Soil Management Plan: 260 River Street, Montpelier, Vermont

SMS #20164661

STONE ENVIRONMENTAL

PROJECT NO.

16-163

REVIEWED BY:

DTV 072720

PREPARED FOR:

260 River Street Montpelier Properties, LLC
Patrick Malone
338 River Street, Unit 7
Montpelier / Vermont / 05602

SUBMITTED BY:

Lee Rosberg / *Project Geologist*
Stone Environmental, Inc.
535 Stone Cutters Way
Montpelier / VT 05602
lrosberg@stone-env.com
802.229.5378

Title and Approval Page

Document Title
Soil Management Plan: 260 River Street, Montpelier, Vermont SMS #20164661

July 27, 2020

Document Prepared by:
Stone Environmental, Inc., 535 Stone Cutters Way, Montpelier, VT 05602 (802) 229-4541

Document Preparer Approvals:

Lee Rosberg, Project Manager, Stone Environmental, Inc.

July 27, 2020

Signature Date

Daniel Voisin, Senior Geologist, Stone Environmental, Inc.

I certify under penalty of perjury that I am an environmental professional and that all content contained within this deliverable is to the best of my knowledge true and correct.

July 27, 2020

Signature Date

Soil Management Plan: 260 River Street, Montpelier, Vermont SMS #20164661

Cover Photo: Capital City Gas Plant, circa 1927

Contents

Table of Figures

Table of Tables

1. Introduction

Stone Environmental, Inc. (Stone) has prepared this Soil Management Plan (SMP), in accordance with §35-804 of the Investigation and Remediation of Contaminated Properties Rule (IRule), effective July 9, 2019. The SMP has been prepared on behalf of 260 River Street Montpelier Properties, LLC to detail soil management practices that will be followed during planned redevelopment of the property located at 260 River Street in Montpelier, Vermont (the Site; Figure 1 in Appendix A). Environmental investigations conducted between 2016 and 2018 at the Site identified non-hazardous contaminated soil in the area of planned redevelopment, including polycyclic aromatic hydrocarbons (PAHs), cyanide, lead, and arsenic at concentrations exceeding Vermont's non-resident Soil Standards (VSS) and the presence of coal gasification wastes. This contamination resulted from the use of urban fill soils and historic operation of a manufactured gas plant (MGP) at the Site. Soil management is necessary to prevent unacceptable risks to human health and the environment through direct contact with known Site contaminants. SMP objectives include providing descriptions of:

1. Contaminated soil that is expected to be encountered during Site redevelopment
2. How contaminated soils will be managed
3. How soil management activities will be documented
4. Proposed engineered barriers

The Site is owned by 260 River Corporation and has been vacant since the 1990s. 260 River Street Montpelier Properties, LLC was recently accepted into the Vermont Brownfields Environmental Liability Limitation Program (BRELLA) as a *bone fide* prospective purchaser of the Site. This SMP will be included within a Corrective Action Plan (CAP) to be drafted later that will also include required institutional controls and a long-term maintenance and monitoring plan for the engineered barriers.

1.1. Site Description

The Site comprises a 6.01-acre parcel located between River Street (US Route 2) and the Winooski River in Montpelier, Vermont. Current Site improvements include an asphalt paved parking area and a former retail hardware and lumber yard building (former Grossman's) measuring approximately 16,000 square feet (Figure 2). A wooden pole barn is located in the northern corner of the developed portion of the Site.

The former Grossman's building is serviced by overhead electrical service (Green Mountain Power) and has municipal potable water connections. An on-Site septic system is located to the south of the current building. Recent use of the Site has been limited to parking by an automotive dealership (Formula Ford), which is located west of the Site, and as a snow dump by the City of Montpelier.

The Site is bordered to the west by an active railroad line and US Route 2 and to the north and east by the Winooski River. The northernmost third of the Site is currently undeveloped, is a mapped Class II wetland, and contains remnants of the former MGP (Figure 3). The southernmost third of the Site is traversed by a gravel drive, is surrounded by scrub and grassy areas, and is defined by a man-made plateau.

Formula Ford (formerly Walker Motors) is located west-southwest of the Site on the opposite side of US Route 2 and is an active State Hazardous Site managed under the Sites Management Section (SMS) #880199 and #20033108. The roundabout intersection of US Route 2 and 302 is located to the southeast of the Site. Further southeast is a vacant lot that was formerly occupied by Interstate Equipment (SMS# 921333).

1.2. Site History

Beginning in 1902, the Site was operated as an MGP by the Capital City Gas Company (CCGC). Former CCGC infrastructure included two iron gas holders, a tar well, condensers, purifier house, retorts, barrel storage, an engine house with storage tank, and coal/coke storage area. CGCC continued to operate the gasification plant until 1949 when the plant was dismantled. The property was sold in 1957.

From 1957 to 1965, the Site was owned by Hill Martin Corporation. Land use of the Site during this period is not well understood, however, Hill-Martin Corporation, formerly of 450 North Main Street in Barre, Vermont and currently owned by Tenco Industries, manufacture and sell snow removal equipment for municipal and state clients.

In 1965, Grossman's Lumber operated a lumber yard and hardware store at the Site until it filed for bankruptcy in the 1990s. The Site has remained vacant, except for automobile storage by Formula Ford and as a snow dump for the City of Montpelier since the 1990's. The Site was purchased by 260 River Corporation, LLC, the current owner, in 1997.

1.3. Proposed Reuse Plan

Proposed redevelopment plans include renovating the existing building, constructing a 7,823 square foot addition, and improving exterior parking, stormwater practices, and landscaping (Figure 4a). A commercial wastewater service provider is expected to occupy the Site following renovations. The northwest area of the Site is delineated as a Class II wetland and, therefore, is not being considered for development.

1.4. Previous Environmental Investigations

The Site has been subject to environmental investigations since 1995 and is managed by the VT DEC Sites Management Section (SMS) under SMS #20164661. Sample locations and results salient to soil management activities are included on the following figures located in Appendix A:

- Figure 5: Phase II ESA Investigation Locations
- Figure 6: Cross Section A-A'
- Figure 7: April 2017 Soil PAH B(a)P TEQ Results
- Figure 8: April 2017 Soil VOC Results
- Figure 9: ISM Sampling and Soil Boring Analytical Results

A summary of previous environmental investigations is included as Section 1.4 of the Partial CAP drafted for the Site titled *Partial Corrective Action Plan: 260 River Street, Montpelier, Vermont SMS #20164661* (Stone, 2019). Partial cleanup of the Site, including excavation and off-Site disposal of coal tar from the Winooski River, closure of outfalls associated with the former MGP that acted as preferential pathways for contaminant migration, and off-Site disposal of drums containing coal tar residue was completed in December 2019. This work is documented in the report titled *Corrective Action Construction Completion Report: 260 River Street, Montpelier, Vermont SMS #20164661* (Stone, 2020).

Details of previous Site environmental investigations salient to this SMP are summarized in the following subsections.

