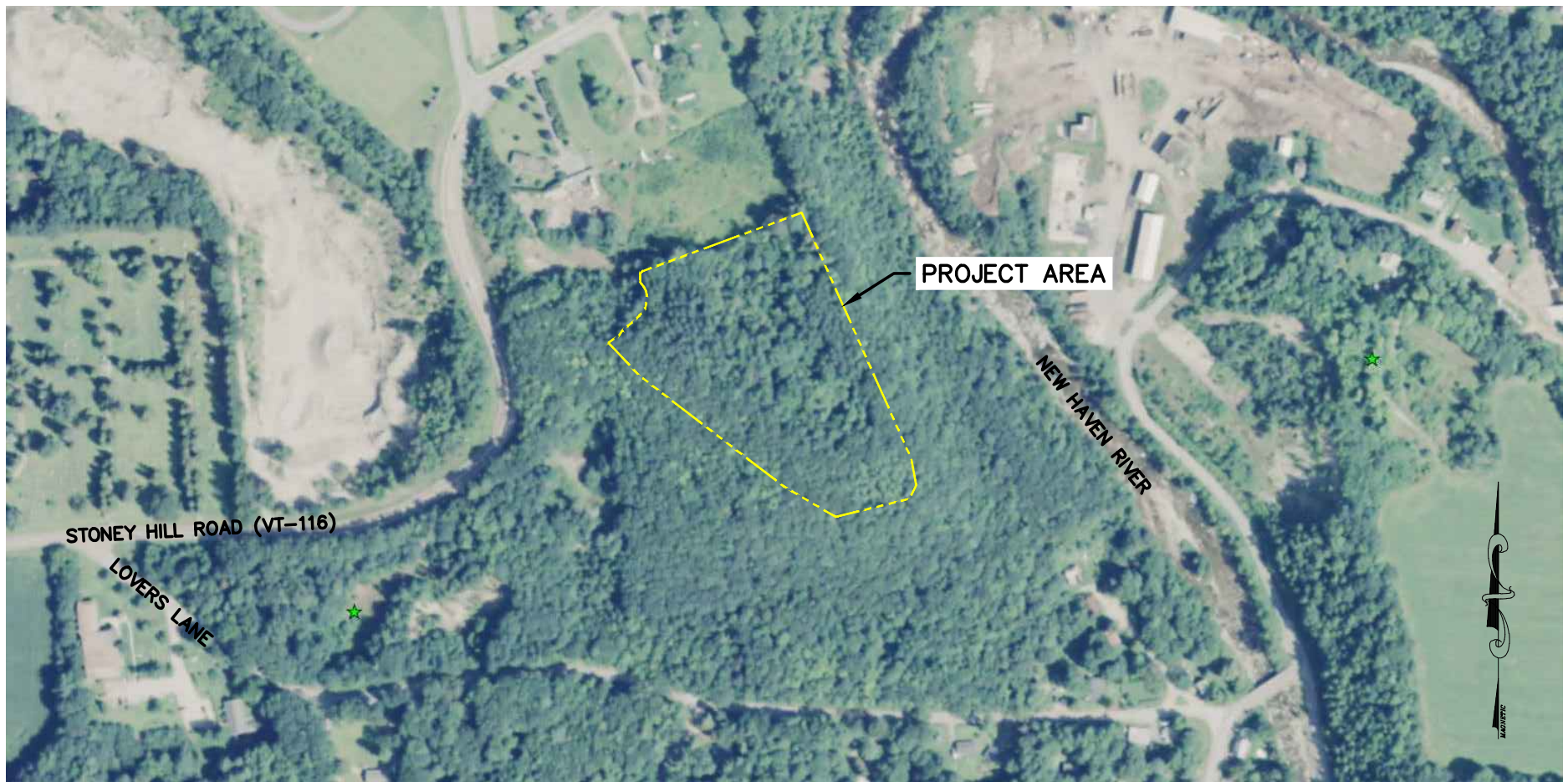
NOTE:
1. THERE ARE 256 TOTAL PARKING SPACES, 12 OF WHICH ARE HANDICAP SPACES.

