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# Windsor Housing Central & Main Project (Lot 1) 133 & 137 Main Street Windsor, Vermont 05089

VTDEC #2022-5087  
KAS #507210630

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## CORRECTIVE ACTION PLAN

September 14, 2023

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*Prepared for:*

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*\*\*This corrective action plan is made possible in part by a grant from the Vermont Agency of Commerce and Community Development Brownfields Revitalization Fund Program.\*\**



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## Certification

This Corrective Action Plan for the Windsor Housing Central & Main Project property located at 133 & 137 Main Street, Windsor, Vermont, State of Vermont Department of Environmental Conservation Site #2022-5087, has been prepared and reviewed by the following personnel.

We certify under penalty of perjury that we are environmental professionals and that all content contained within this deliverable is to the best of our knowledge true and accurate.

Prepared By:

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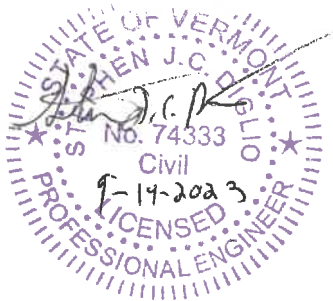
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Engineering Manager

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## Executive Summary

This Corrective Action Plan (CAP) has been prepared by KAS Inc. (KAS) to outline corrective actions proposed during the property redevelopment, known as the Windsor Housing Central & Main Project, located at 133 & 137 Main Street, Windsor, Vermont (Site or Lot 1). This work was conducted for the prospective purchasers, Windham & Windsor Housing Trust (WWHT) and Evernorth and funded by Mount Ascutney Regional Commission (MARC) using assessment funds from the Vermont Agency of Commerce and Community Development Brownfields Revitalization Program.

WWHT and Evernorth are collaborating with the Town of Windsor and the Windsor Improvement Corporation (current property owner) to redevelop the Site with a new three story, 25 unit mixed-income residential apartment building. As part of the redevelopment project, three existing abutting parcels, totaling approximately 1.06 acres, will be redefined into two parcels known as Lot 1 and Lot 2. The Site, or Lot 1, is an empty vacant lot of approximately 0.58-acres. A separate CAP has been prepared for Lot 2, which is identified separately due to funding agreements and different redevelopment goals. However, given that the proposed limited changes to Lot 2 (e.g., vehicular access to the proposed building on Lot 1 and regrading) are required for the redevelopment of Lot 1, Lot 2 is referenced in this CAP.

The overall project site (Lot 1 and Lot 2) is identified by the Vermont Department of Environmental Conservation (VT DEC) Sites Management Section (SMS) as SMS #2022-5087 for polycyclic aromatic hydrocarbons (PAHs) and lead in soil at levels above the Vermont regulatory standard. Previous use of the properties was residential and historical fire(s) have apparently occurred on former onsite structures. The PAHs and lead in soil is attributed to the historical use of fill onsite, the Site being in a long-time established urban environment, and/or from the historical fire(s). Fill soils containing brick, wood and slate have been observed throughout the Site down to depths ranging from approximately 2.0 to 5.0 feet below grade, and an average depth of approximately 4.0 feet below grade.

The objective of the corrective actions is to mitigate the potential exposure of impacted soils to Site users to the maximum extent practicable during and after Site redevelopment. This will be accomplished by implementing the following:

1. A soil management plan to ensure that impacted soils disturbed during construction are managed appropriately, do not migrate, and do not present a risk to potential sensitive receptors during construction. Impacted soils will be reused onsite as much as feasible. Excess soils will be properly disposed offsite;
2. Installation of engineered barriers to isolate impacted soils that will remain. The physical barriers will mitigate the potential for direct contact with contaminated soil; and,
3. Use of institutional controls to ensure engineered controls remain effective over time.

The corrective action work is planned for the 2024 construction season.



## 1.0 INTRODUCTION, BACKGROUND, AND SCOPE

This Corrective Action Plan (CAP) has been prepared by KAS Inc. (KAS) for the prospective purchasers, Windham & Windsor Housing Trust (WWHT) and Evernorth, to address subsurface contamination found at the property, located at 133 & 137 Main Street, Windsor, Vermont (Site, subject property, or Lot 1). This CAP has been prepared in accordance with the Vermont Department of Environmental Conservation (VT DEC) *Investigation and Remediation of Contaminated Properties Rule* (IRule). An IRule CAP checklist is provided in Appendix H.

The prospective purchasers have enrolled the Site in the Brownfields Reuse and Environmental Limitation Act (BRELLA) program. Preparation of the CAP has been sponsored by Mount Ascutney Regional Commission (MARC) using assessment funds from the Vermont Agency of Commerce and Community Development Brownfields Revitalization Program.

As part of the redevelopment project, three existing abutting parcels, totaling 1.06± acres (see Existing Conditions Plan, Appendix A), will be redefined into two parcels known as Lot 1 and Lot 2 (see Survey, Appendix A). This CAP specifically applies to the redevelopment of Lot 1. A separate CAP has been prepared for Lot 2, which is identified separately due to funding agreements and different redevelopment goals. At this time, minimal redevelopment is planned for Lot 2, which primarily includes vehicular access to the proposed building (on Lot 1).

The key project contacts include the following:

Property Owner:	Windsor Improvement Corporation Contact: Bob Flint, Executive Director Email: <a href="mailto:bobf@springfielddevelopment.org">bobf@springfielddevelopment.org</a> Phone: 802-885-3061 Mail: PO Box 445, Windsor, VT 05089
Windham & Windsor Housing Trust:	Contact: Peter Paggi, Director of Housing Development Email: <a href="mailto:ppaggi@homemattershere.org">ppaggi@homemattershere.org</a> Phone: 802-246-2113 Mail: 68 Birge St., Brattleboro, VT 05301
Evernorth	Contact: Matt Moore, Senior Developer Email: <a href="mailto:mmoore@evernorthus.org">mmoore@evernorthus.org</a> Phone: 802.863.8424 Mail: 100 Bank St., Suite 400, Burlington, VT 05401
MARC	Contacts: Thomas Kennedy, Director of Community Development; Cindy Ingersoll, Community Development Specialist Emails: <a href="mailto:tkennedy@marcvt.org">tkennedy@marcvt.org</a> , <a href="mailto:cingersoll@marcvt.org">cingersoll@marcvt.org</a> Phone: 802.674.9201 Mail: PO Box 320, 38 Ascutney Park Road, Ascutney, VT 05030

### 1.1 Site Description

Lot 1 consists of a 0.58± acre parcel located in the Windsor's Historic Downtown. In the surrounding area are mixed residential and commercial uses. The Site is currently vacant with no



buildings or improvements (see Existing Conditions Plan and Survey in Appendix A). A Site Location Map, Site Vicinity Map, and Site Map are provided in Appendix A. Site conditions and contaminants found in the soil are detailed in Section 2.0 Conceptual Site Model.

### 1.2 Applicable Environmental Media Standards

The VT DEC has established concentration standards for contaminants that have the potential to adversely affect human health or the environment. The contaminants of concern for the Site, and the basis for corrective actions, are summarized in the following table and compared to the applicable standard.

**Table 1: Contaminants of Concern and Applicable Standards**

Contaminant	Media	Vermont Soil Standards (VSS) Residential (mg/kg)	Vermont Urban Background Standard (mg/kg)
Lead, total	Soil	400	-
Benzo(a)pyrene	Soil	0.07	0.58*

\*Total benzo(a)pyrene toxic equivalents

### 1.3 Redevelopment and Reuse Plan

WWHT and Evernorth are collaborating with the Town and the Windsor Improvement Corporation (current property owner) to redevelop the Site with a new four-story, 25 unit mixed-income residential apartment building. The first level of the proposed building will be a covered garage area on a 6-inch slab, 12-inch select sub-grade materials, and footings. The remainder of the property is planned for paved parking, stormwater treatment (infiltration basins beneath the parking area), retaining walls, and landscaped areas. Pedestrian access will be from Main Street. Vehicular and pedestrian access will be from Central Street. A Grading Plan by Engineering Ventures, which shows the redevelopment plans, is provided in Appendix A. Architectural renderings are provided in Appendix B.

### 1.4 Objective and Scope of Corrective Actions

The objective of the corrective actions, as detailed in Section 3.0, is to mitigate the potential exposure of impacted soils to sensitive receptors to the maximum extent practicable during and after Site redevelopment. This will be accomplished by implementing the following:

1. A soil management plan to ensure that impacted soils disturbed during construction are managed appropriately, do not migrate, and do not present a risk to potential sensitive receptors during construction. Impacted soils will be reused onsite as much as feasible. Excess soils will be properly disposed offsite;
2. Installation of engineered barriers to isolate impacted soils that may remain. The physical barriers will mitigate the potential for direct contact with contaminated soil; and,
3. Use of institutional controls to ensure engineered controls remain effective over time.

### 1.5 Evaluation of Corrective Action Alternatives

This CAP is being submitted without an evaluation of corrective action alternatives (ECAA). An ECAA exemption, per §35-604(b), applies to the Site since the following criteria are satisfied:



- There are no impacts to drinking water sources and vapor intrusion is not occurring;
- Direct contact threats to sensitive receptors can be addressed through removal of a limited amount of source material or capping with an engineered barrier; and,
- The proposed corrective action (soil capping) has been utilized at many other sites and has been shown to be reliable, cost effective, and effective at mitigating exposure to contaminants.

## 1.6 Public Notice and CAP Approval

Once reviewed by the VT DEC, this CAP will be uploaded into the Environmental Notice Bulletin (ENB) for the required 30-day public comment period. A notice of this CAP will be mailed to all adjoining property owners (Appendix C). A tax parcel map, which shows who will receive notification of the CAP public comment, is included in Appendix C. The notice will consist of a completed VT DEC Official Notice form (Appendix C). Any information request or public comment will be considered prior to final CAP approval.

## 1.7 Implementation of the Corrective Action Plan

Following CAP approval by the VT DEC, implementation of the CAP is planned for the 2024 construction season. Upon completion of the CAP, a Corrective Action Construction Completion Report, per Subchapter 5, §35-507 of the IRule will be prepared and submitted to the VT DEC.

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## 2.0 CONCEPTUAL SITE MODEL

The goal of a conceptual site model (CSM) is to present the source, nature and extent of the contamination at the site and evaluate the potential risk the contaminants pose to receptors via fate and transport mechanism. For the purpose of this CSM, the “project site” includes both Lot 1 and Lot 2, totaling 1.01± acres (excludes the 0.05± acres land lease on Lot 2).

### 2.1 Site Conditions and Property History

The project site is located in Windsor, VT along the eastern side of Main Street (US Route 5). River Street is the north, Central Street to the east, and Etta Frasier Drive to the south. The project site comprises of three parcels, totaling 1.06± acres, which are identified by the Town of Windsor as tax lot 564133 (a.k.a. 133 Main Street), 564137 (a.k.a. 137 Main Street), and 564139 (a.k.a. 139 Main Street), as shown in the Existing Conditions Plan by Engineering Ventures PC (Appendix A). As part of the redevelopment project, the three existing abutting parcels, are being redefined into two parcels known as Lot 1 and Lot 2, as shown in the Survey plan (Appendix A). The project site is located within the central business zoning district, which is characterized as a mixed residential and commercial area. The project site contains unlevelled grounds throughout with a substantial slope along the western and eastern portion of the property (e.g., down from Main Street and towards Central Street). The Windsor Diner (135 Main Street) and area immediately around it (e.g., 10 feet from building footprint) consist of a land lease specified in land records associated with Lot 2. Otherwise, there are no other buildings on project site. Lot 1 is covered by grass vegetation and contains a partially buried concrete slab along the eastern edge of the lot. A gravel driveway (Etta Frasier Drive) from Central Street leads to a gravel parking area on Lot 2. From this gravel parking area, a gravel path leads to the Windsor Diner, although the primary access to the restaurant appears to be via Main Street. A Site Map which shows relevant Site features and the parcel layout is included in Appendix A.