1.4.1. Stone Environmental, Inc. Phase II ESA, 2017

The 2017 Phase II ESA was conducted with the objective of assessing whether RECs identified by a Johnson Company (JCO) Phase I ESA have resulted in a release(s) to the environment and to define the degree and extent of contamination, if present, in support of remedial planning prior to Site redevelopment. Phase II ESA field tasks completed by Stone included completion of sixty-nine soil borings and collection of soil samples for several Site contaminants of concern. The Phase II ESA revealed the following conditions related to soil quality in the redevelopment area:

- Operation of the former CCGC MGP at the Site resulted in releases of contaminants to the subsurface, including coal gasification wastes immediately northwest of the Site building and in an isolated area in the southern extent of the Site (Figure 7). Coal gasification wastes at these locations were present at depths ranging between approximately 7.5 to 10 feet below ground surface (bgs) and included semi-rigid coal tar and coal tar-saturated wood chips, which were likely used as a filtration media in the MGP process.
- PAHs are present in soil at levels exceeding Vermont Soil Standards (VSS) for non-resident properties in soil samples containing coal tar. VOCs, including benzene, ethylbenzene, and naphthalene are present in Site soil at concentrations exceeding VSS for non-resident sites. The extent of VOC contamination in soils appears to be limited to the vicinity of areas where coal tar is present. Antimony, arsenic, copper, and lead are present in coal tar contaminated soils at concentrations that VSS for non-resident sites. Cyanide contamination does not appear to be widespread at the Site. One soil sample, containing coal tar, and one from black stained soil, contained cyanide at concentrations exceeding the VSS for residential sites but less than the VSS for non-resident sites.
- No PCBs were identified in asphalt directly below pole-mounted transformers. No herbicides were detected in soil samples collected along the former Site rail spur and in the location where rail ties were formerly stockpiled.
- The severity of contaminated soil is much greater near the former MGP relative to the proposed redevelopment area of the Site defined by the man-made plateau, Site building, and asphalt and gravel drives.

Based on these conditions, Stone recommended that an ECAA be prepared to assess remedial alternatives to prevent unacceptable exposure of contaminants to Site users as part of Site redevelopment planning in the southern portion of the Site. For the former MGP area of the Site, Stone recommended that Supplemental Site Investigation (SSI) tasks be completed to fill data gaps prior to remedial planning.

1.4.2. Stone Environmental, Inc. Supplemental Site and Evaluation of Corrective Action Alternatives (ECAA) Investigations, 2018.

ECAA investigation tasks were completed between November 13, 2017 and November 28, 2017 to evaluate the feasibility of remedial alternatives in the proposed redevelopment area of the Site.

ECAA objectives included:

- Assess soil quality within the footprint of the proposed building;
- Assess soil quality across areas proposed for exterior parking and stormwater improvements; and
- Determine whether the current or future buildings are at risk of vapor intrusion of Site contaminants.

The ECAA investigation revealed that PAH contamination is widespread in Site soil at levels exceeding VSS for non-resident sites, including within the former MGP area of the Site and the proposed development area. In the proposed development area, concentrations of PAHs increase with depth as urban fill soils are encountered below engineered fill soils found below the parking lot. These soils will require management during redevelopment to prevent direct contact to construction workers and future Site users. Metals, PCBs, VOCs, and herbicides were not detected in soil samples collected from the portion of the Site slated for redevelopment.

Based on soil gas sample results, there is no risk for vapor intrusion to the current Site building. Ethylbenzene occurred in one exterior soil gas sample at a concentration that presents a vapor intrusion (VI) risk to residential, but not non-resident uses. If the Site was to be developed with a residential, food production, or daycare structures, VI mitigation measures would be needed.

Recommendations relative to the proposed redevelopment area of the Site included preparing a CAP to assess remedial alternatives to prevent unacceptable exposure of soil contamination to Site users as part of Site redevelopment planning.

1.4.3. Stone Environmental, Inc., 2018 Evaluation of Corrective Action Alternatives

Based on previous environmental investigation results, Stone prepared an ECAA to evaluate cleanup alternatives for three areas of concern (AOC), including AOC 3 which is defined by the proposed redevelopment area:

- AOC 3: Urban fill soils containing PAH, VOC, cyanide, antimony, and arsenic contamination. Corrective action alternatives considered for AOC 3 included:
  - Alternative 1: No action;
  - Alternative 2: Excavation and off-Site disposal; and
  - Alternative 3: Installation of engineered barriers and institutional controls.

The remedial alternatives were subjected to a comparative analysis of their appropriateness for mitigating direct contact exposure risk to known Site contaminants and supporting the proposed redevelopment.

Based on the results of the ECAA, the recommended corrective actions for AOC 3 was Alternative 3: installation of engineered barriers and institutional controls. The VT DEC Site Manager, James Donaldson, approved the recommended cleanup alternatives via email on October 22, 2018.

1.5. Contaminant Distribution

Soils observed in the redevelopment area of the Site include up to thirteen feet of fill materials, including sand and gravel containing brick rubble, coal, ashes, and MGP wastes (semi-solid coal tar and coal tar saturated wood shavings) overlain by varying thicknesses of crushed phyllite. Fill materials are underlain by approximately 2.5 feet of fine pebbly sands interbedded with silt lenses, consistent with glaciolacustrine sediments. These soils are underlain by up to 2 feet of poorly sorted sand and gravel, likely river channel deposits, followed by at least 2.5 feet of till. Most soil borings in the redevelopment area were not advanced to refusal. Approximately 2.5 feet of uncontaminated engineered fill is present below the current asphalt parking lot.

Coal tar in some areas, has become semi-rigid as a result of the loss of aromatic and low molecular weight compounds due to the physical properties of these constituents (e.g. higher vapor pressures and solubility). Semi-rigid coal tar dense non-aqueous phase liquids (DNAPLs) in the subsurface, such as those found in the

subsurface immediately northwest of the Site building, are likely immobile due to high viscosities and capillary pressures.

Light non-aqueous phase liquid (LNAPL), with a specific gravity less than that of water, if present in significant quantities, will remain immiscible, and move through the subsurface in the same direction that groundwater moves. In the redevelopment area of the Site, LNAPL may be present at monitoring well MW-10 (Figure 5) based on the presence of coal gasification wastes. Based on the absence of coal tar in four soil borings located immediately downgradient of MW10, coal tar at this location does not appear to be mobile.

1.5.1. PAHs

Carcinogenic PAHs normalized to benzo(a)pyrene (B(a)P TEQ) are present at concentrations up to three orders of magnitude greater than the VSS for non-resident sites in soil mixed with purifying wastes (e.g. wood shavings). Wood shavings have been disposed of in at least two locations at the Site, including the southernmost area and the area immediately northwest of the Site building. In the latter area, coal tar DNAPL is present as both semi-rigid and less viscous products. The extent of coal tar DNAPL northwest of the Site building has not been fully defined to the north or south and may extend below the Site building. It is possible that coal gasification wastes were used as fill materials in unidentified locations within the redevelopment area. If encountered during construction activities, coal gasification wastes will be left in-place to the extent practical and, if possible, the excavation will be relocated to avoid these wastes. If the excavation cannot be moved, the coal gasification wastes will be encapsulated under an engineered barrier as described in Section 2.4 of this SMP.

Coal and coal ash were frequently encountered at depths ranging from near ground surface up to 13 feet bgs in the area immediately northwest of the Site building to the far southern Site boundary, including the rail corridor and gravel drive, and contain PAHs at concentrations exceeding non-resident VSS. Engineered backfill below the existing parking lot does not contain PAH contaminated soil at depths of approximately 2.0-2.5 feet bgs. However, B(a)P TEQ of soil in coal ash and building material containing fill underlying the engineered fill exceeds the non-resident VSS.

1.5.2. VOCs

VOCs present in redevelopment area Site soil at concentrations exceeding VSS have only been identified in the southernmost area of the Site where coal tar NAPL was observed in wood shavings.

1.5.3. Cyanide and Metals

Cyanide:

Cyanide was detected in the gasification wastes present at approximately 7 -10 feet bgs at MW10 (Figure 5) at a concentration that exceeds the residential Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for residential soils but less than the RSL for industrial properties. Former MGP practices do not appear to have resulted in widespread cyanide contamination at the Site.

Antimony:

Antimony was detected at concentrations exceeding the resident VSS, but below the non-resident VSS, in coal gasification wastes located at 7-10 feet bgs in MW10 (Figure 5).