REV.	DATE	DESCRIPTION	BY

1438 SOUTH BROWNELL ROAD
BRISTOL, VT 05602
PHONE: (802) 862-5590
FAX: (802) 862-7598

CIVIL
WATER
WASTEWATER

PROJECT TITLE	CONCEPTUAL ALTERNATIVE #4
PROJECT	STONEY HILL MASTER PLAN
CLIENT	TOWN OF BRISTOL, VERMONT
DESIGNED	KJC 08/17/16
DRAWN	RSO AS SHOWN
CHECKED	KJC FEB. 2016
PROJECT NO.	25-029
FIGURE NO.	7



LEGEND

★ WETLAND SITE

1438 SOUTH BROWNELL ROAD
 WILLISTON, VERMONT 05495
 PHONE: (802)862-5590
 FAX: (802)862-7598

**GREEN
 MOUNTAIN
 ENGINEERING**

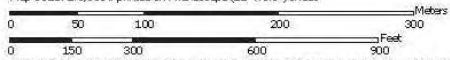
CIVIL
 WATER
 WASTEWATER

DRAWING TITLE	WETLANDS MAP		DESIGNED	KJC	PROJECT NO.	25-029
	PROJECT	STONEY HILL MASTER PLAN	DRAWN	PH	FIGURE NO.	
CLIENT	TOWN OF BRISTOL, VERMONT	CHECKED	KJC	PLOT DATE	08/16/16	
		SCALE	NONE	DATE	FEB. 2016	

Soil-Based Residential Wastewater Disposal Ratings (VT)—Addison County, Vermont



Map Scale: 1:3,830 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

USDA Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

LEGEND

- WELL SUITED/WELL DRAINED
- WELL SUITED/MODERATELY DRAINED
- MARGINALLY SUITABLE
- NOT SUITABLE

1438 SOUTH BROWNELL ROAD
WILLISTON, VERMONT 05495
PHONE: (802)862-5590
FAX: (802)862-7598

GREEN MOUNTAIN ENGINEERING

CIVIL WATER WASTEWATER

DRAWING TITLE	SOIL SEPTIC SUITABILITY MAP	
	DESIGNED	KJC
	DRAWN	PH
PROJECT	CHECKED	KJC
	PLOT DATE	08/16/16
	SCALE	NONE
CLIENT	DATE	FEB. 2016
	PROJECT NO.	25-029
	FIGURE NO.	9