Based on a review of topographic maps and aerial photography, the project area lies at an approximate elevation of 345 feet above mean sea level. The nearest surface water is the Connecticut River, which is located approximately 0.25 miles east. Based on topography, the surface drainage from the project site is anticipated to flow in a general easterly direction. Utilities servicing the project area appear to consist of municipal sewer, with a manhole located along the northeastern portion of the project site. No other subsurface infrastructure is known to be present beneath the project area and none was reported by the Town of Windsor.

As of July 2022, during KAS' most recent property visit, neighboring property uses consisted of the following:

- North: Restaurant (Bistro Midva) / Commercial building
- South: Mixed commercial / residential properties and Etta Frasier Drive
- East: Residential properties
- West: Windsor Diner and Main Street (US Route 5)

In August 2021, KAS performed a Phase I ESA of the Lot 1 and Lot 2. The assessment revealed the historical use of the Site as residential and historical fire(s) at one of the buildings on the property. The assessment identified following recognized environmental condition (REC):

- The potential presence of historical fill material beneath the property as a result of historical urban use and historical fire(s).

## 2.2 Apparent Source(s) of Release

The PAHs and lead in soil is attributed to the historical use of fill onsite, the project site being in a long-time established urban environment, and/or from the historical fire(s). Fill soils containing brick, wood and slate have been observed beneath the project site.

## 2.3 Geology

The soils beneath the project site are mapped as littoral sands and pebbly sands of glacial origin.<sup>1</sup> Soils encountered during soil boring advancement in October 2021 and July 2022 generally consisted of well to medium coarse silty sand with gravel underlain by a native coarse poorly graded sand.

Evidence of historical fill has been noted beneath the project area and has mainly been concentrated in the upper five feet. Bedrock in the vicinity of the project site is mapped as Devonian-aged Gile Mountain Formation, which is described as gray phyllite and schist.<sup>2</sup> No bedrock outcrop points are present at the project site and no wetland areas have been identified on the Site property according to VT DEC records.

## 2.4 Hydrogeology

Windsor is situated within the Connecticut River watershed. As such, all land in Windsor ultimately drains to the Connecticut River, which is located approximately 0.25 miles east of the project site. Based on the topography of the local region, groundwater from the project site is expected to

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<sup>1</sup> Doll, 1970.

<sup>2</sup> Doll, 1961.



flow easterly towards the Connecticut River. Groundwater was encountered in one of the soil borings (SB21-2) advanced on October 6, 2021 at a depth of approximately 10.5 feet below grade.

## 2.5 Contaminant Distribution

In October 2021, KAS conducted a Phase II ESA, which initially assessed the environmental conditions of soil beneath the project site. KAS performed a Site Investigation in July 2022 for further characterization of soils. Soil contaminant summary tables are provided in Appendix D. Below is a summary of the findings.

On October 6, 2021 six soil borings (SB21-1 through SB21-6) were advanced at various locations on the project site to assess the potential presence of urban fill. No elevated photoionization detector (PID) readings or odors were noted in any of the soil borings advanced on October 6, 2021. Fill material consisting of brick, wood, and slate was noted from surface grade down to 5.0 feet below grade. The interface between urban fill and underlying native sandy layer was visually distinguishable. Composite soil sampling was completed at the Site property to assess the potential for arsenic, lead and PAH impacts. PAHs were detected in five of the six samples at concentrations above the laboratory reporting limits. Samples COMP A (0-2'), COMP A (2-5'), COMP B (0-2') and COMP B (2-5') contained Benzo(a)pyrene (BaP) at a concentration exceeding the applicable Vermont Soil Standard (VSS) for a residential property. PAHs expressed as the Toxic Equivalent Quotient (TEQ) for BaP exceeded the background level soil concentration for urban sites in the COMP A (0-2'), COMP A (2-5'), COMP B (0-2') and COMP B (2-5') samples. A concentration of arsenic and lead was reported in all samples; however, the concentrations were below the applicable VSS. Based on these results, it was determined that urban fill and related contaminants were a concern for the Site and additional investigation was deemed warranted by the VT DEC/IRule.

On July 6, 2022, eighteen soil borings (SB-1 through SB-18) were advanced by KAS at various locations on the project site to further assess PAH, arsenic and lead impacts to soils. SB-1 through SB-6 were within Lot 2. SB-7 through SB-18 were within Lot 1. No elevated PID readings or odors were noted in any of the soil borings. Discrete soil samples were collected from the soil borings at shallow depths, (0-18" below grade), intermediate depths (between 18" to the native sandy layer), and depths within the deeper native soil to assess the potential for arsenic, lead and PAH impacts. PAHs expressed as the TEQ for BaP exceeded the background level soil concentration for urban sites in 11 of 18 shallow soil samples and in 6 of 18 intermediate soil samples. No PAHs were detected in any of the deeper underlying native soil samples. Arsenic and lead concentrations were reported in all of the samples (shallow, intermediate, and native sand samples); however, the concentrations were below the applicable VSS except at SB9-S (shallow 0-18" sample) where total lead was reported at 410 mg/kg, which is slightly above the VSS of 400 mg/kg.

The source of the PAH and lead impacts is believed to be related to the historical placement of fill on the project site and/or the site lying in a long-time established urban environment. Fill soils containing brick, wood and slate have been observed throughout the project site down to an average and maximum depth of approximately 4.0 and 5.5 feet below grade, respectively. The interface between urban fill and underlying native sandy layer is visually distinguishable.

## 2.6 Contaminant Fate and Transport

Generally, PAHs and lead exhibit low mobility (do not easily dissolve in water) and will persist in the environment once adsorbed onto soils. These contaminants are slow to degrade under natural conditions. The risk for groundwater transport and/or leaching of impacts from shallow soil



appears to be low given groundwater is presumed to be lie several feet below the urban fill layer based on the data collected during soil boring advancement in October 2021 and July 2022.

## 2.7 Exposure Pathways and Sensitive Receptor Risk Assessment

Potential exposure pathways to soil impacts identified at the project site have been evaluated. Routes of potential exposure to current and future property users include absorption via dermal contact and/or ingestion of soil. Also, shallow soils can become airborne as dust particles, which may result in exposure via inhalation. Impacted soils have been identified at shallow depths across the Site. The potential redevelopment plan proposed for the project site property consists of building residential housing which could result in a potential exposure risk for future site users to shallow soils. On Lot 2, the direct contact exposure risk is currently minimized due to the presence of a gravel parking area.

## 2.8 Data Gap Analysis

Potential data gaps in the CSM have been evaluated and none have been identified. Based on the known historical use (residential) of the Site and soil data collected to date, the CSM presents a complete understanding of contaminant impacts. Additional investigation is not recommended.

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# 3.0 CORRECTIVE ACTION PLAN

Corrective actions are required to mitigate the potential exposure of impacted soils to sensitive receptors to the maximum extent practicable during and after Site redevelopment.

## 3.1 Soil Management Plan

The soil management plan establishes guidelines for the excavation, loading, and temporary stockpiling of contaminated soil. Excavated soil as part of Site redevelopment will either be reused onsite (if feasible) and ultimately capped with engineered barriers (Section 3.2) or disposed offsite. The deeper native sandy soil, beneath the impacted fill layer, is not considered to be contaminated based on historical testing. Therefore, excavated native soils will either be reused onsite and capped by engineered barriers or managed as non-regulated soil and transported to a fill site. Excess native soils will not be used as part of the engineered barriers.

### 3.1.1 Soil Excavation & Offsite Disposal

The following table (next page) summarizes soil excavation estimates. The plans that show the excavation areas for the building, footings, and utility trenches are included in Appendix A. The excavation area for the building does not include the full building footprint as it is anticipated that the east/back side will need imported/clean suitable structural fill to achieve the required finished grade. As shown in Table 2, the total excavation volume is approximately 5,086 cubic yards, of which 3,691 cubic yards is estimated to be contaminated based on an average fill soil depth of 4.0 feet below grade. Therefore, 3,691 cubic yards is the estimated amount of soil requiring offsite disposal. This volume of soil is anticipated to be further reduced to 3,361 cubic yards (or 5,042 tons using a 1.5 tons per cubic yard conversion) by reusing approximately 330 cubic yards of impacted soils onsite, as discussed in Section 3.1.2. The limit of disturbance (LOD) also extends into Lot 2, which is addressed in a separate CAP. A grading plan is provided in Appendix A.



It is important to note that the depth of the contaminated fill layer ranges from approximately 2.0 to 5.0 feet below grade and that the fill layer and native sandy soil are visually distinguishable. Therefore, in areas where the anticipated excavation is deeper than the fill layer (e.g., building slab, structural footings, and utility trenches), segregation of soils will be determined on a visual basis in the field. This segregation is an important aspect of minimizing sending non-regulated soil to the landfill and reducing costs.

**Table 2: Soil Estimates**

Proposed Material	Approx. Area (square feet)	Approx. Excavation Depth (feet) <sup>(1)</sup>	Estimated Excavation		Impacted Fill Soil <sup>(3)</sup>	Native Soil
			Volume (cubic feet)	Volume (cubic yard) <sup>(2)</sup>	Volume (cubic yard)	Volume (cubic yard)
Building Slab Portion	4,736	7.5	35,520	1,316	702	614
Building Foundation Footings	3,973	7.5	29,798	1,104	589	515
Paved Surfaces (excluding stormwater system)	6,437	2.3	14,805	548	548	-
Underground Stormwater Treatment System	2,408	5.0	12,040	446	357	89
Concrete (access ways & non-structural surfaces)	2,468	3.0	7,404	274	274	-
Retaining Wall	421	2.0	842	31	31	-
Grass	5,294	1.5	7,941	294	294	-
Utility Trenching - Electrical	-	-	-	255	255	-
Utility Trenching - Stormwater	-	-	-	720	576	144
Utility Trenching - Water	-	-	-	13	8	4
Utility Trenching - Sewer	-	-	-	85	57	28
Sum:				5,086	3,691	1,395
Estimate of impacted fill soils reused onsite (Section 3.1.2):				-	330	-
Estimate of soil requiring offsite disposal:				-	3,361	-

Notes: (1) The excavation depth is based on the thickness of proposed material.  
 (2) 27 cubic feet in a cubic yard.  
 (3) Impacted fill soil volume is based on an average depth of 4.0 feet below grade.

Prior to the completion of the site investigation, KAS shared the soil sampling data with Casella Waste Management (Casella) to determine if the data collected to date is sufficient to prepare a waste profile for approval for future soil disposal at the Coventry, VT, Morrisonville, NY, and/or Bethlehem, NH landfills. Casella indicated the data collected to date is sufficient to obtain a waste profile for the soil to be used as landfill alternative daily cover. Therefore, no additional waste characterization sampling is anticipated.

Excavated soils will be live loaded onto tractor trailers and/or dump trucks provided by the disposal/receiving facility. To prevent the migration of contaminated soil, the following will be verified prior to each truck leaving the site:

- There is no evidence of liquid leaking from the truck bed;
- Tailgates are latched;
- Loads are covered; and,



- There is no evidence of excavated soil being tracked out of the excavation area.