Arsenic:

Most arsenic concentrations in Site soil are below the Statewide background concentration of 16 mg/Kg. However, arsenic concentrations in soil exceeded 16 mg/Kg in soil samples associated with coal gasification

wastes located immediately northwest of the Site building and at a depth of approximately 10 feet bgs (SB62, Figure X) and near the rail corridor (Sb35, Figure X).

Lead:

Occurrence of lead in soils at concentrations in excess of the non-resident VSS was limited to coal tar saturated wood shavings located in the southernmost area of the Site in the same location described above for cyanide and antimony.

2. Soil Management Plan

This section describes the recommended soil management practices that shall be followed during any construction activities that disturb contaminated soil. All work shall be performed by personnel trained in accordance with Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations (29 CFR 1910.120). All soil management activities described within this SMP will be performed by contractors under the supervision of a Qualified Environmental Professional (QEP).

2.1. Waste Material Management

The Site grading plan has accounted cut/fill volumes for all redevelopment elements and has balanced the cut/fill such that all soil will remain on-Site; off-Site disposal will not be required. A grading plan is presented on Figure 4b and includes the encapsulation of PAH contaminated soil in two mounds, one located in the southeast portion of the Site and the other located north of the parking lot.

Waste generated during installation of engineered barriers will be limited to construction debris and personal protective equipment. These materials will be disposed of as solid waste in accordance with Vermont Solid Waste Management Rules.

2.2. Expected Soil Disturbance

Site redevelopment elements that are anticipated to disturb contaminated soil include:

1. Trenching to install water, sewer, and stormwater utilities.
2. Excavation to approximately five feet bgs to construct the foundation for the 7,823 square foot addition (Figure 4a).
3. General regrading to prepare the Site for engineered sections for access drives, parking, parking lot light fixtures, sidewalks, and landscaped areas.

Trenches containing subsurface utilities will be partially backfilled with clean engineered fill. Urban fill soils may be used as backfill above engineered fill but shall be separated using an indicator layer as described in Section 2.3, below. It is not anticipated that coal gasification wastes will be encountered in excavations. However, if these wastes are encountered, the following courses of action will be taken after gaining concurrence from the VT DEC Site Manager:

1. If coal gasification wastes are encountered, they will remain in place to the extent practical and, if possible, the excavation will be relocated to avoid these wastes.
2. If the excavation cannot be moved, the coal gasification wastes will be encapsulated under an engineered barrier in one of the two mounds depicted on Figure 4b.

2.3. Soil Management

All non-hazardous soil will be capped under engineered barriers in accordance with §35-803(c)(4)(c). Engineered barriers will be installed to reduce the potential for human contact with PAH-contaminated soil

following construction. The engineered barriers to be constructed at the Site will, at a minimum, consist of the materials listed in Table 1, below, or equivalent materials as applicable. Clean fill materials below impervious barriers (asphalt and concrete) will at a minimum be six inches thick in accordance with the IRule. The sections described in Table 1 and depicted on Table 10 are typical for each respective redevelopment element.

Table 1: Materials of Construction

Engineered Barriers			
Asphalt Barrier	**Sol Barrier**	**Concrete Sidewalk barrier**	**Concrete Foundation Barrier**
Type III Bituminous Concrete •1.5" thick	Landscape backfills •18" thick	Portland cement concrete •5" thick	Portland cement concrete •6" thick
Type II Bituminous Concrete •2.5" thick	Non-woven geotextile fabric •Mirafi 500X or equivalent	Compacted Coarse Crushed Gravel •6- 12" thick	Vapor Barrier •15-mil Stego Wrap or equivalent
Compacted Fine Crushed Gravel •6" thick	Subgrade (undisturbed existing)	Non-woven geotextile fabric •Mirafi 500X or equivalent	Compacted Fine Crushed Gravel •6" thick
Compacted Course Crushed Gravel •12" thick		Sub-grade (undisturbed existing)	Compacted Course Crushed Gravel •12" thick
Non-woven geotextile fabric •Mirafi 500X or equivalent			Non-woven geotextile fabric •Mirafi 500X or equivalent
Subgrade (undisturbed existing)			Subgrade (undisturbed existing)

Disturbed soil containing coal ash and building debris will be placed below the engineered barrier. Contaminated surface soil in the redevelopment area of the Site will be regraded to allow for the installation of engineered barrier materials. All engineered barriers will be underlain by a geotextile fabric or other appropriate material that will serve as an indicator layer between clean and contaminated soils. This indicator layer shall be inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids (e.g. Mirafi 500X or equivalent).

2.4. Description of Engineered Barriers

Engineered barriers described within this SMP include:

- Soil Barrier: Soil and geotextile fabric cap;
- Asphalt Barrier: Asphalt and soil cap with geotextile fabric;
- Concrete Sidewalk Barrier: Concrete and soil cap with geotextile fabric; and
- Concrete Foundation Barrier: Concrete and soil cap with geotextile fabric.

Environmental oversight will be provided by a QEP with experience implementing SMPs to ensure that engineered barriers are installed in accordance with this SMP. The areal extent of each type of barrier, based on the redevelopment plan, is provided as Figure 10.

Germane to each type of barrier is the installation of geotextile fabric (i.e. Mirafi 500X or equivalent) that will serve as a marker between underlying contaminated soils and overlying clean materials. Geotextile fabric will be installed in accordance with the manufacturer's specification. If more than one sheet of geotextile is needed to cover an area, the individual sheets will be joined by overlapping a minimum of two feet.

Clean fill imported to the Site to construct the engineered barriers will be certified in writing by each supplier to be virgin material that has not been impacted by release of oil or hazardous materials.

2.4.1. Soil and Geotextile

Proposed greenspaces requiring a soil barrier include greenspaces in the southern extent of the Site and greenbelts within the access drive and parking lot (Figure 10). The engineered barrier in these areas will include surface grading soil to allow for subsequent installation of at least 18-inches of clean imported fill. The type of clean fill used within green spaces will be determined by the Site civil engineer. Following grading, a geotextile fabric will be installed over existing Site soils. Clean fill will then be installed over the geotextile fabric. Any stockpiled clean fill will be placed on pavement or geotextile fabric to prevent mixing with contaminated soil.

Clean fill placed in greenspaces will be mechanically graded and compacted using light to medium weight excavation or compaction equipment, to prepare the area for finished surface materials. Figure 10 provides a detail cross sectional view of the soil barrier as detail "Soil Barrier Detail."

2.4.2. Asphalt, Soil, and Geotextile

The proposed access drive and parking lot alignment (Figure 10) will require construction as an engineered barrier. PAH-contaminated soil will be regraded to receive a minimum of 6-inches of subbase or thicker as specified by the Site civil engineer. A geotextile fabric will be installed directly over contaminated soil. Asphalt will be installed in two courses. The base course will be 2.5-inches thick and the finish course will be 1.5-inch thick or other thickness as specified by the Site civil engineer. The asphalt and soil caps must be a minimum of 6-inches thick but are anticipated at least a total of 22-inches thick based on standard parking lot sections. Figure 10 provides a detail cross sectional view of the asphalt and soil barrier as detail "Asphalt Barrier Detail."

2.4.3. Concrete Sidewalk, Soil, and Geotextile

Proposed concrete sidewalks provided access to the existing and proposed Site building from the proposed asphalt parking lot (Figure 10). To serve as an engineered barrier, a 5-inch concrete sidewalk will be poured over base materials with a minimum of 6-inches of clean subbase material. Typical sidewalk subbase consists of 12-inches of course crushed gravel overlain by 6-inches of fine crushed gravel. The Site civil engineer will specify subbase materials and thickness. A geotextile fabric will separate underlying PAH-contaminated soil from overlying clean gravel. The concrete and soil caps must be a total of 6-inches thick but are anticipated to be approximately 23-inches thick based on standard sidewalk sections. Figure 10 provides a detail cross sectional view of the asphalt and soil barrier as detail "Concrete Sidewalk Barrier Detail."