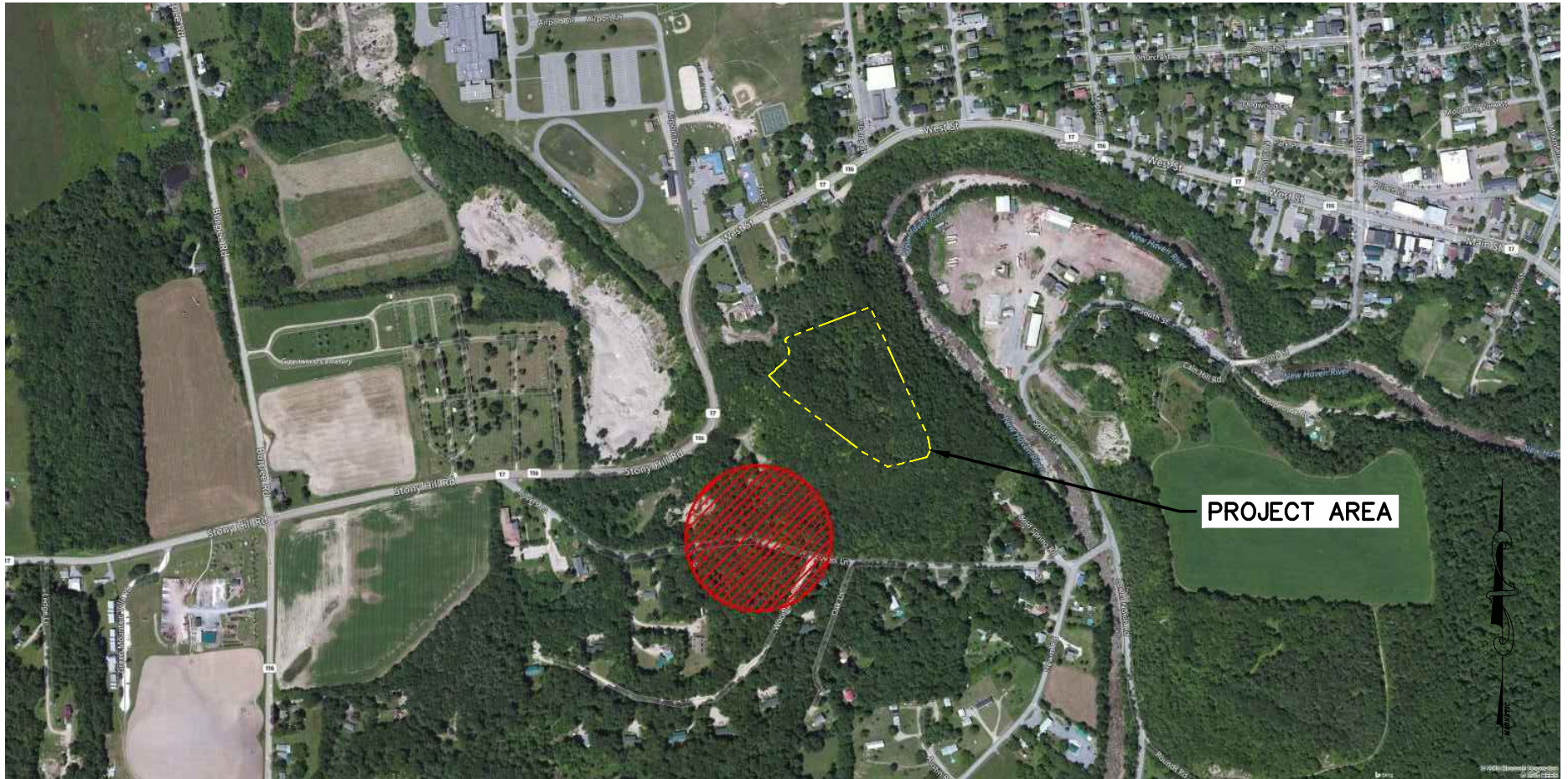


1438 SOUTH BROWNELL ROAD
 WILLISTON, VERMONT 05495
 PHONE: (802)862-5590
 FAX: (802)862-7598

GREEN MOUNTAIN ENGINEERING


CIVIL
 WATER
 WASTEWATER

DRAWING TITLE		DESIGNED	PROJECT NO.
IMPORTANT FARMLAND MAP		KJC	25-029
		DRAWN	
PROJECT		PH	FIGURE NO.
STONEY HILL MASTER PLAN		CHECKED	10
CLIENT		KJC	
TOWN OF BRISTOL, VERMONT		PLOT DATE	
		08/16/16	
		SCALE	
		NONE	
		DATE	
		FEB. 2016	