The offsite disposal of soil will be documented via transportation bill of lading/manifests and/or truck scale tickets from the disposal facility.

### 3.1.2 Soil Reuse Onsite and Capping

To the extent feasible, impacted fill soils will be strategically reused onsite to raise grades to desired final elevations, then capped with engineered barriers (Section 3.2). The reuse of impacted fill soil onsite decreases the amount of soil requiring offsite disposal and reduces costs. Impacted fill soils will not be reused beneath or adjacent to the building structural foundation/footings or beneath the stormwater infiltration basin (Section 3.1.3). Reuse of impacted fill soils will be limited to Lot 1. The main area that fill soils may be reused, based on achieving required finished grades, is beneath the proposed asphalt pavement near the proposed retaining wall along the east side of the Site. The estimated fill capacity, in which impacted soils may be reused, is 330 cubic yards. A cut/fill analysis for this specific area (paved driveway) is provided in Appendix A.

Additional capacity for the reuse of impacted fill soils onsite may be achieved via over excavation, the feasibility of which will be determined during the excavation/construction phase. Over excavation would involve the excavation/removal of native sandy soils, beyond the estimated excavation depths in Table 2 (e.g., beneath paved, non-structural concrete, and grass surfaces). Over excavation and the segregation of impacted fill and native soils would be determined based on visual inspections in the field. Given that over excavation means handling/moving soils multiple times, it is not intended for the onsite reuse of small volumes of impacted fill.

All areas in which impacted fill soils remain and/or are placed beneath engineered barriers will be identified and documented in the Corrective Action Construction Completion Report. It is proposed soils reused onsite be placed at a depth immediately below the engineered barriers, not to exceed a depth of 7.0 feet below grade. This will minimize the potential for contaminants to impact the groundwater, which is estimated at 10.5 feet below grade. Excavated soil slated for reuse onsite may require temporary stockpiling (see Section 3.1.4).

### 3.1.3 Stormwater Infiltration Basin

A stormwater infiltration basin is proposed beneath the parking lot (see Lot #1 Corrective Action Plan ENV.1, Appendix A). Stormwater runoff will be conveyed to this basin and treated as it infiltrates down and into the soils and ultimately into the groundwater table. The depth of the basin is approximately 5.0 feet below grade. As such, all fill soils beneath this specific area, will be excavated and reused elsewhere or disposed offsite. Removal of impacted fill soils minimizes the potential for contaminants to migrate after the infiltration basin is installed. Permitting that may be required for the stormwater infiltration basin will be obtained by the developer and is beyond the scope of this CAP.

### 3.1.4 Temporary Stockpiles

The use of temporary onsite soil stockpiles is anticipated as part of the soil management plan. Soils slated for offsite disposal and/or unexpected and uncharacterized contaminated soil encountered during excavation may require temporary stockpiling. Transport truck scheduling issues may also result in temporary stockpiles. Should grossly contaminated soil be encountered, as determined via visual and/or olfactory methods, these soils will be segregated into a separate stockpile. Characterization and disposal options will be evaluated by KAS and discussed with the VT DEC at that time. A VT DEC stockpile form (e.g., Management of Non-Hazardous Contaminated Soil

Request Form) is provided in Appendix E. The VT DEC requires minimum distances between stockpiles and sensitive environments. A stockpile onsite would satisfy the setback requirements except possibly to the property boundary and to the adjacent residential properties. To mitigate potential contaminant migration and impacts to these sensitive receptors, stockpiles will be fully encapsulated in a minimum 6-mil plastic sheeting at all times with appropriate anchors to keep the cover in place. Stockpiles will be located onsite and will be segregated from imported soil and construction materials. Stockpiles will be routinely inspected, and damaged covers will be promptly replaced. Stockpiles will be continuously encircled with silt fences. The stockpile area will be appropriately graded to control run-off and will be in areas not subject to flooding or excessive sheet flow during storm events. Possible locations of temporary stockpiles are shown in the Site Map with Stockpiles (Appendix A); however, the locations may vary slightly as actual onsite locations will be determined by the general contractor depending on construction/site constraints at the time. Also, temporary stockpiles may be placed on Lot 2 for staging purposes only. Lastly, temporary stockpiling is not generally done during the winter season, which is beyond the typical construction season (e.g., December 1 to April 1). However, depending on the weather, Site conditions, and construction schedule, the start of excavation activity may begin in March.

### 3.1.5 Dewatering and Water Treatment

Excavation depths are generally anticipated to be above the depth of groundwater. As such, dewatering during excavation is not anticipated to be a major component of the construction. Nonetheless, depending on conditions at the time of construction, groundwater may be encountered during the deepest excavations. If groundwater is encountered during construction activities and needs to be managed to facilitate the redevelopment, it will be containerized pending analytical results. If a significant amount of groundwater requires dewatering, a discharge permit will be obtained as needed.

## 3.2 Engineered Barriers

Soil impacted with PAHs and lead will remain after site redevelopment to a limited degree. To mitigate the potential risk of exposure to and possible migration through erosion, engineered isolation barriers will be constructed to cap impacted soil that will remain onsite. In general, the engineered barriers will include a concrete building foundation and slab, a paved parking lot and accessways, concrete walkways, and pervious greenspace. Table 2 of Section 3.1.1 and the Lot #1 Corrective Action Plan ENV.1 (Appendix A) provide estimated square footage coverage of each engineered barrier type. A geotextile fabric will be used as an indicator material between the engineered barriers/caps and the underlying impacted soil. The impervious surfaces will be underlain with a minimum of 6-inches of clean/imported fill or sub-base material per the IRule. Only clean/imported fill will be used in the construction of the engineered barriers. A relatively small portion of the Site will be greenspace or landscaped areas (see Lot #1 Corrective Action Plan ENV.1 in Appendix A). For these pervious areas, a soil barrier of at least 18-inches, per the IRule, is proposed. Several trees are proposed within the greenspace areas. The geotextile fabric will be installed up to the tree well circumference.

A small grass area may remain undisturbed (e.g., beyond the proposed retaining wall along the eastern Site boundary). In Lot #1 Corrective Action Plan ENV.1 (Appendix A), this area is shown as a non-shaded/non-colored area between the property boundary and the LOD. Although contaminants that may be present in the fill soils will remain in this area, the potential exposure risk is low given that the area will not be accessible due to the proposed retaining wall and steep grading.





### 3.3 Performance Standards for Soil Management and Engineered Barriers

KAS will periodically check in on the excavation progress and document that the work is being completed in accordance with the CAP. The proposed inspection frequency will generally depend on key milestones/activities associated with the soil management plan (Section 3.1). Such activities may include, but not necessarily be limited to, the following: excavations, reuse of impacted soils onsite, inspection of temporary stockpile(s), and loading of transport trucks. The offsite disposal of soil will be documented via transportation bill of lading/manifests and/or truck scale tickets from the disposal facility.

Proper construction of the barriers will depend largely on the contractor adhering to the civil engineering plans. During construction of the barriers, KAS will conduct periodic visual inspections and provide documentation via field notes and photos.

### 3.4 Erosion Control

The anticipated area impacted by the Site redevelopment (or LOD), for Lot 1 and Lot 2 combined, will be less than 1-acre (e.g., 0.89± acres). Therefore, a stormwater Construction General Permit is not required. However, an Erosion Prevention and Sediment Control (EPSC) Plan, which is intended to minimize off-site migration during construction activities, and is especially important for sloped sites, will be prepared as part of the construction/civil design plans. The EPSC plan, which will outline standard erosion control measures, per the Vermont Low Risk Site Handbook, will be used to minimize soil migration during CAP implementation. Should the LOD expand to encompass an area of 1-acre or greater, a stormwater Construction General Permit would be required. If so, this permit would be obtained by the developer and is beyond the scope of this CAP.

Generation of dust during CAP implementation will be addressed as follows to minimize the inhalation pathway during construction: all excavated surfaces will be wetted with water as needed to minimize dust; and calcium chloride may also be used to control dust on exposed excavation surfaces.

### 3.5 Health and Safety Plan (HASP)

A HASP for the corrective action area will be prepared and implemented to govern the safety aspects associated with the corrective action activities in accordance with OSHA requirements. A 40-hour OSHA 1910.120 trained personnel must be appointed as the Site Safety Officer with a backup also designated. A copy of the HASP will be kept onsite and will be available to other parties upon request. A copy of the HASP is included in Appendix F.

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## 4.0 CORRECTIVE ACTION OPERATION & MAINTENANCE PLAN

The property owner will be required to periodically visually inspect the engineered barriers (pavement/concrete caps and soil caps) and make subsequent repairs, if needed. Given that engineered barriers, in accordance with the minimum thicknesses of the IRule, are proposed for the entire redevelopment area, the annual inspection form known as the Land Use Restrictions – Annual Institutional Control Inspection Form is not applicable. No other long-term monitoring and/or maintenance requirements are anticipated.



In the future, should excavation become necessary in the corrective action areas, prior notification to the VT DEC must be made along with a plan of the work to be done. The integrity of the membrane underlying the soil cap areas must be maintained during work including patching replacement if breached.

## 5.0 PERMITS, CONTRACTORS, REPORTING, SCHEDULE, AND COST

### 5.1 Permits / Approvals

CAP approval from the VT DEC is required prior to CAP implementation. Additional permits/approvals that are beyond the scope of this CAP may be required and are the responsibility of the owner. Such permits include zoning, water/wastewater, stormwater, and building permits. This project is believed to meet the high priority housing criteria and, therefore, it is anticipated that a jurisdictional opinion will consider the Site exempt from Act 250. No other permits are known to be required.

### 5.2 Contractors and Sub-Contractors

Contractors are to yet to be determined. Depending upon contractor availability, the following is a partial list of potential contractors:

**Table 3: Contractors and Sub-Contractors**

Company	Contact Information	
<i>Excavation and Site Restoration</i>		
S.D. Ireland	Contact: Randy LaFramboise Williston, VT 05495	(802) 658-0201
Engineers Construction Inc	Contact: Ed Gaudrea Williston, VT 05495	(802) 863-6389
<i>Waste Disposal Facilities</i>		
CleanEarth (formerly ESMI)	Contact: Mike Phelps Louden, NH	(800) 950-7645
New England Waste Services of Vermont	Contact: Scott Sampson Coventry, VT	(802) 334-5795
<i>Laboratories</i>		
Eastern Analytical, Inc	Contact: Jennifer Laramie Concord, NH	(603) 410-3881
Endyne, Inc	Contact: Harry Locker Williston, VT	(802) 879-4333

### 5.3 Reporting

Following the completion of the CAP implementation, a Corrective Action Construction Completion Report will be prepared per the IRule. The report will describe the work performed during construction and note deviations, if any, from the approved CAP.

### 5.4 Schedule

Following CAP approval by the VT DEC, the start of CAP implementation is anticipated for the spring of 2024. This schedule is dependent on selection of a contractor. The approved CAP will be provided to contractors bidding on the redevelopment work at the Site.