2.4.4. Concrete Foundation, Soil, and Geotextile

The concrete foundation of the proposed building expansion will serve as an engineered barrier. Concrete and subbase thicknesses will be determined by a civil engineer but must be a total of 6-inches thick. Based on typical building slab design, we anticipate that the concrete foundation barrier will be constructed with 6-inches of concrete over base materials consisting of 12-inches of course crushed gravel overlain by 6-inches of fine crushed gravel or other material as specified by the Site civil engineer. Figure 10 provides a detail cross sectional view of the concrete foundation and soil barrier as detail "Concrete Foundation Barrier Detail."

2.5. Excavation Oversight

Stone will conduct at least two daily Site inspections when construction work that disturbs contaminated soil is being performed and installation of indicator layers. These inspections will generally occur once in the morning to review the days plan with the contractor and in the afternoon to track daily progress. Stone will conduct additional oversight as required. After disturbance of contaminated soil is complete and indicator layers are installed, Stone will conduct daily Site inspections to confirm and document that engineered barriers are constructed in accordance with this SMP.

2.6. Schedule and Contracting

The schedule to complete soil management activities described in this SMP is summarized in Table 2, below, and is based on the following assumptions:

- Review and approval of this SMP will occur within two weeks of receipt.
- A stormwater general permit will be received concurrently with SMP approval.
- Work requiring contaminated soil disturbance will occur over six weeks.
- Engineered barriers will be constructed in two weeks.

Table 2: Soil Management Schedule

Task	Responsible Party	Duration	Anticipated Start Date	Anticipated Completion Date
Draft SMP	Stone	1 week	July 23, 2020	July 27, 2020
SMP Regulatory Review and Approval	VT DEC	2 weeks	July 28, 2020	August 10, 2020
Site Construction/Oversight	Malone Properties/Stone	6 weeks	August 11, 2020	September 22, 2020
Engineered Barrier Construction/Oversight	Malone Properties/Stone	2 weeks	September 22, 2020	October 15, 2020

3. References

Code of Federal Regulations, Chapter 29 Part 1910, Occupational Safety and Health Standards, Hazardous Waste Operations and Emergency Response.

Stone Environmental, Inc., 2017a, *Phase II Environmental Site Assessment Report: Former Grossman Property, 260 River Street, Montpelier, Vermont (SMS #20164661)*, June 13.

Stone Environmental, Inc., 2017b*, Supplemental Site Investigation and Evaluation of Corrective Action Alternatives Work Plan, 260 River Street, Montpelier, VT 05602 (SMS# 2016-4661),* October 26.

Stone Environmental, Inc., 2018a, *Supplemental Site Investigation and Evaluation of Corrective Action Alternatives Investigation: Former Grossman Property, 260 River Street, Montpelier, Vermont 05602 (SMS #20164661)*, January 30.

Stone Environmental, Inc. 2018b, *Evaluation of Corrective Action Alternatives: 260 River Street, Montpelier, Vermont (SMS #20164661)*, September 7.

Stone Environmental, Inc. 2019, *Partial Corrective Action Plan: 260 River Street, Montpelier, Vermont SMS #2016466,* August 22.

Stone Environmental, Inc. 2020, *Corrective Action Construction Completion Report: 260 River Street, Montpelier, Vermont SMS #20164661,* March 12.

The Johnson Company, Inc., 2016. *Phase I Environmental Site Assessment, 260 River Street, Montpelier, Vermont 05602*, September 12.

VT DEC 2019, *Investigation and Remediation of Contaminated Properties Rule*, July 6.

Appendix A: Figures

VT

Map Location

N

0 0.125 0.25 0.5 Miles

0 500 1,000 1,500 2,000 Feet

Contour interval 20 feet

Hazardous Waste Site

SOURCES
(1) US Geological Survey topographic basement (ESRI/National Geographic Society)
(2) City of Montpelier Assessor's Parcel Data (2014)
(3) VT ANR Hazardous Waste Sites, 11/8/2016

Location Map

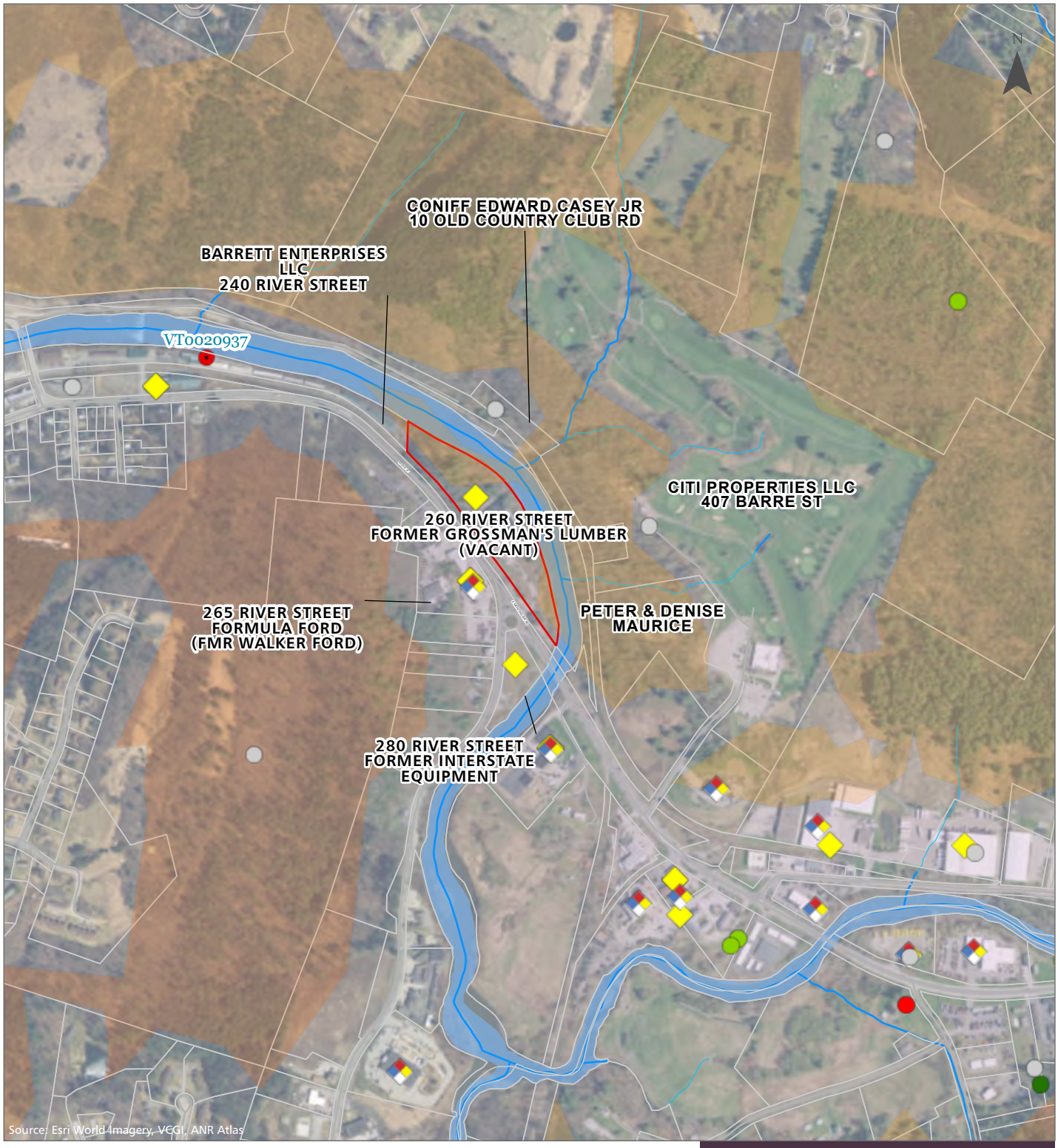
Figure 1

Former Grossman Property

260 River Street
Montpelier, Vermont

STONE ENVIRONMENTAL

O:\Proj-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\SSI_ECAA_WorkPlanFig1_Location Map.mxd: created on 11/30/16 by sah