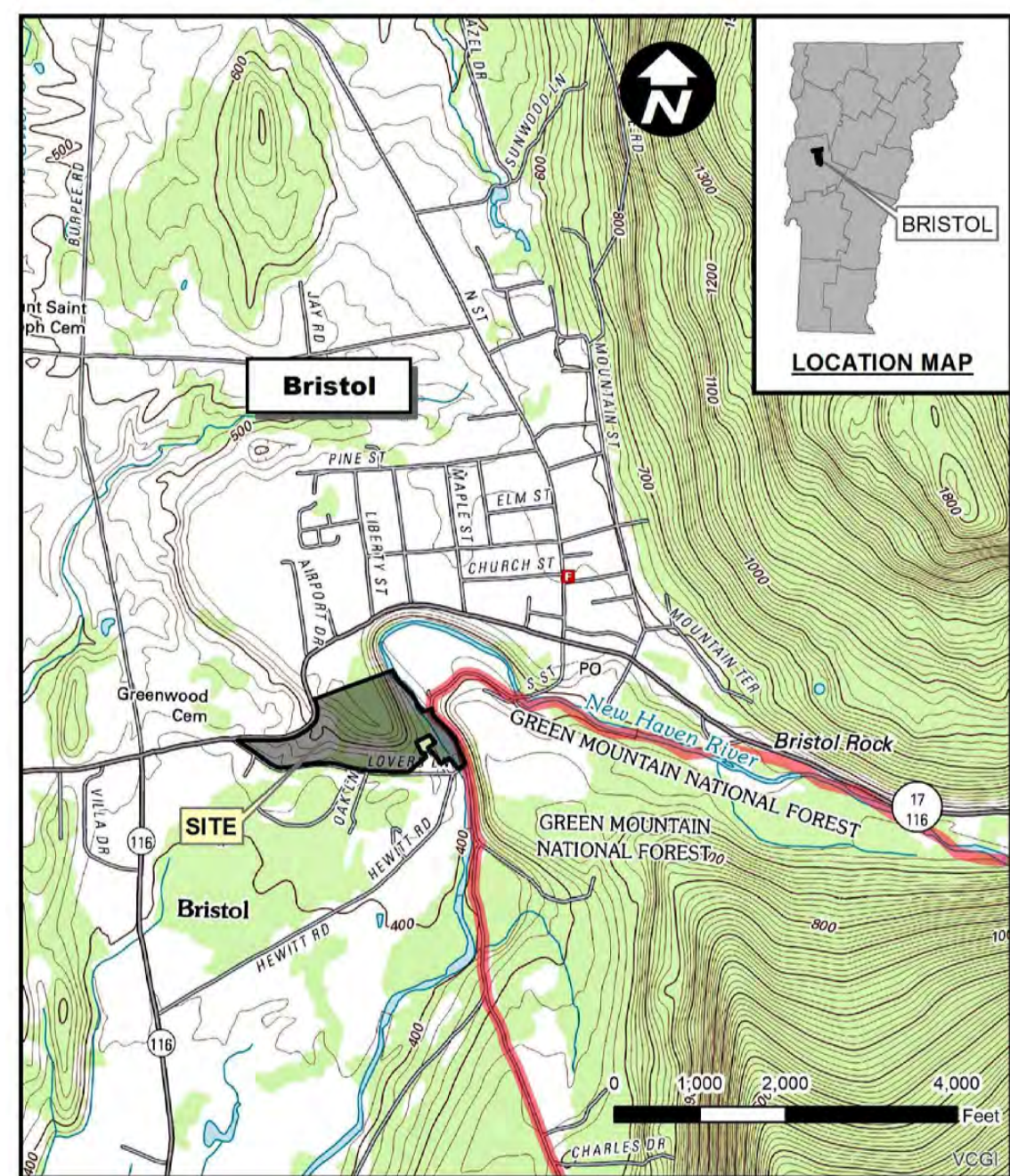
LEGEND
 **THREATENED/ENDANGERED SPECIES**

1438 SOUTH BROWNELL ROAD
 WILLISTON, VERMONT 05495
 PHONE: (802)862-5590
 FAX: (802)862-7598



**CIVIL
 WATER
 WASTEWATER**

DRAWING TITLE	DESIGNED	PROJECT NO.	
	KJC	25-029	
PROJECT	DRAWN	FIGURE NO.	
	PH		11
CLIENT	CHECKED	SCALE	
	KJC		NONE
	PLOT DATE		DATE
STONEY HILL MASTER PLAN	08/16/16	FEB. 2016	

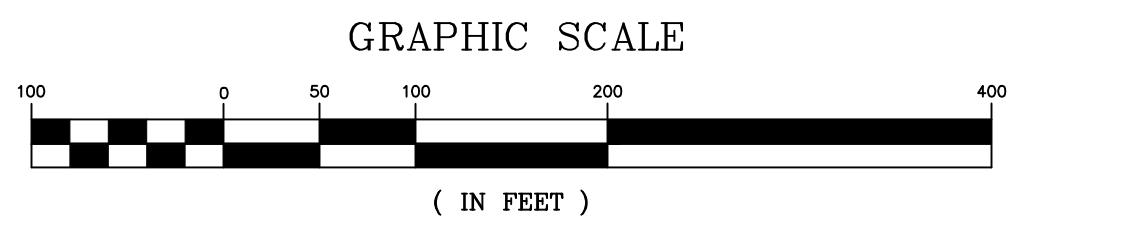


NOTE:

1. PARCEL GEOMETRY PROVIDED BY THE ADDISON COUNTY REGIONAL PLANNING COMMISSION AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI).
2. ELEVATION AND CONTOUR INFORMATION DERIVED FROM LIDAR DATA PROVIDED BY VCGI, AS WELL AS TOPOGRAPHIC SURVEYS PERFORMED BY GREEN MOUNTAIN ENGINEERING USING NIKON DTM521 TOTAL STATION AND LEICA GS14 GPS. SITE PLAN GEOREFERENCED TO VT STATE PLANE NAD 1983 COORDINATES.
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4. BOUNDARY INFORMATION FOR TOWN OF BRISTOL PARCEL (DEED REFERENCE 93:11) DERIVED FROM SURVEY PERFORMED BY OTHERS, DATED FEBRUARY 10, 2016.

LEGEND

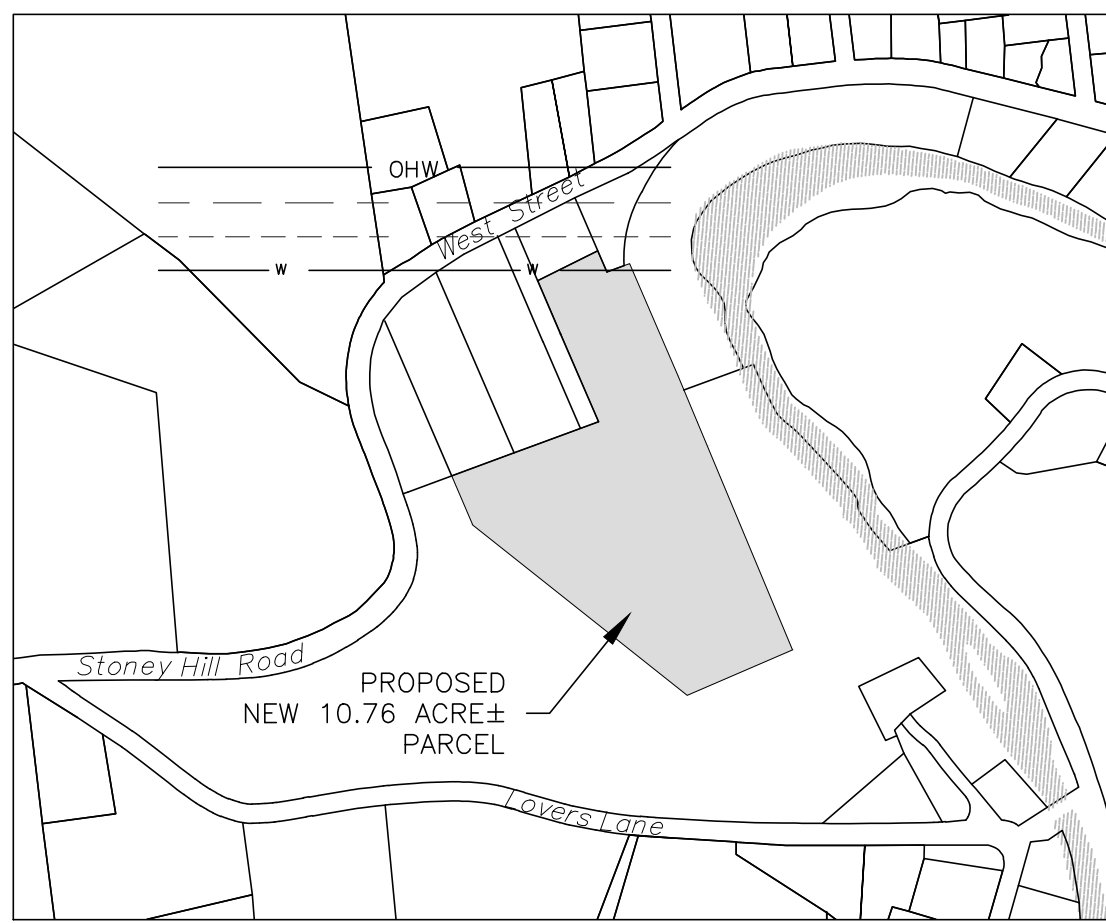
- PROPERTY LINE
- - - VAOT EASEMENT
- DEVELOPABLE REGION
- ARCHEOLOGICALLY SENSITIVE AREA
- CONTOUR
- - - WATER MAIN
- - - CONCRETE SIDEWALK
- PAVED ROAD
- IRON PIN FOUND
- IRON PIN SET
- ⊙ WELL
- ⊕ UTILITY POLE