Although the start of CAP implementation is not anticipated to start until the spring of 2024, CAP approval is needed in October 2023 due to project funding milestones. The following are specific target dates and milestones:

**Table 4: Implementation Schedule**

Target Date	CAP Related	Construction Related	Milestone Description
9/15/23	✓		Review/approval of draft CAP and start of 30-day public comment period
Spring 2024	✓	✓	Excavation of impacted soils
Spring 2024	✓	✓	Installation of engineered barriers
Summer 2024	✓		Completion of Corrective Action Completion Report
Summer 2024	✓		Certificate of completion is issued by the VT DEC

### 5.5 Cost

KAS has prepared a cost estimate for the corrective actions specified herein, contaminated soil management, use of engineered barriers, and subsequent CAP completion report. The estimated costs are representative of the design elements, as described within this CAP, that are necessary to mitigate exposure to Site contaminants. Structural, architectural, and other components of the Site’s redevelopment design are not included within these costs.

The estimated cost to implement the corrective actions as described within this CAP, on Lot 1, is approximately \$718,271, which includes a 15% contingency. A detailed cost estimate is provided in Appendix G. The estimated cost for CAP implementation on Lot 2 is approximately \$219,257. Therefore, the total estimated cost for both lots is \$937,528. A copy of the estimated cost for Lot 2 is included in Appendix G.

## 6.0 SITE CLOSURE AND INSTITUTIONAL CONTROL

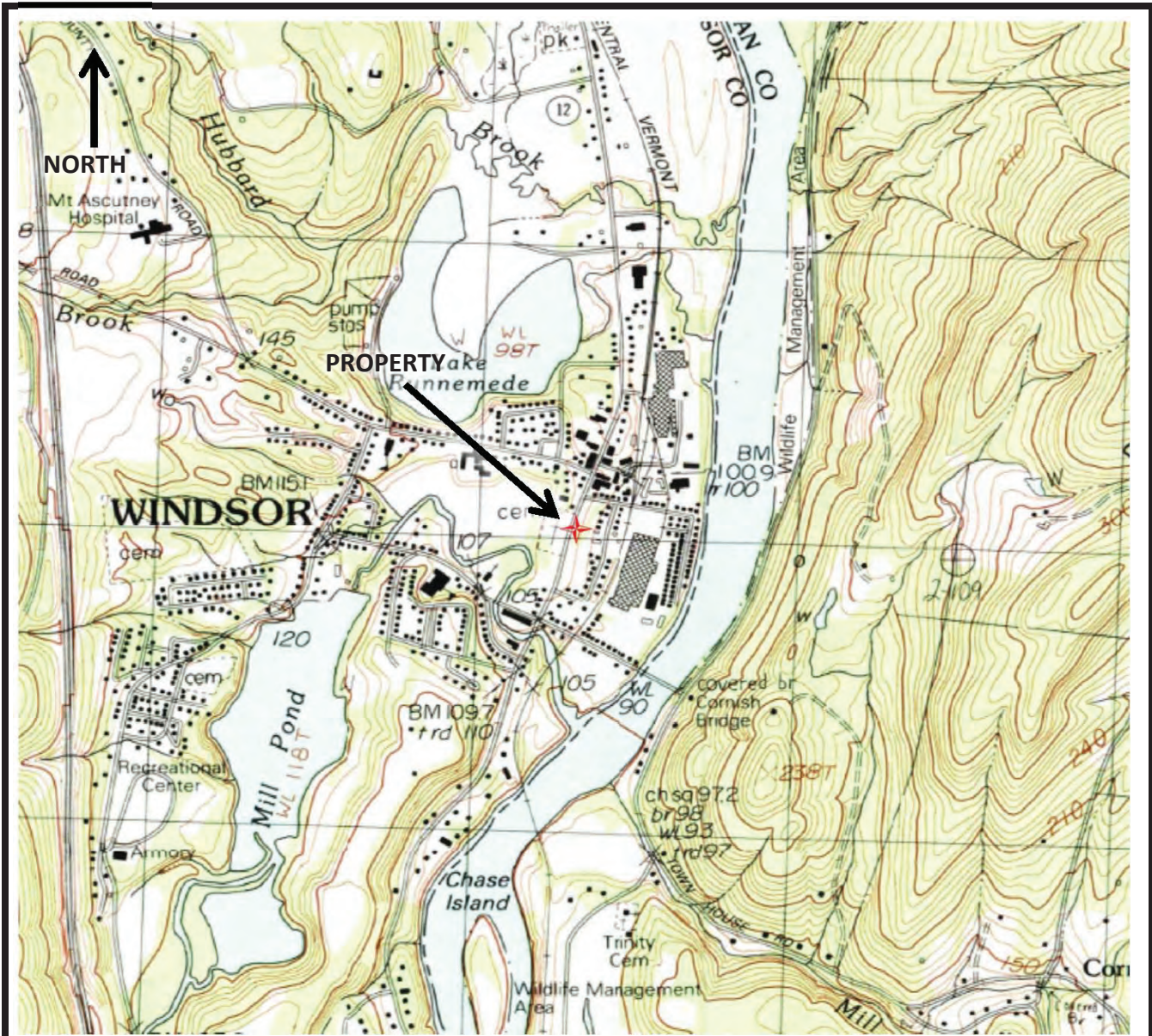
Institutional controls are intended to help minimize potential future human exposure to residual contamination, and to ensure that engineered controls remain protective over time. Future long-term monitoring requirements, land use restrictions, and/or required notifications to the VT DEC will be incorporated into the Certificate of Closure (COC). COCs are issued by the VT DEC after substantial completion of the CAP. The COC also serves as the institutional control and will be filed with land records associated with the Site.



## **Appendix A**

### **Maps & Plans**

- 1) Site Location Map**
- 2) Site Vicinity Map**
- 3) Site Map**
- 4) Site Map with Stockpiles**
- 5) Existing Conditions Plan C1.1 (by Engineering Ventures)**
- 6) Survey (by Rose Land Surveying)**
- 7) Grading Plan C2.2 (by Engineering Ventures)**
- 8) Soil: Lead Concentration Map**
- 9) Soil: PAHs as TEQ Benzo(a)pyrene Concentration Map**
- 10) Lot #1 Corrective Action Plan ENV.1**
- 11) Excavation Areas – Building**
- 12) Excavation Areas – Footings**
- 13) Excavation Areas – Utility Trenches**
- 14) Cut/Fill Analysis for Paved Driveway**



KAS Job #: 507210630

Source: EnviroSite



**133 - 139 Main Street  
Windsor, VT 05089**

**Site Location Map  
Windsor, VT Quadrangle, 1984 USGS Map**

Date: 08/18/21	Drawing No. 0	Scale: NTS	By: JR
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**LEGEND**

- Wetland - VSWI
  - Class 1 Wetland
  - Class 2 Wetland
  - Buffer
- Hydrologically Connected Road Segments (MRGP)
  - Yes
  - Yes (Catch Basin)
  - No
- Hazardous Site
- Hazardous Waste Generators
- Dry Cleaner
- Parcels (standardized)
- Roads
  - Interstate
  - US Highway; 1
  - State Highway
  - Town Highway (Class 1)
  - Town Highway (Class 2,3)
  - Town Highway (Class 4)
  - State Forest Trail
  - National Forest Trail
  - Legal Trail
  - Private Road/Driveway
  - Proposed Roads
- Stream/River
  - Stream
  - Intermittent Stream
- Town Boundary

**1: 5,000**  
 1in = 417 ft.  
 1cm = 50 meters

254.0 0 127.00 254.0 Meters



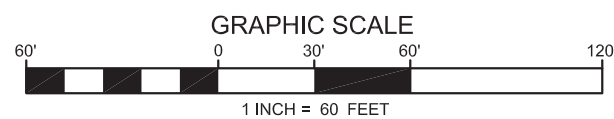


**LEGEND**

- SB16-09 SOIL BORING
- UTILITY POLE
- CATCH BASIN
- ☼ TREE/BUSH
- PROPERTY LINE
- - - SUBJECT PROPERTY LINE
- DU OVERHEAD UTILITY
- ST.S STORMWATER LINE
- S SANITARY SEWER

NOTES:  
 1. BASE MAP DEVELOPED FROM VCGI ORTHOIMAGERY AND PARCEL MAPS, AND FIELD OBSERVATIONS BY KAS, INC.  
 2. ALL UTILITES AND PROPERTY LINES ARE CONSIDERED APPROXIMATE.

KAS #507210630  
 VTDEC #2022-5087



589 Avenue D, Suite 10  
 PO Box 787  
 Williston, VT 05495  
[www.kas-consulting.com](http://www.kas-consulting.com)

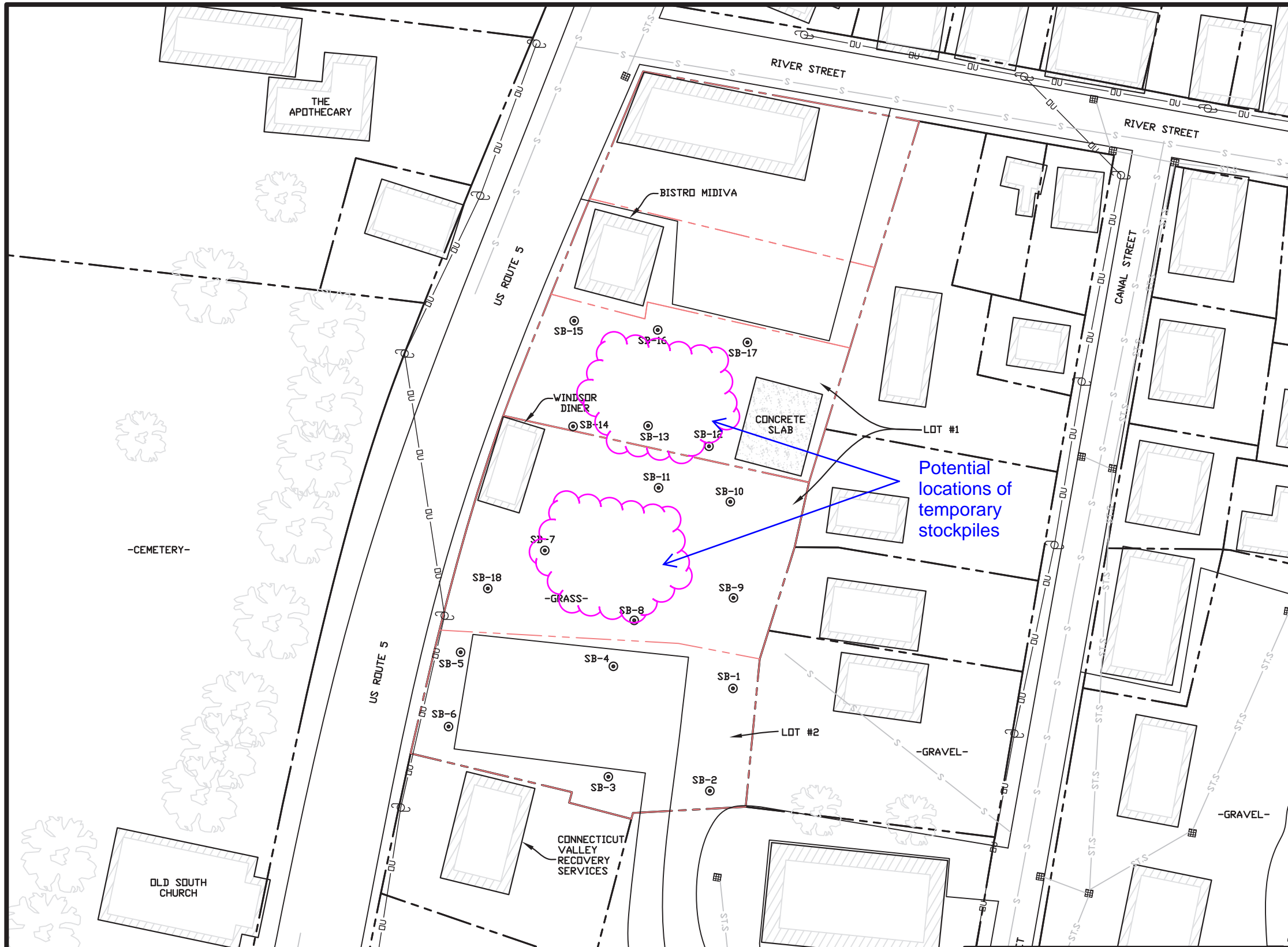
802.383.0486 p  
 802.383.0490 f



WINDSOR HOUSING  
 135 MAIN STREET  
 WINDSOR, VERMONT

**SITE MAP**

DATE: 9/27/22	DWG. #: 1	SCALE: 1"=60'	DRN.: SB	APP.: JR
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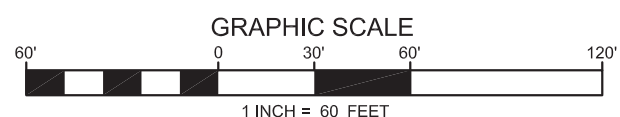


**LEGEND**

SB16-09	SOIL BORING
	UTILITY POLE
	CATCH BASIN
	TREE/BUSH
	PROPERTY LINE
	SUBJECT PROPERTY LINE
	OVERHEAD UTILITY
	STORMWATER LINE
	SANITARY SEWER

NOTES:  
 1. BASE MAP DEVELOPED FROM VCGI ORTHOIMAGERY AND PARCEL MAPS, AND FIELD OBSERVATIONS BY KAS, INC.  
 2. ALL UTILITES AND PROPERTY LINES ARE CONSIDERED APPROXIMATE.