LEGEND

Private Wells
- GPS Location
- screen digitized
- E911 Address

Hazardous Waste Generators

Hazardous Waste Sites

Habitat Blocks and Wildlife Corridors
- 3
- 2

Site Boundary

Parcel Boundary

Public Water Sources
- Inactive

Stream
- Intermittent
- Perennial

River

0 250 500
Feet

Figure 2: Vicinity Map

260 River Street

Malone 260 River St.
Montpelier Properties, LLC

STONE ENVIRONMENTAL

Path: O:\PROJ-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\16-163 2018 Monitoring Report ECAA\16-163 2018 Monitoring Report ECAA.aprx Figure 2 CAP Site VicinityExported: 7/24/2020 1:26 PM by lrajnak

LEGEND

- Former MGP Area
- Proposed Redevelopment Area
- 11/8/2018 (AQBOGS LLC) and 6/19/2019 (Stone Env) Field Wetland Delineation
- Transformer
- Tar in Sediments
- Septic System
- Former Coal/Coke Pile
- Concrete-Lined Tank
- Former Building Footprints from Sanborn Maps
- Parcel Boundary

N

0 50 100

Feet

Figure 3: Site Map

260 River Street

Prepared for
260 River St. Corporation, LLC

STONE ENVIRONMENTAL

Path: O:\PROJ-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\16-163 2018 Monitoring Report ECAA\16-163 2018 Monitoring Report ECAA.aprx Figure 3c Site PlanExported: 7/24/2020 1:46 PM by lrajnak

Winooski River

floodway

100–year floodplain

Class II Wetland Boundary (delineated by 2018 and 2019)

50 foot Wetland Buffer

existing building (12,950 sf) approx. ffe= 543.5'

500–year floodplain

existing overhang

New Addition (7,823 sf footprint) match existing FFE (543.5')

North Branch River Corridor

top of bank

riparian buffer

water setback

50' permanent easement

US ROUTE 2

US Route 2/ River Street

LEGEND

- BUILDING ADDITION
- BUILDING EXISTING
- WETLAND DELINATION
- CURB
- PARCEL BOUNDARY
- EDGE OF PAVEMENT
- FENCE
- PARKING LOT MARKINGS
- RAILROAD
- WETLAND BUFFER
- SUBSURFACE PIPING
- CATCH BASIN
- CLEAN OUT
- LIGHTING
- UTILITY POLE
- VEGETATION

Notes:
Sheet C1.04 Grading Plan drafted by Malone Properties. Stone Environmental added legend 7/24/2020.

New Building Addition
260 River Street, Montpelier, Vermont

Sheet C1.04
Grading Plan
Sheet 6 of 13

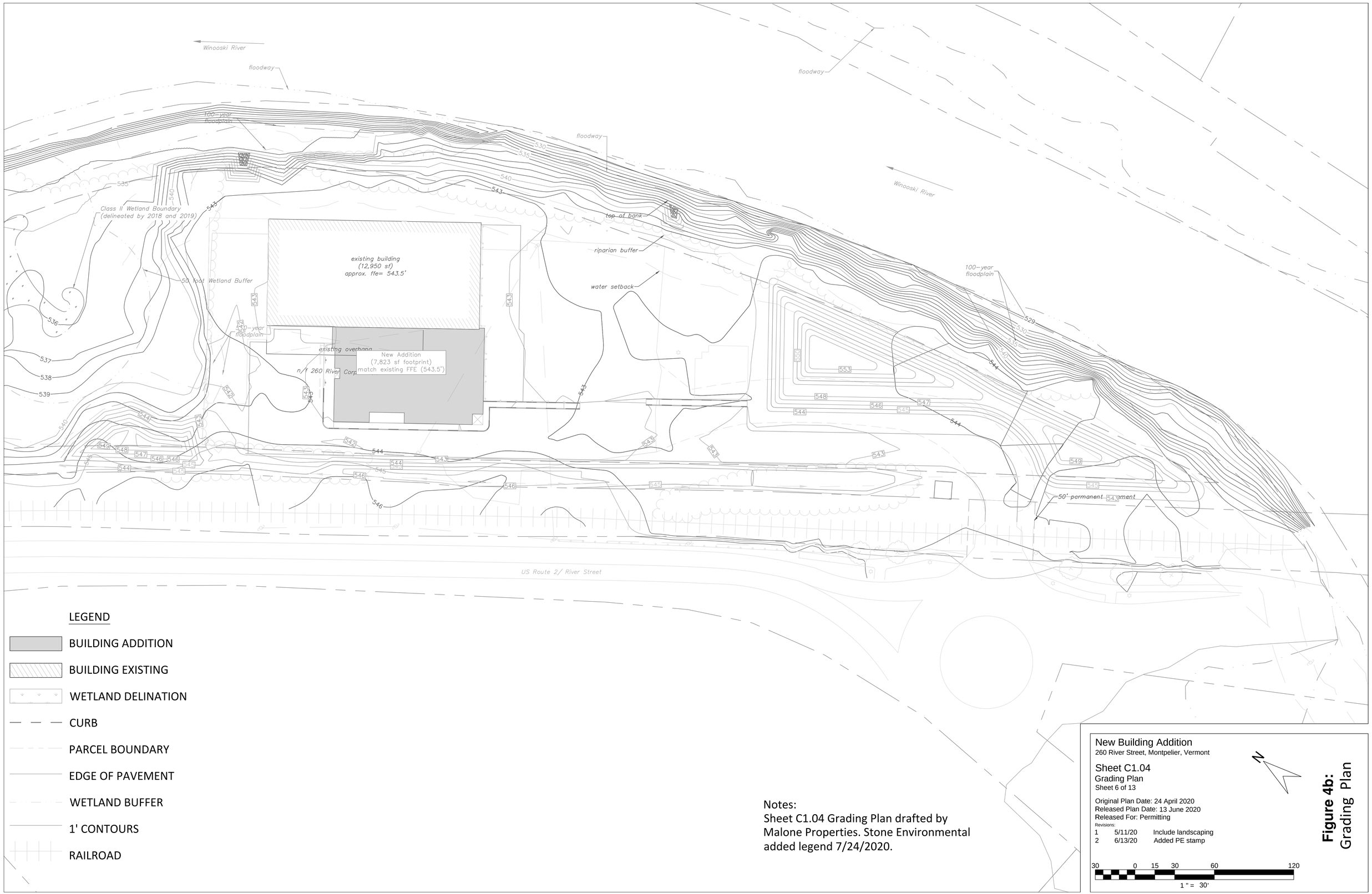
Original Plan Date: 24 April 2020
Released Plan Date: 13 June 2020
Released For: Permitting

Revisions:

1	5/11/20	Include landscaping
2	6/13/20	Added PE stamp

30 0 15 30 60 120
1 " = 30'

Figure 4a: Redevelopment Plan



Notes:
Sheet C1.04 Grading Plan drafted by Malone Properties. Stone Environmental added legend 7/24/2020.