1438 SOUTH BROWNELL ROAD WILLIAMSBURG, VT 05390 PHONE: (802)882-0580 FAX: (802)882-7598	
GREEN MOUNTAIN ENGINEERING CIVIL WATER WASTEWATER	
PROJECT	ARCHAEOLOGICALLY SENSITIVE AREA PLAN
CLIENT	STONEY HILL MASTER PLAN TOWN OF BRISTOL, VERMONT
DESIGNED	KJC
DATE	10/05/16
DRAWN	RSO
SCALE	AS SHOWN
CHECKED	KJC
DATE	OCT. 2016
PROJECT NO.	25-029
FIGURE NO.	12



LOCATION PLAN
SCALE: 1"=2,000'



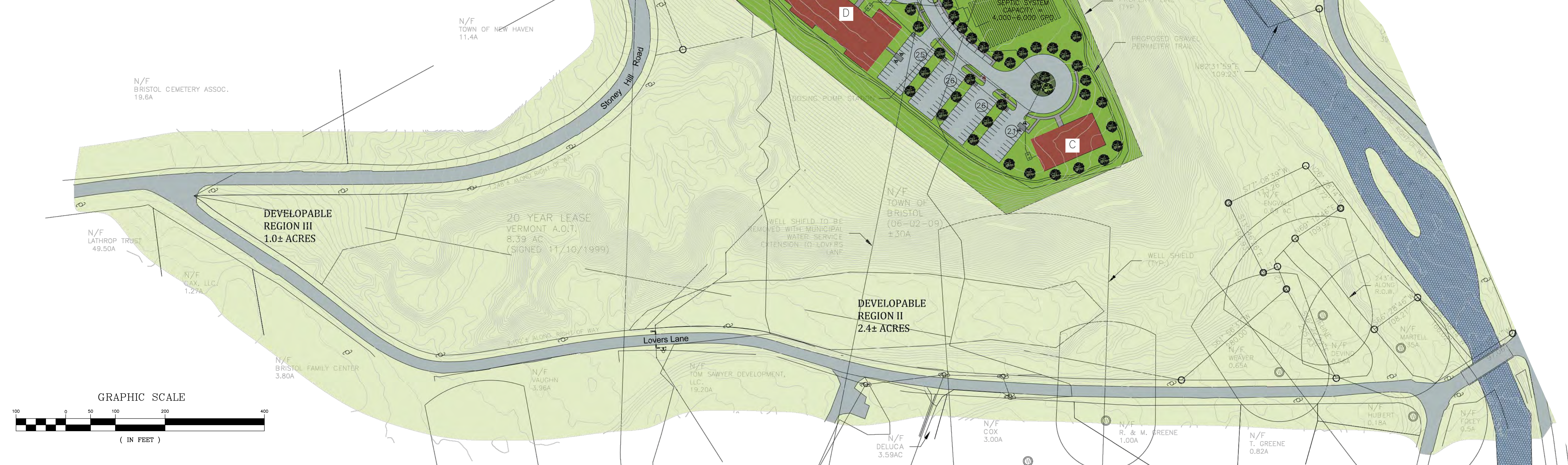
PARCEL PLAN
SCALE: 1"=500'