KAS #507210630  
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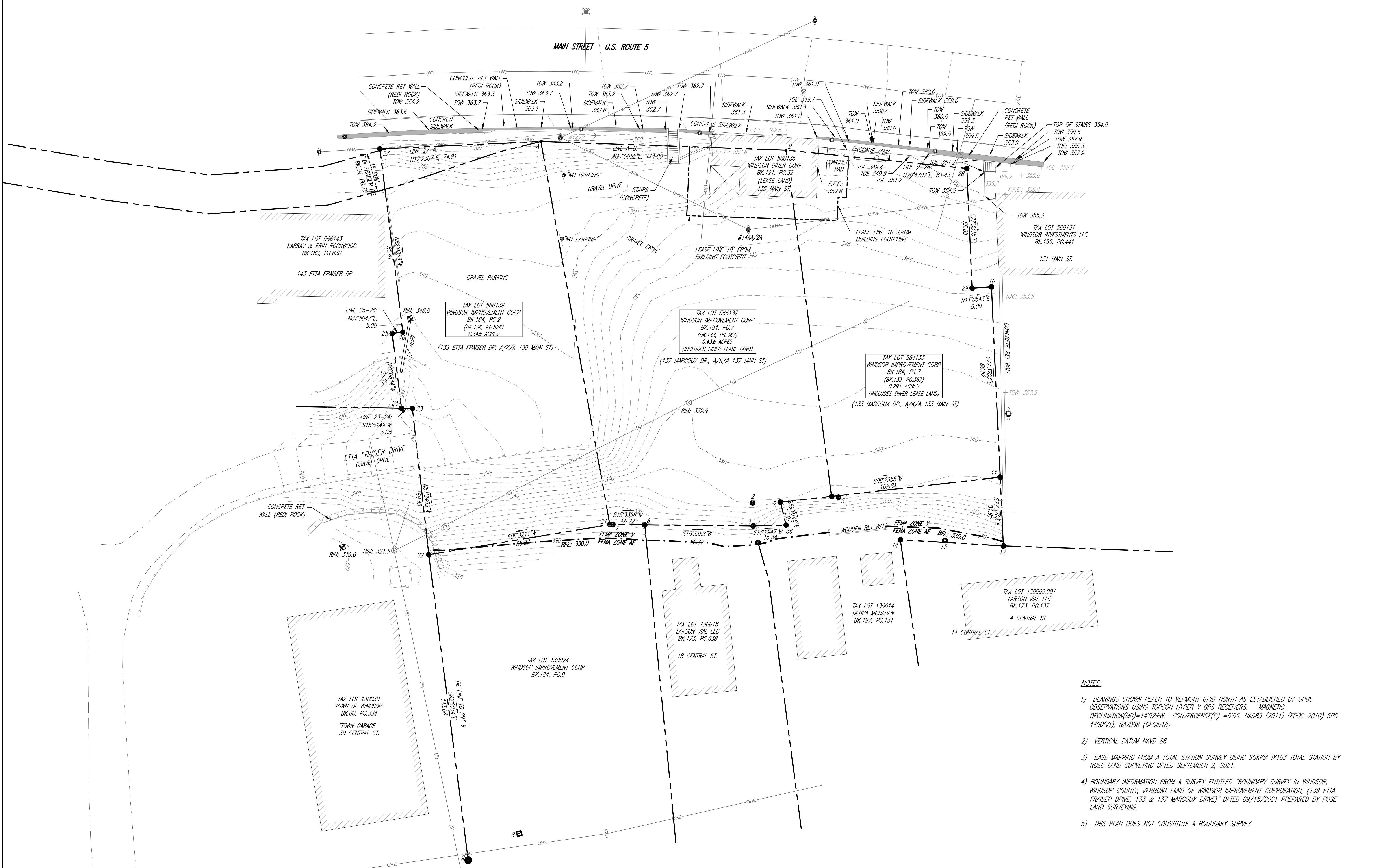
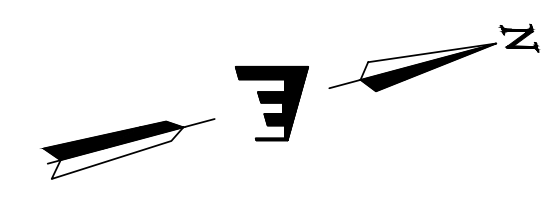


WINDSOR HOUSING  
 135 MAIN STREET  
 WINDSOR, VERMONT

SITE MAP

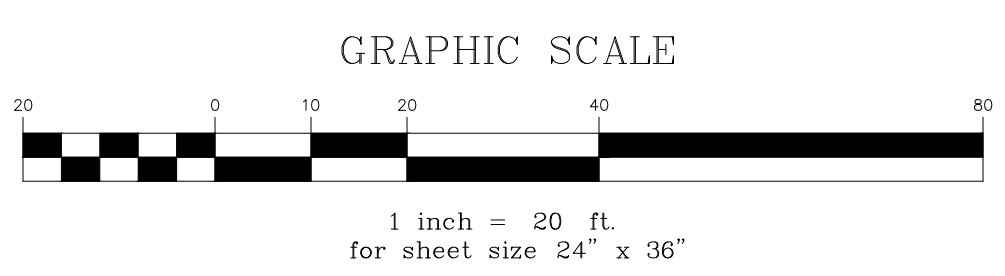
DATE: 9/27/22	DWG. #: 1	SCALE: 1"=60'	DRN.: SB	APP.: JR
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- NOTES:**
- 1) BEARINGS SHOWN REFER TO VERMONT GRID NORTH AS ESTABLISHED BY OPUS OBSERVATIONS USING TOPCON HYPER V GPS RECEIVERS. MAGNETIC DECLINATION(MD)=14°02±W. CONVERGENCE(C)=0°05. NAD83 (2011) (EPOC 2010) SPC 4400(VT), NAD88 (GEOID18)
  - 2) VERTICAL DATUM NAVD 88
  - 3) BASE MAPPING FROM A TOTAL STATION SURVEY USING SOKKIA IX103 TOTAL STATION BY ROSE LAND SURVEYING DATED SEPTEMBER 2, 2021.
  - 4) BOUNDARY INFORMATION FROM A SURVEY ENTITLED "BOUNDARY SURVEY IN WINDSOR, WINDSOR COUNTY, VERMONT LAND OF WINDSOR IMPROVEMENT CORPORATION, (139 ETTA FRAISER DRIVE, 133 & 137 MARCOUX DRIVE)" DATED 09/15/2021 PREPARED BY ROSE LAND SURVEYING.
  - 5) THIS PLAN DOES NOT CONSTITUTE A BOUNDARY SURVEY.

**SCHEMATIC DESIGN  
NOT FOR CONSTRUCTION  
01/25/2022**



No.	Description	Date	Stamp

**ENGINEERING VENTURES PC**  
 208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-6225  
 85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333  
 414 Union Street, Schenectady, NY 12305 • 518-630-9614  
 www.engineeringventures.com

DUNCAN WISNIEWSKI ARCHITECTS  
 295 SOUTH CHAMPLAIN STREET  
 BURLINGTON, VERMONT

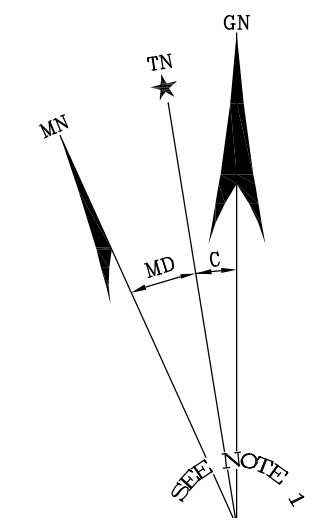
**EXISTING CONDITIONS PLAN**  
**WINDSOR HOUSING**  
 WINDSOR, VERMONT

EV Project #	21618
Drawn By:	JWF
Checked By:	NAF
Scale:	1" = 20'
Date:	01/25/2022

**C1.1**



Line Table  
 B-46:N20°47'07"E, 29.27'  
 43-44:N72°32'53"W, 10.76'  
 44-45:N17°27'07", 3.82'  
 45-46:N71°36'01"W, 19.19'



- Lot Merger/Subdivision Notes:**
- 1) The purpose of this plat is to depict the lot merger of Tax Lots 564133, 564137 & 566139 owned by Windsor Improvement Corporation and the subsequent subdivision of those lands into 2 parcels. Also shown is a minor lot line adjustment annexing a portion to Tax Lot 564137 to Tax Lot 130014, lands of David Kenney.
  - 2) Proposed Parcel 1 to be conveyed to Central and Main Housing Limited Partnership.
  - 3) Proposed Parcel 2 to be retained by Windsor Improvement Corporation and includes the limits of the existing lease land presently occupied by Windsor Diner Corporation (See Note 4d).
  - 4) Access to proposed Parcels 1 & 2 from Central Street along Etta Fraiser Drive.
  - 5) Subject parcels located in the Windsor Central Business Zoning District and the Main Street Design Review Subdistrict.