New Building Addition
260 River Street, Montpelier, Vermont

Sheet C1.04
Grading Plan
Sheet 6 of 13

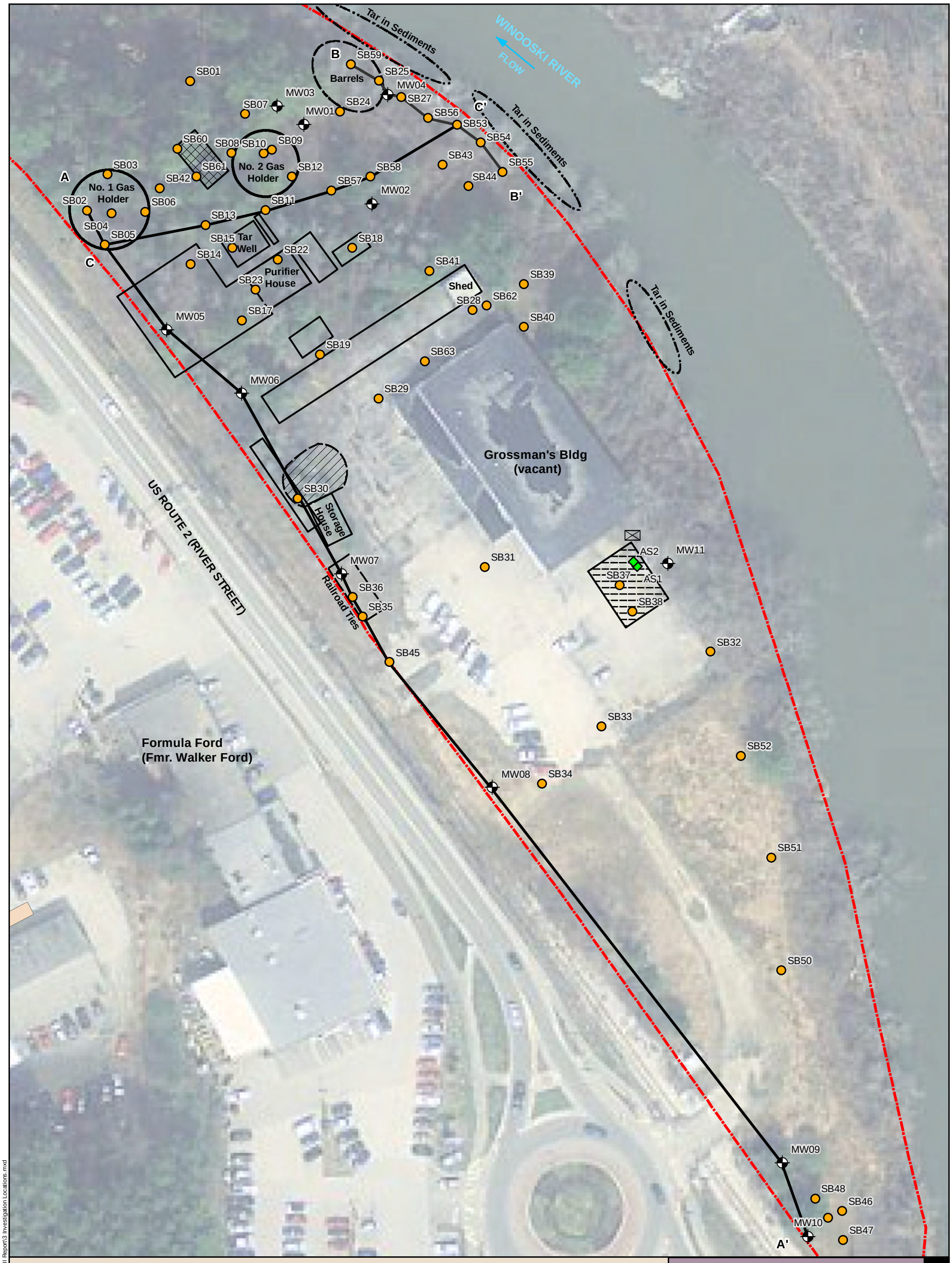
Original Plan Date: 24 April 2020
Released Plan Date: 13 June 2020
Released For: Permitting

Revisions:

1	5/11/20	Include landscaping
2	6/13/20	Added PE stamp

30 0 15 30 60 120
1 " = 30'

Figure 4b: Grading Plan



SOURCES
2013 aerial orthoimage (VCGI, 2013); City of Montpelier digital parcel data (2014); Sanborn Fire Insurance Maps (1925 and 1945); Draft Environmental Site Assessment, 260 River Street, prepared by the Johnson Company (JCO), October 1995

Phase II ESA Investigtation Locations

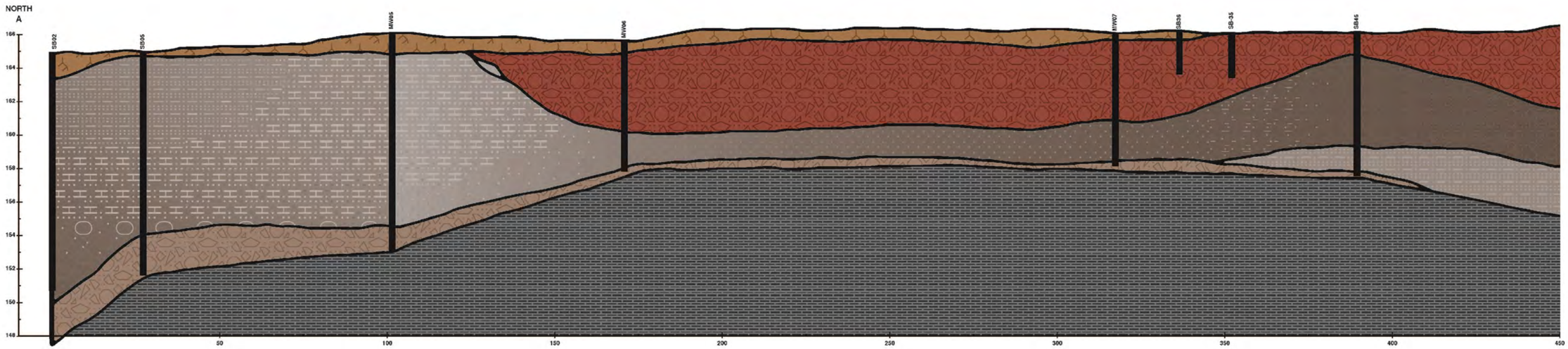
Figure 5

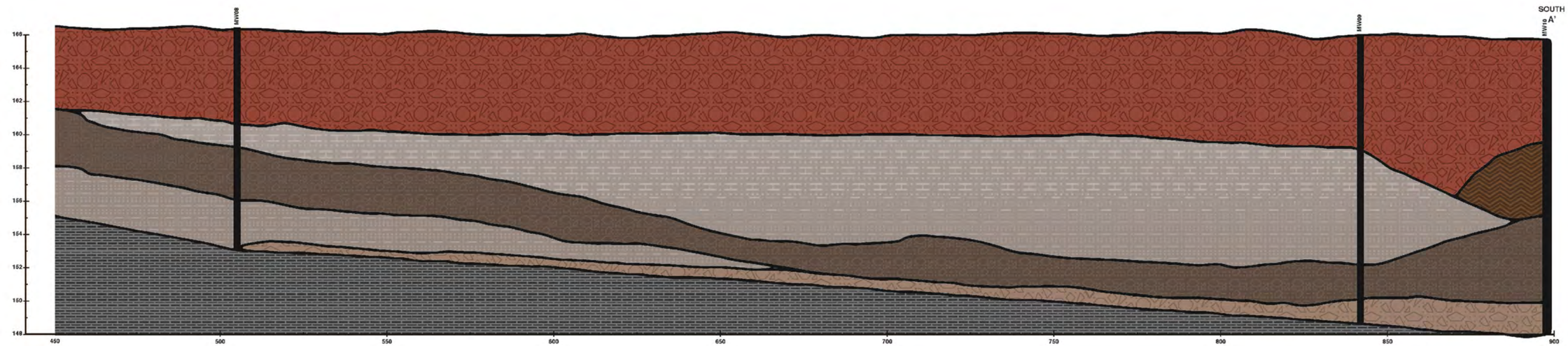
Former Grossman Property

260 River Street
Montpelier, Vermont

STONE ENVIRONMENTAL

O:\PROJ-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\Phase II Report\3 Investigation Locations.mxd