NOTES

1. PARCEL GEOMETRY PROVIDED BY THE ADDISON COUNTY REGIONAL PLANNING COMMISSION AND THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI).
2. ELEVATION AND CONTOUR INFORMATION DERIVED FROM LIDAR DATA PROVIDED BY VCGI, AS WELL AS TOPOGRAPHIC SURVEYS PERFORMED BY GREEN MOUNTAIN ENGINEERING USING NIKON DTM521 TOTAL STATION AND LEICA GS14 GPS. SITE PLAN GEOREFERENCED TO VT STATE PLANE NAD 1983 COORDINATES.
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B) ET-1 TOWN OF BRISTOL FIRE ENGINE (37'-4"L x 10'-1"W)

LEGEND

- EXISTING**
- PROPERTY LINE
 - - - VAOT EASEMENT
 - ELEV. CONTOUR (2FT)
 - WATER MAIN
 - SIDEWALK
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 - IRON PIN FOUND
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 - ⊙ WELL
 - ⊕ UTILITY POLE
- PROPOSED**
- PROPERTY LINE
 - GRAVEL PATH
 - SIDEWALK
 - PAVED ROAD
 - TREE
 - WATER
 - S SEWER
 - L LOW PRESSURE SEWER
 - S STORM SEWER
 - D DRAIN/CULVERT
 - ⊙ CATCH BASIN
 - ⊙ STORM SEWER MANHOLE
 - ⊕ FIRE HYDRANT
 - ⊕ SEPTIC/EFFLUENT PUMPING SYSTEM

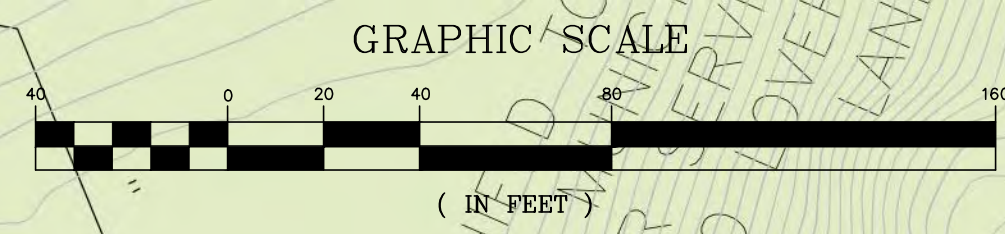


NON-RESIDENTIAL BUILDING FLOOR AREA	
BUILDING	AREA (SQ. FT.)
A	13,390
B	12,650
C	9,450
D	24,200
TOTAL SF.: 59,690	

RESIDENTIAL BUILDING UNITS	
BUILDING	No. OF UNITS
E	8
TOTAL UNITS: 8	

NOTE:
1. THERE ARE 256 TOTAL PARKING SPACES, 12 OF WHICH ARE HANDICAP SPACES.

1438 SOUTH BROWNELL ROAD MILLIS, MA 01946 PHONE: (802) 862-5590 FAX: (802) 862-7598	 CIVIL WATER WASTEWATER
PROJECT NO. 25-029 FIGURE NO. 13	



DRAWING TITLE		PROJECT		CLIENT	
PROPOSED CONDITIONS SITE PLAN		MASTER PLAN		TOWN OF BRISTOL, VERMONT	
DESIGNED	AH	PLOT DATE	10/05/16	PROJECT NO.	25-029
DRAWN	RSO	SCALE	1" = 40'	DRAWING NO.	14
CHECKED	AH	DATE	OCT 2016	SHEET 2 OF 2	
REV.	DATE	DESCRIPTION	BY		

1438 SOUTH BROWNELL ROAD
MILLVILLE, VT 05475
PHONE: (802) 862-5590
FAX: (802) 862-7598

GREEN MOUNTAIN ENGINEERING
CIVIL WATER WASTEWATER

Appendix B
Detailed Cost Estimates

**Stoney Hill Master Plan
Opinion of Probable Cost**

SITWORK

Item Description	Unit	Quantity	Unit Price	Amount
Clearing & Grubbing	Acre	8	\$2,000.00	\$16,000.00
Hauling & Dumping	LS	1	\$10,000.00	\$10,000.00
Rough & Fine Grading	SF	350,000	\$0.20	\$70,000.00
Topsoil	CY	1,000	\$25.00	\$25,000.00
Silt Fence	LF	2,100	\$3.00	\$6,300.00
Seeding & Mulching	SF	9,000	\$2.00	\$18,000.00
Plantings	EA	100	\$500.00	\$50,000.00
Sitework Subtotal				\$195,300.00