Zoning Regulations For The Town of Windsor, Vermont  
 Amended March 24, 2015  
 Central Business District (CB)

Dimensional Standards	Class 1
Minimum Lot Size	5,000 sq/ft
Minimum Lot Size per Family Unit	1,000 sq/ft
Minimum Frontage	50 ft
Minimum Front Setback	0 ft
Minimum Side Setback	0 ft
Minimum Rear Setback	0 ft
Maximum Height	60 ft
Maximum Structure Coverage	90 %

Class 1 - Municipal Sewer and or Public Water

TOWN CLERKS OFFICE  
 WINDSOR, VT  
 RECEIVED FOR RECORDING

Date: \_\_\_\_\_  
 at \_\_\_\_\_ Hr \_\_\_\_\_ Min AM/PM  
 Map Slide: \_\_\_\_\_  
 Attest: \_\_\_\_\_

**Monument Table**

Point	Description
1	1 1/2" Iron Pipe, 24" Reveal
2	3/4" Capped Rebar, 8" Reveal (Farnsworth LS 21)
3	3/4" Rebar, 16" Reveal
4	5/8" Capped Rebar, 3" Reveal (Coleman LS 585)
5	5/8" Capped Rebar, 3" Reveal (VT Geomatics LS 648)
6	3/4" Rebar, 2" Reveal
9	5/8" Rebar, Flush
10	3/4" Rebar Bent, 6" Buried
11	3/4" Rebar Bent, 2" Reveal
12	5/8" Capped Rebar, 3" Reveal (VT Geomatics LS 648)
13	1/2" Iron Pipe, 10" Reveal
14	1/2" Rebar, 12" Reveal Bent Flush
21, 27, 36	5/8" Capped Rebar, 8" Reveal (DN Rose LS 657)
22, 25, 26	5/8" Capped Rebar, Flush (DN Rose LS 657)
23, 24	5/8" Capped Rebar, 4" Reveal (DN Rose LS 657)
28, 29	5/8" Capped Rebar, Flush (DN Rose LS 657)
20, 40-46	5/8" Capped Rebar, To Be Set (DN Rose LS 657)

Record Owner Tax Lots 564133, 564137, 566139  
 Windsor Improvement Corporation  
 P.O. Box 445  
 Windsor, VT 05089

**Pre Merger/Subdivision Area Summary**

Tax Lot	Record Deed	Boundary Points	Area
564133	Bk.184, Pg.7	(28-29,10-11,C,B,46,28)	0.29± Ac*
564137	Bk.184, Pg.7	(B-C,5,36,4,6,21,A,B)	0.43± Ac*
566139	Bk.184, Pg.2	(21-27,A,21)	0.34± Ac
Total Area (Includes Diner Lease Land 0.05±Ac*)			1.06± Ac*

**Post Merger/Subdivision Area Summary**

Parcel	Ownership	Boundary Points	Area
1	To Be Conveyed	(28-29,10-11,5,20,4,6,21,40-46,28)	0.58± Ac
2	To Be Retained	(23-27,A,D,B,46-40,21)	0.48± Ac*
Total Area (Includes Diner Lease Land 0.05±Ac*)			1.06± Ac*

The subdivision depicted on this plat was duly approved, as conditioned, by the Windsor Development Review Board in accordance with the Windsor Subdivision Regulations and all other applicable laws and regulations on the \_\_\_\_ day of \_\_\_\_\_ 2\_\_\_\_. Subdivision Permit# \_\_\_\_\_

Signed: \_\_\_\_\_ [Development Review Board Chair or Vice-Chair].

This survey was conducted in accordance with the Rules of the Board of Land Surveyors, Part 5, Standards for the Practice of Land Surveying. It is based on deed descriptions, map references listed, and physical evidence found in the field. It is consistent with this information to the best of my knowledge and belief unless otherwise noted. This plat conforms with the requirements of 27 VSA 1403.

David N. Rose VT L.S. 657 Date: 02/14/2023

- Legend**
- Computed Point
  - Rebar (Found)
  - Capped Rebar (Found)
  - Capped Rebar (To Be Set)
  - Iron Pipe (Found)
  - Key Deed (Typical)
  - Proposed Feature
  - Map Reference
  - Utility Pole
  - Utility Pole Anchor
  - Light Post
  - Hydrant
  - Catch Basin
  - Sewer Manhole
  - Boundary Line
  - Boundary To Be Voided
  - Right-Of-Way Line
  - Diner Lease Line
  - Edge Of Concrete
  - Edge Of Pavement
  - Edge Of Gravel
  - Guard Rail
  - Overhead Electric & Telephone
  - Existing Building
  - Culvert
  - Right-of-Way (See Note 4c)
  - Diner Lease Land (See Note 4d)
  - Lease To Be Extinguished
  - Parcel 1 To Be Conveyed To Central and Main Housing Limited Partnership
  - Lot Line Adjustment, Area To Be Annexed To David Kenney

SHEET 1 of 2

SEE SHEET 2 FOR:  
 Site Location Notes  
 Map References

**ROSE LAND SURVEYING**  
 P.O. BOX 72  
 LUDLOW, VERMONT 05149  
 (802) 228-4634

**LOT MERGER/SUBDIVISION**  
 IN  
 WINDSOR, WINDSOR COUNTY, VERMONT  
 LAND OF  
 WINDSOR IMPROVEMENT CORPORATION  
 FOR  
 CENTRAL AND MAIN HOUSING, LP  
 (139 ETTA FRAISER DRIVE, 133 & 137 MARCOUX DRIVE)  
 (ALSO KNOWN AS 139, 133, 137 MAIN STREET)

REVISIONS:  
 02/14/2023 Proposed Lot Lines, Lot Line Adjustment

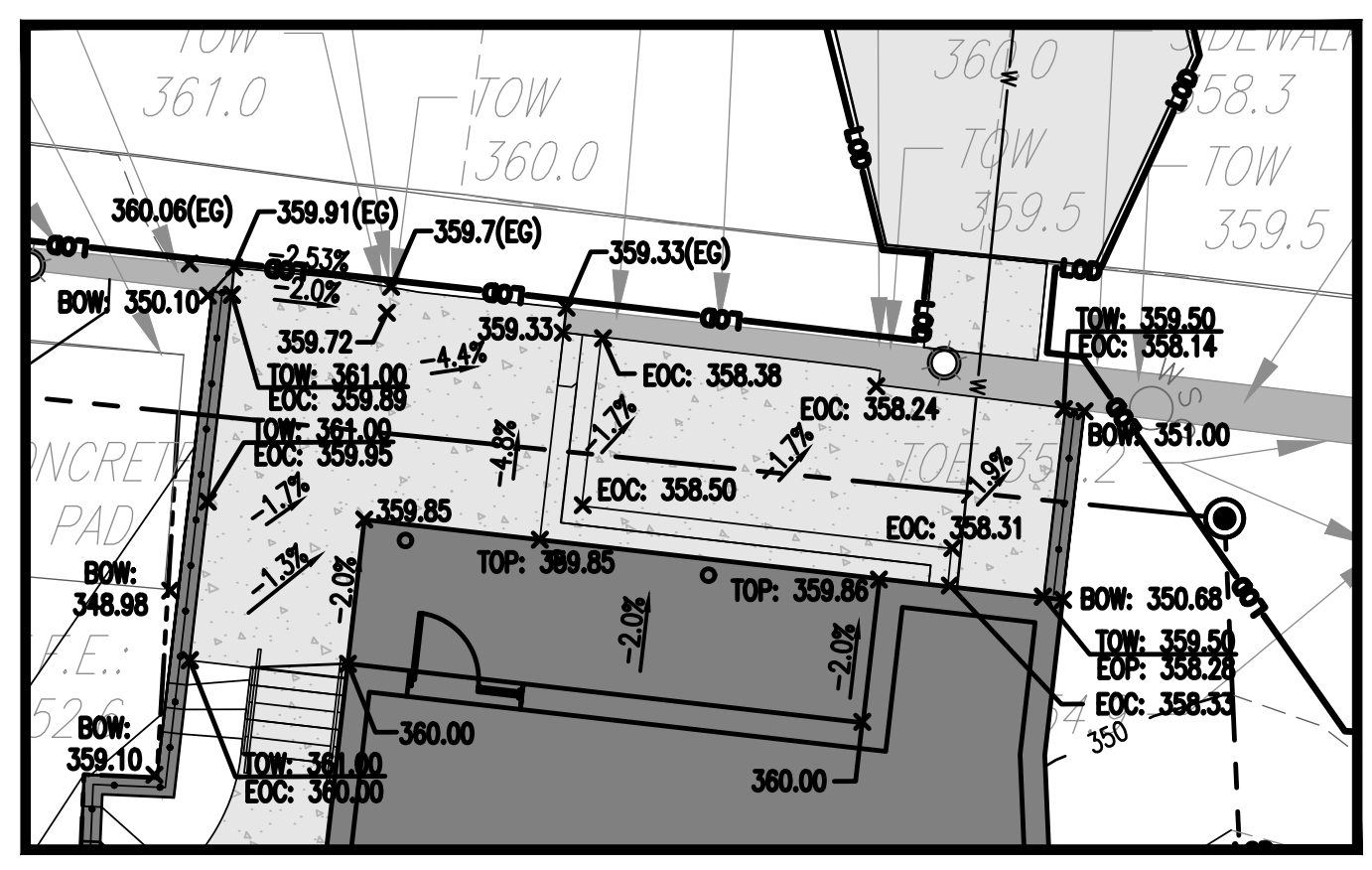
DAVID N. ROSE No. 657 LICENSED LAND SURVEYOR ORIGINAL SEAL IN BLUE

SCALE: 1"=30'