Legend

- Topsoil
- Fill
- Wood Chips
- Concrete
- Sand and Gravel
- Pebbly Sand
- Sand
- Sand and Silt
- Clay and Silt
- Till
- Bedrock

Notes:
1. 5x Vertical exaggeration

STONE ENVIRONMENTAL

Cross section A - A'

Figure 6

Former Grossman Property

260 River Street
Montpelier, Vermont

O:\Proj-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\Phase II Report\Figure 4 Section A.mxd

N

0 100 200 Feet

Legend

- Subject Property
- Parcel Boundary
- Concrete-Lined Tank (Stone, 2017)
- Former Gas Holder Footprint (Sanborn, 1925)
- Former Building Footprint (Sanborn, 1925; JCO, 1995)
- Former Coal/Coke Pile (Sanborn, 1925)
- Electrical Transformer
- Grossman's Septic System (JCO, 1995)
- Area of Tar in Sediments (Stone, 2008)
- DNAPL Observed

Soil PAH B(a)P TEC Results

- Soil Sample, PAHs detected (Results in mg/Kg)
- Soil Sample, PAHs not detected

Isopleths

- 1 mg/Kg
- 10 mg/Kg
- 100 mg/Kg
- 1000 mg/Kg

SOURCES

2013 aerial orthoimage (VCGI, 2013); City of Montpelier digital parcel data (2014); Sanborn Fire Insurance Maps (1925 and 1945); Draft Environmental Site Assessment, 260 River Street, prepared by the Johnson Company (JCO), October 1995

April 2017 Soil PAH B(a)P TEQ Results

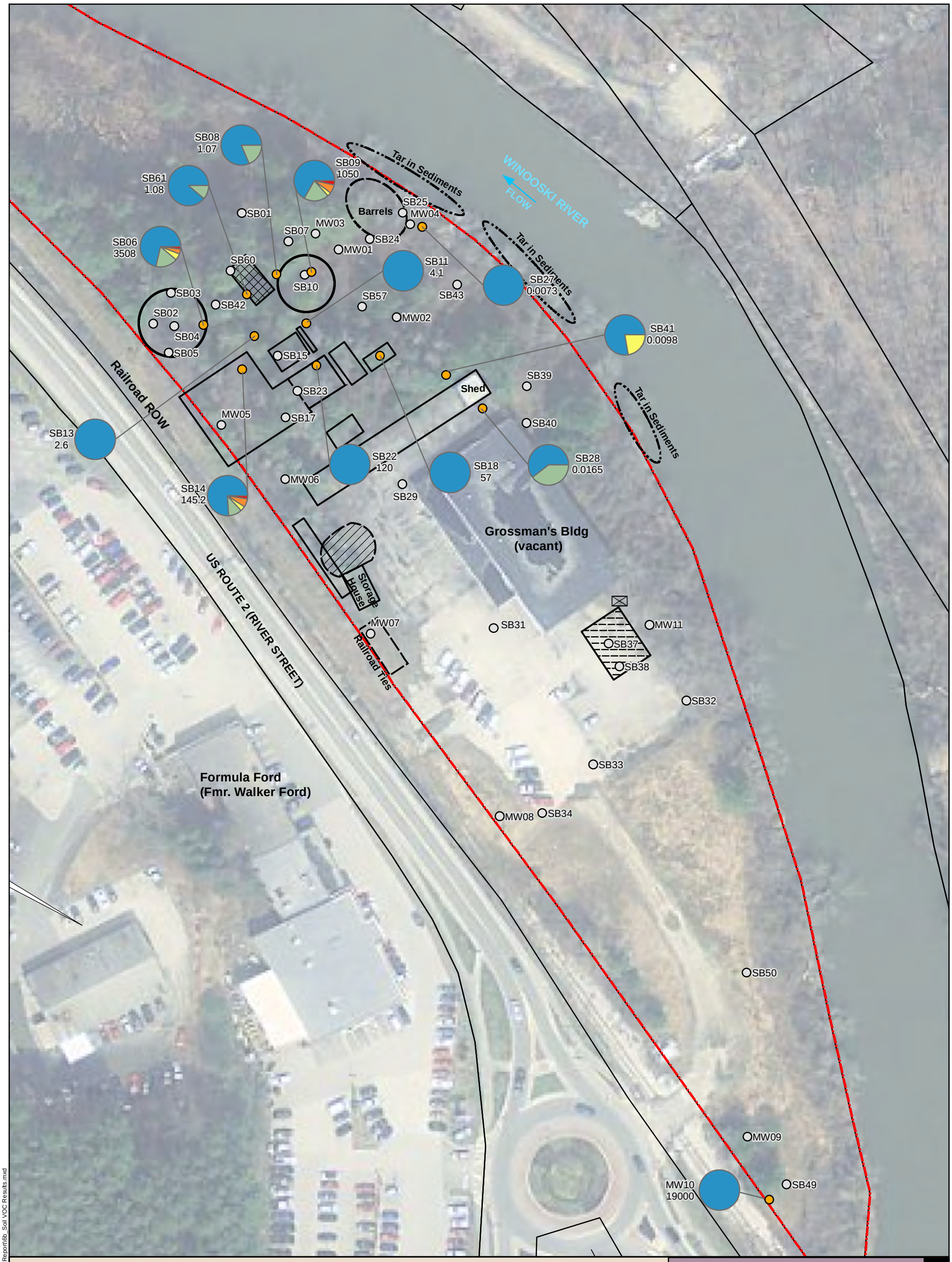
Figure 7

Former Grossman Property

260 River Street
Montpelier, Vermont

STONE ENVIRONMENTAL

O:\Proj-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\Phase II Report\6a_TECcontours.mxd



SOURCES
2013 aerial orthoimage (VCGI, 2013); City of Montpelier digital parcel data (2014); Sanborn Fire Insurance Maps (1925 and 1945); Draft Environmental Site Assessment, 260 River Street, prepared by the Johnson Company (JCO), October 1995

April 2017
Soil VOC Results

Figure 8

Former Grossman Property

260 River Street
Montpelier, Vermont

STONE ENVIRONMENTAL

O:\Proj-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\Phase II Report\6b_Soil VOC Results.mxd

SB76
SB78
SB77
SB79
SB82
SB81
SB80
SB83
Grossman's Bldg
(vacant)
Storage House
Railroad Ties
Increment #25
Composite B(a)P-TEQ Results
Soil Borings SB76 - SB83
2.5 feet: 0.062
5 feet: 20
ITE 2 (RIVER STREET)
ula Ford
Walker Ford)
DU1
B(a)P-TEQ 95% UCL:
2.47
DU2
B(a)P-TEQ 95% UCL:
3.25

Legend

- Subject Property
- Parcel Boundary
- Former Building Footprint (Sanborn, 1925, 1945; JCO, 1995)
- Former Coal/Coke Pile (Sanborn, 1925)
- Extent of Visible Coal-Tar Seep (8/17/2017)
- Proposed Building Footprint
- Grossman's Septic System

Sample Locations (Results in ug/kg)

- Soil Boring
- Decision Unit 1
- Decision Unit 2

Note: B(a)P-TEQ - Benzo(a)Pyrene toxicity equivalence quotient;
UCL = upper confidence limit