ROADWAY, WALKWAYS & TRAILS

Item Description	Unit	Quantity	Unit Price	Amount
Fine Crushed Gravel	CY	2,400	\$30.00	\$72,000.00
2" Bottom Course Asphalt Pavement	Ton	1,600	\$62.00	\$99,200.00
1-1/2" Top Bottom Course Asphalt Pavement	Ton	1,200	\$67.00	\$80,400.00
5' Wide Concrete Sidewalks	SF	9,800	\$5.00	\$49,000.00
Trails	SF	6,800	\$2.00	\$13,600.00
Roadways, Walks and Trails Subtotal				\$314,200.00

UTILITIES

Item Description	Unit	Quantity	Unit Price	Amount
Water				
8" Watermain	LF	600	\$75.00	\$45,000.00
Hydrant Connections	EA	2	\$5,000.00	\$10,000.00
6" Water Services	LF	450	\$65.00	\$29,250.00
Testing	LS	1	\$5,000.00	\$5,000.00
Sewer				
4" PVC SDR 35 Sewer Services	LF	50	\$50.00	\$2,500.00
5,000 Gallon STEP Tanks	EA	5	\$15,000.00	\$75,000.00
1 1/2" STEP Forcemains	LF	1,000	\$35.00	\$35,000.00
5,000 Gallon Dosing Pumping Station	EA	1	\$20,000.00	\$20,000.00
Testing	LS	1	\$5,000.00	\$5,000.00
Leachfield (See Separate Breakdown)				\$0.00
Excavate Leachfield Trenches	CY	560	\$8.00	\$4,480.00
Leachfield Stone	CY	310	\$25.00	\$7,750.00
1 1/2" Laterals	LF	1,700	\$6.00	\$10,200.00
Filter Fabric	SY	750	\$2.00	\$1,500.00
Topsoil	CY	250	\$25.00	\$6,250.00
2" Forcemains	LF	500	\$30.00	\$15,000.00
Spider Valves	EA	2	\$2,000.00	\$4,000.00
Testing	LS	1	\$5,000.00	\$5,000.00
Stormwater				
Grassed Swales	SF	15000	\$0.50	\$7,500.00
Stormwater Basin	LF	1	\$30,000.00	\$30,000.00
Fence around Basin	LF	26	\$26.00	\$676.00
15" stormwater pipe	LF	2,800	\$60.00	\$168,000.00
Catch Basins	EA	10	\$5,000.00	\$50,000.00
Buried Electric, Telephone, Cable	LF	2,500	\$60.00	\$150,000.00
Site Lights	EA	40	\$2,000.00	\$80,000.00
Utilities Subtotal				\$767,106.00

Sitework Subtotal **\$1,276,606.00**

Building Costs

Item Description	Unit	Quantity	Unit Price	Amount
Building A	SF	13,000	\$160.00	\$2,080,000.00
Building B	SF	12,600	\$140.00	\$1,764,000.00
Building C	SF	9,400	\$120.00	\$1,128,000.00
Building D	SF	24,000	\$120.00	\$2,880,000.00
Building E	SF	12,000	\$120.00	\$1,440,000.00
Building Subtotal				\$9,292,000.00

Total Construction Cost	
Sitework	\$1,276,606
Buildings	\$9,292,000
Preparation of Site/Misc. Work (8%)	\$845,488
Contingency (10%)	\$1,141,409
Total Construction Cost	\$12,555,504

Total Project Cost	
Construction Cost	\$12,555,504
Architect/Engineering (10%)	\$1,255,550
Archeological Investigations (Estimated)	\$20,000
Land Acquisition	\$252,700
Permitting	\$94,911
Total Project Cost	\$14,178,665