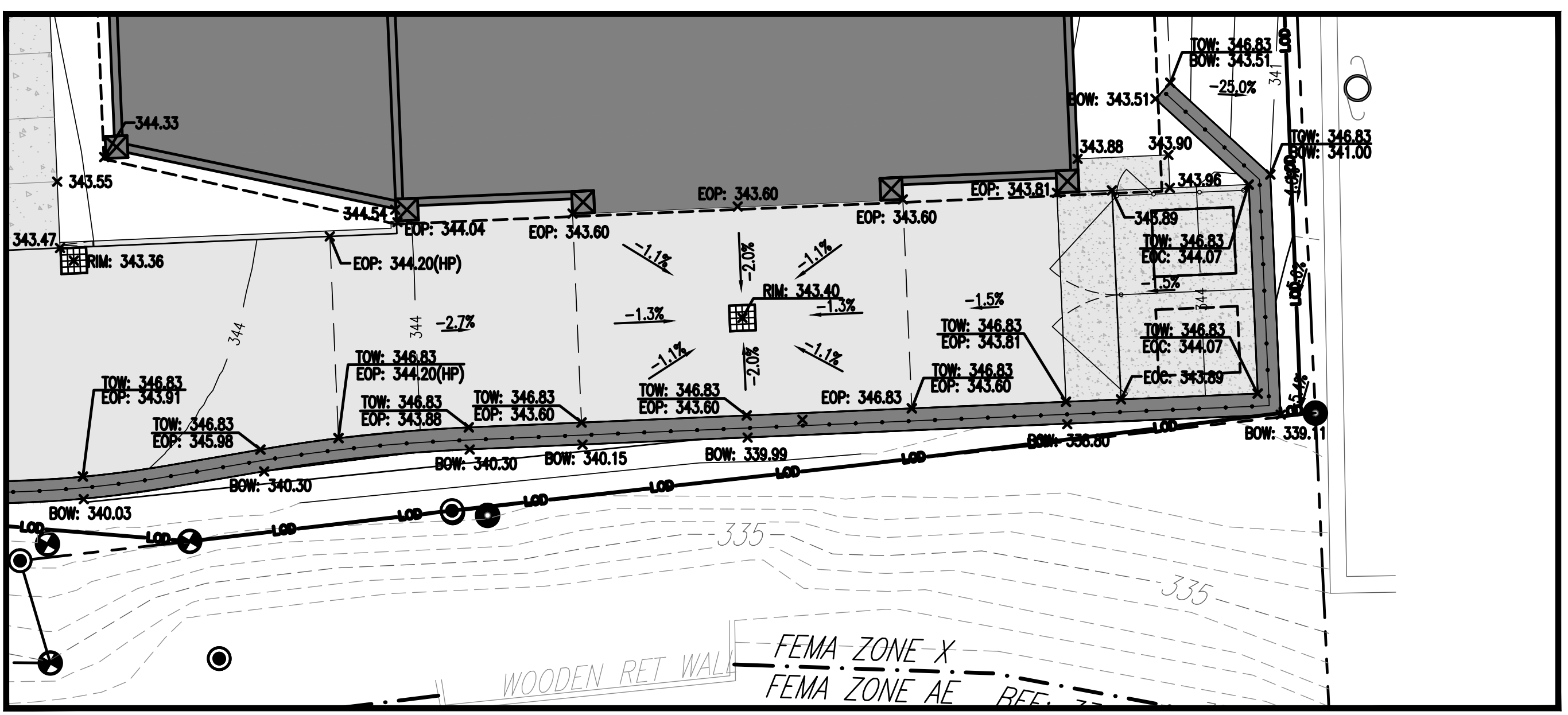
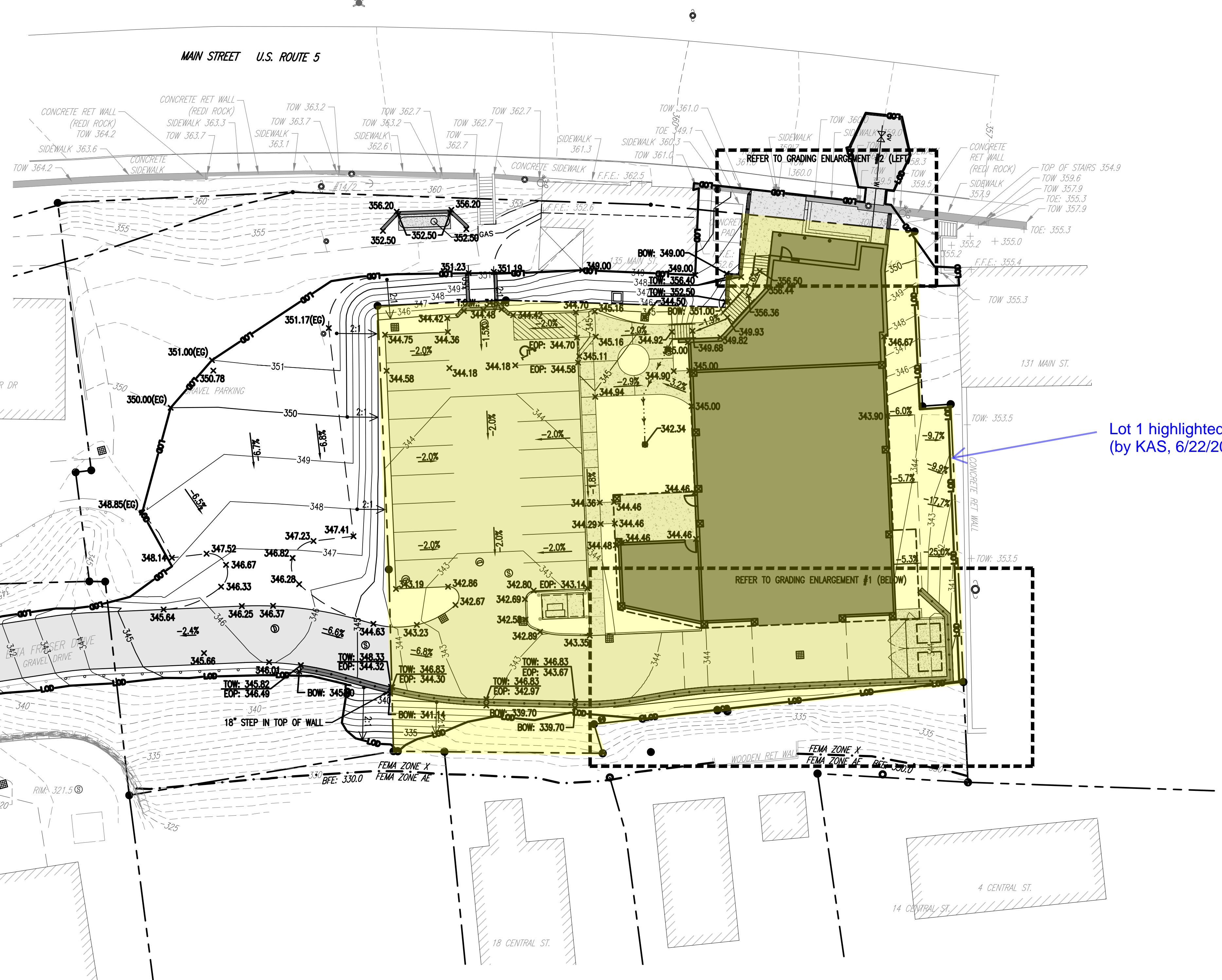
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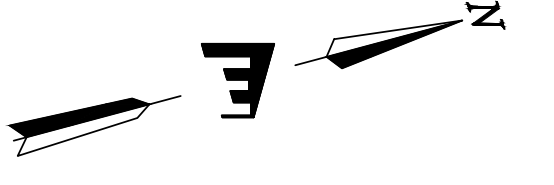
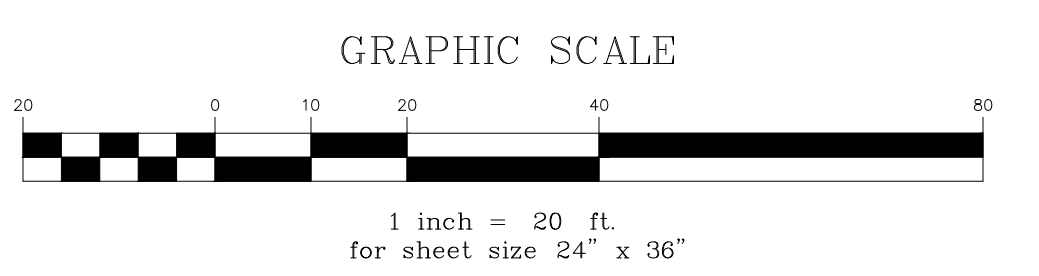
S:\PROJECTS\2021\18 WINDSOR HOUSING\DWG\2021\18 C2.2 GRADING PLAN.DWG  
 PLOTTED: 20220324 09:00



**GRADING ENLARGEMENT #2**  
SCALE: 1" = 10'



**GRADING ENLARGEMENT #1**  
SCALE: 1" = 10'



No.	Description	Date	Stamp

**ENGINEERING VENTURES PC**  
 208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-6225  
 85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333  
 414 Union Street, Schenectady, NY 12305 • 518-630-9614  
 www.engineeringventures.com

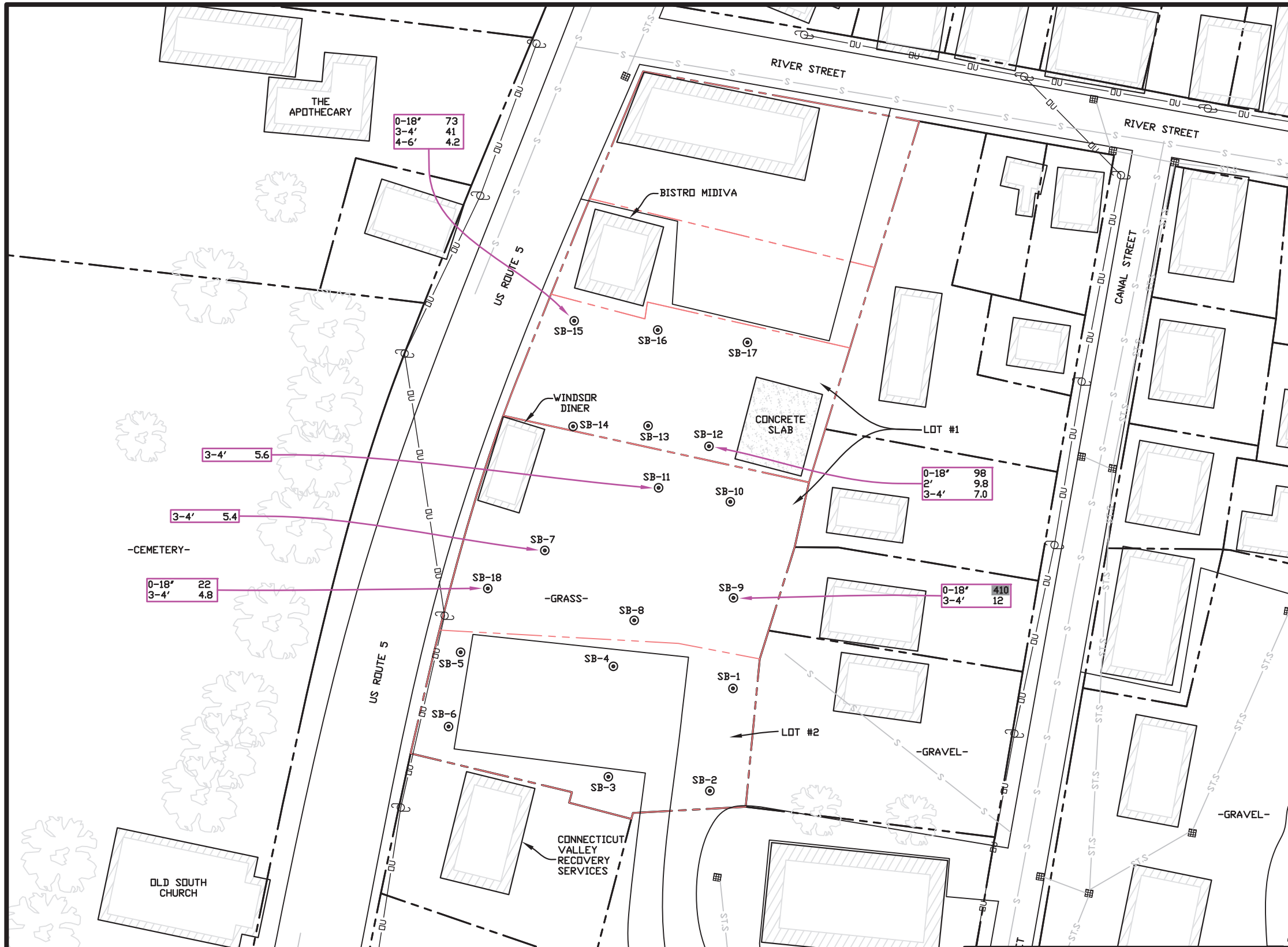
DUNCAN WISNIEWSKI ARCHITECTS  
 255 SOUTH CHAMPLAIN STREET  
 BURLINGTON, VERMONT

Sheet Title: **GRADING PLAN**  
 Project Title: **CENTRAL & MAIN**  
 Location: **TOWN OF WINDSOR, WINDSOR COUNTY, VERMONT**

EV Project #	21618
Drawn By:	JWF
Checked By:	NAF
Scale:	1" = 20'
Date:	03/03/2023

C2.2

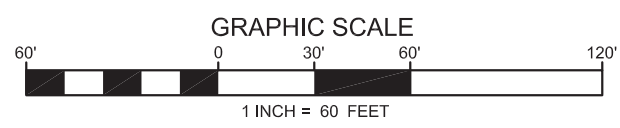




**LEGEND**

- SB-9  
3-4' 12
- 410
- ND
- NS
- Utility Pole
- Catch Basin
- Tree/Bush
- Property Line
- Subject Property Line
- Overhead Utility
- Stormwater Line
- Sanitary Sewer

NOTES:  
 1. BASE MAP DEVELOPED FROM VCGI ORTHOIMAGERY AND PARCEL MAPS, AND FIELD OBSERVATIONS BY KAS, INC.  
 2. ALL UTILITES AND PROPERTY LINES ARE CONSIDERED APPROXIMATE.