SOURCES
2013 aerial orthoimage (VCGI, 2013); City of Montpelier digital parcel data (2014); Sanborn Fire Insurance Maps (1925, 1945);
Draft Environmental Site Assessment, 260 River Street, prepared by the Johnson Company (JCO), October 1995;
Interstate Equipment bldg footprint digitized from 1994 aerial orthoimage (VCGI)

N
0 25 50 Feet

ISM Sampling and Soil Boring Analytical Results

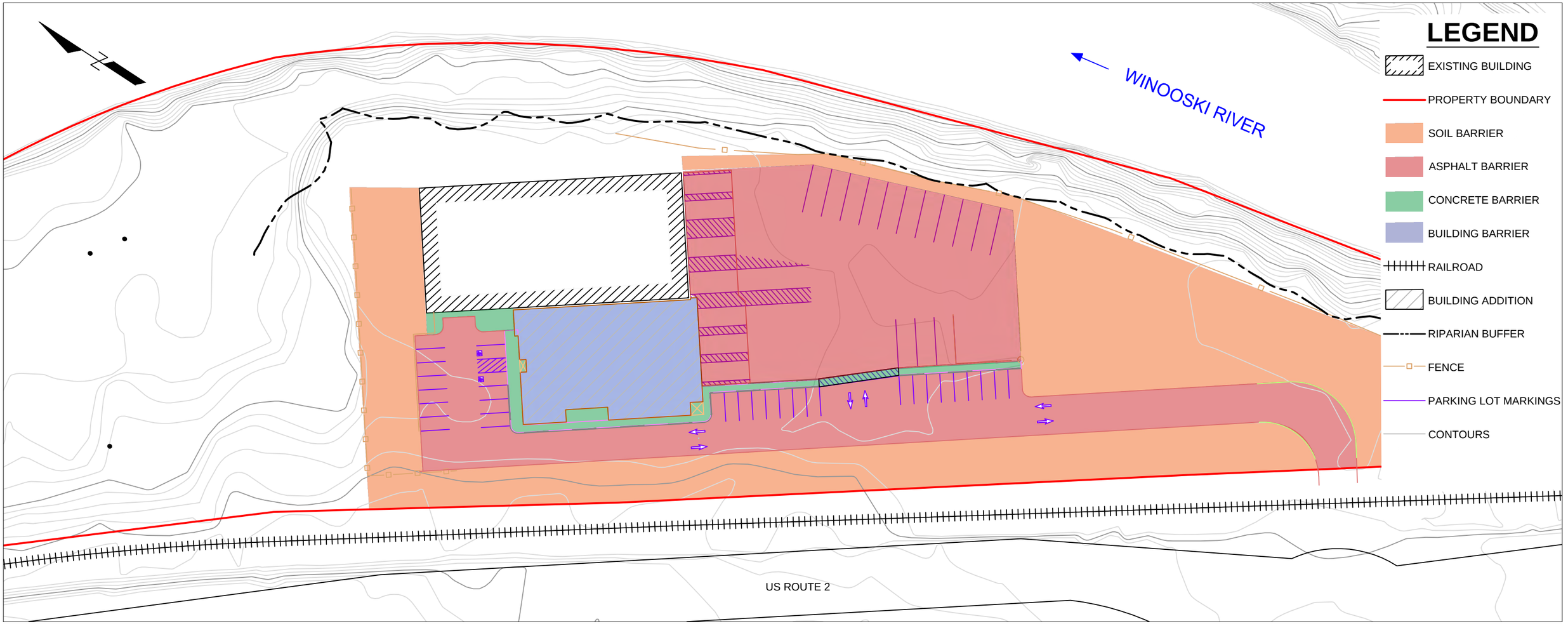
Figure 9

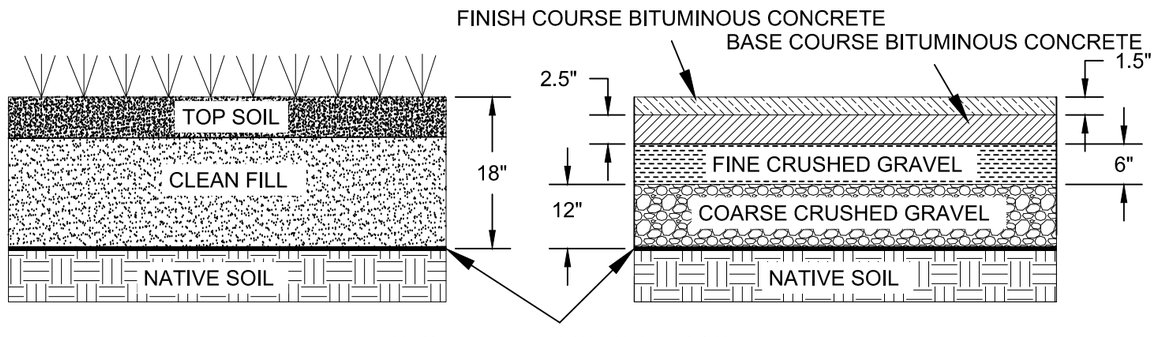
Former Grossman Property

260 River Street
Montpelier, Vermont

STONE ENVIRONMENTAL

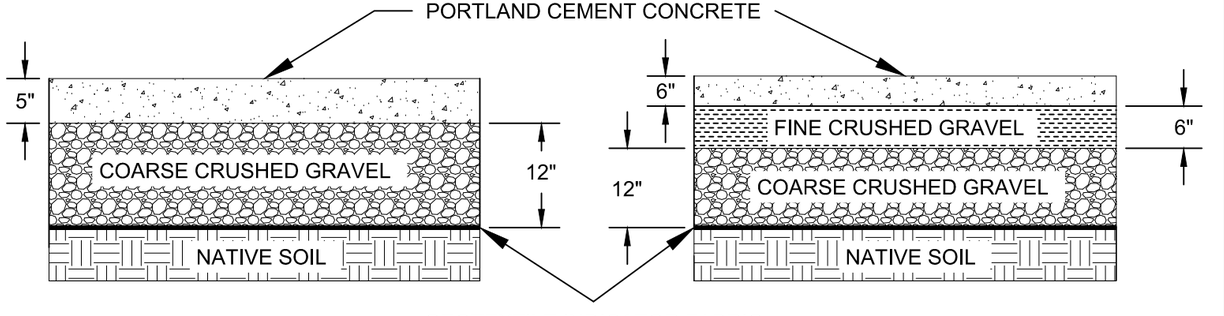
O:\Proj-16\CSC\16-163 Malone Grossmans Montpelier\GIS\MapDocuments\SSI_ECAA_Report\Fig6_DU and Soil Boring Results.mxd 1/16/2018 kmt





SOIL BARRIER DETAIL
N.T.S.

ASPHALT BARRIER DETAIL
N.T.S.



CONCRETE SIDEWALK BARRIER DETAIL
N.T.S.

CONCRETE FOUNDATION BARRIER DETAIL
N.T.S.

File: FILE LOCATION: O:\Proj-16\CSC\16-163 Malone Grossmans Montpelier\Data\AutoCAD\16-163_260 River Street_Elevation Data_with Elevations.dwg

DRAWING CREDITS

Drawn On: 7/24/2020
Drawn By: LBR
Checked On: 7/24/2020
Checked By: LJR
Project No.: 16-163

REVISIONS

#	Date	Drwn	Chk'd	App'd	Description

DRAWING SCALE

0 60 120 Feet

STONE ENVIRONMENTAL
535 Stone Cutters Way / Montpelier / VT / 05602 / USA
802.229.4541 / info@stone-env.com / www.stone-env.com

CAPPING PLAN
CORRECTIVE ACTION PLAN
260 RIVER STREET
MONTPELIER VERMONT

FIGURE NO. 10