KAS #507210630  
 VTDEC #2022-5087

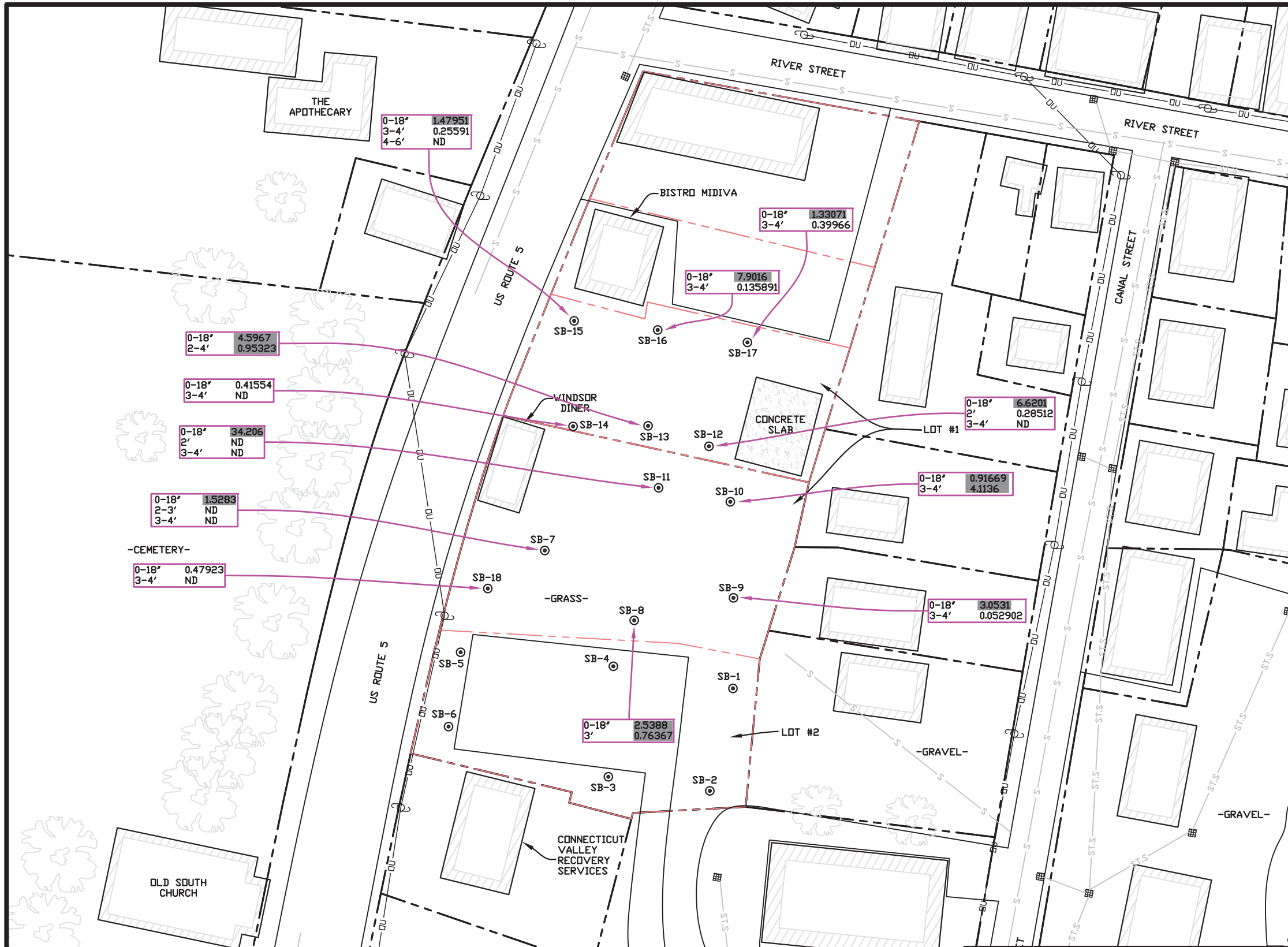
589 Avenue D, Suite 10  
 PO Box 787  
 Williston, VT 05495  
 www.kas-consulting.com  
 802.383.0486 p  
 802.383.0490 f



WINDSOR HOUSING  
 135 MAIN STREET  
 WINDSOR, VERMONT

SOIL: TOTAL LEAD CONCENTRATION MAP  
 SAMPLED: 7/6/22

DATE: 9/27/22	DWG. #: 4	SCALE: 1"=60'	DRN: SB	APP: JR
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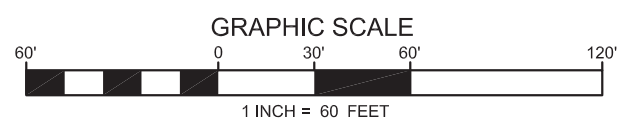


**LEGEND**

- SB-9  
⊙  
3-4' 0.052902
- 3.0531
- ⊙
- ⊙
- ⊙
- 
- 
- 
- 
- 
- 

NOTES:  
 1. BASE MAP DEVELOPED FROM VCGI ORTHOIMAGERY AND PARCEL MAPS, AND FIELD OBSERVATIONS BY KAS, INC.  
 2. ALL UTILITES AND PROPERTY LINES ARE CONSIDERED APPROXIMATE.

KAS #507210630  
 VTDEC #2022-5087



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WINDSOR HOUSING  
 135 MAIN STREET  
 WINDSOR, VERMONT

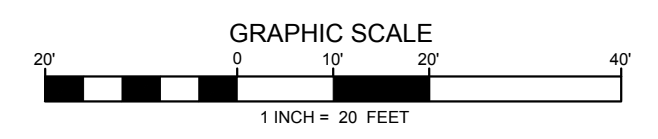
SOIL: PAHs TEQ AS BENZO(A)PYRENE  
 CONCENTRATION MAP SAMPLED: 7/6/22

DATE: 9/27/22	DWG. #: 2	SCALE: 1"=60'	DRN: SB	APP: JR
---------------	-----------	---------------	---------	---------





**PROPOSED CORRECTIVE ACTION PLAN**  
SCALE: 1" = 20'



**LEGEND**

PROPOSED	EXISTING	
---	---	PROPERTY LINE
---	---	SUBJECT SITE PROPERTY LINE
---	---	WATER LINE
---	---	SEWER LINE
---	---	STORMWATER LINE
---	---	GAS LINE
---	---	OVERHEAD POWER LINE
---	---	UNDERGROUND POWER
---	---	LIMITS OF DISTURBANCE
---	---	EDGE OF PAVEMENT
---	---	EDGE OF GRAVEL
○	○	SOIL BORING (SB)
■	■	SOIL CAP AREA
■	■	IMPERVIOUS COVER
■	■	CONCRETE

**CONTACTS**

PROPERTY OWNER:  
WINDSOR IMPROVEMENT CORPORATION  
PO BOX 455  
WINDSOR, VT 05089

BOB FLINT  
(802) 885-3061  
bobflint@springfielddevelopment.org

PERSPECTIVE PURCHASERS AND DEVELOPERS:  
WINDHAM & WINDSOR HOUSING TRUST  
68 BIRGE STREET  
BRATTLEBORO, VT 05301

PETER PAGGI  
(802) 246-2113  
ppaggi@hometownmattershere.org

EVERNORTH  
100 BANK STREET, SUITE 400  
BURLINGTON, VT 05401

MATT MOORE  
(802) 863-8424  
mmoore@evernorthus.org

ENGINEER / ENVIRONMENTAL CONSULTANT:  
KAS, INC.  
589 AVENUE D, SUITE #10 / PO BOX 787  
WILLISTON, VT 05495

PROJECT MANAGER:  
CLARE SANTOS, P.E.  
(802) 383-0486 x106  
ClareS@kas-consulting.com

CERTIFYING ENGINEER:  
STEPHEN DIGLIO, P.E. #74333  
(802) 383-0486 x104  
StephenD@kas-consulting.com

VTDEC PROJECT MANAGER:  
KASSANDRA KIMMEY  
(802) 505-8060  
kassandra.kimmey@vermont.gov



**SURVEY NOTES:**

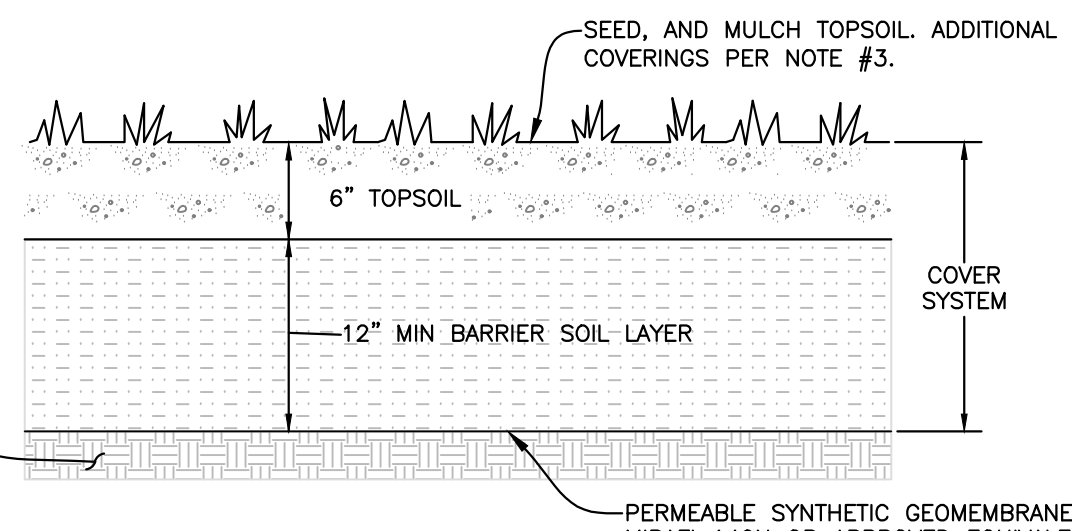
- BEARINGS SHOWN REFER TO VERMONT GRID NORTH AS ESTABLISHED BY OPUS OBSERVATIONS USING TOPCON HYPER V GPS RECEIVERS. MAGNETIC DECLINATION(MD)=14°02±W. CONVERGENCE(C)=0°05. NAD83 (2011) (EPOC 2010) SPC 4400(VT), NAVD88 (GEOID18)
- VERTICAL DATUM NAVD 88.
- BASE MAPPING FROM A TOTAL STATION SURVEY USING SOKKIA IX103 TOTAL STATION BY ROSE LAND SURVEYING DATED SEPTEMBER 2, 2021.
- BOUNDARY INFORMATION FROM A SURVEY ENTITLED "BOUNDARY SURVEY IN WINDSOR, WINDSOR COUNTY, VERMONT LAND OF WINDSOR IMPROVEMENT CORPORATION, (139 ET TA FRAISER DRIVE, 133 & 137 MARCOUX DRIVE)" DATED 09/15/2021 PREPARED BY ROSE LAND SURVEYING.
- THIS PLAN DOES NOT CONSTITUTE A BOUNDARY SURVEY, AND IS PRESENTED HERE FOR REFERENCE ONLY. REFER TO LOT MERGER/SUBDIVISION PLAN BY ROSE LAND SURVEYING, OF LUDLOW, VT, FOR OFFICIAL LOT LINE INFORMATION.

**GENERAL NOTES:**

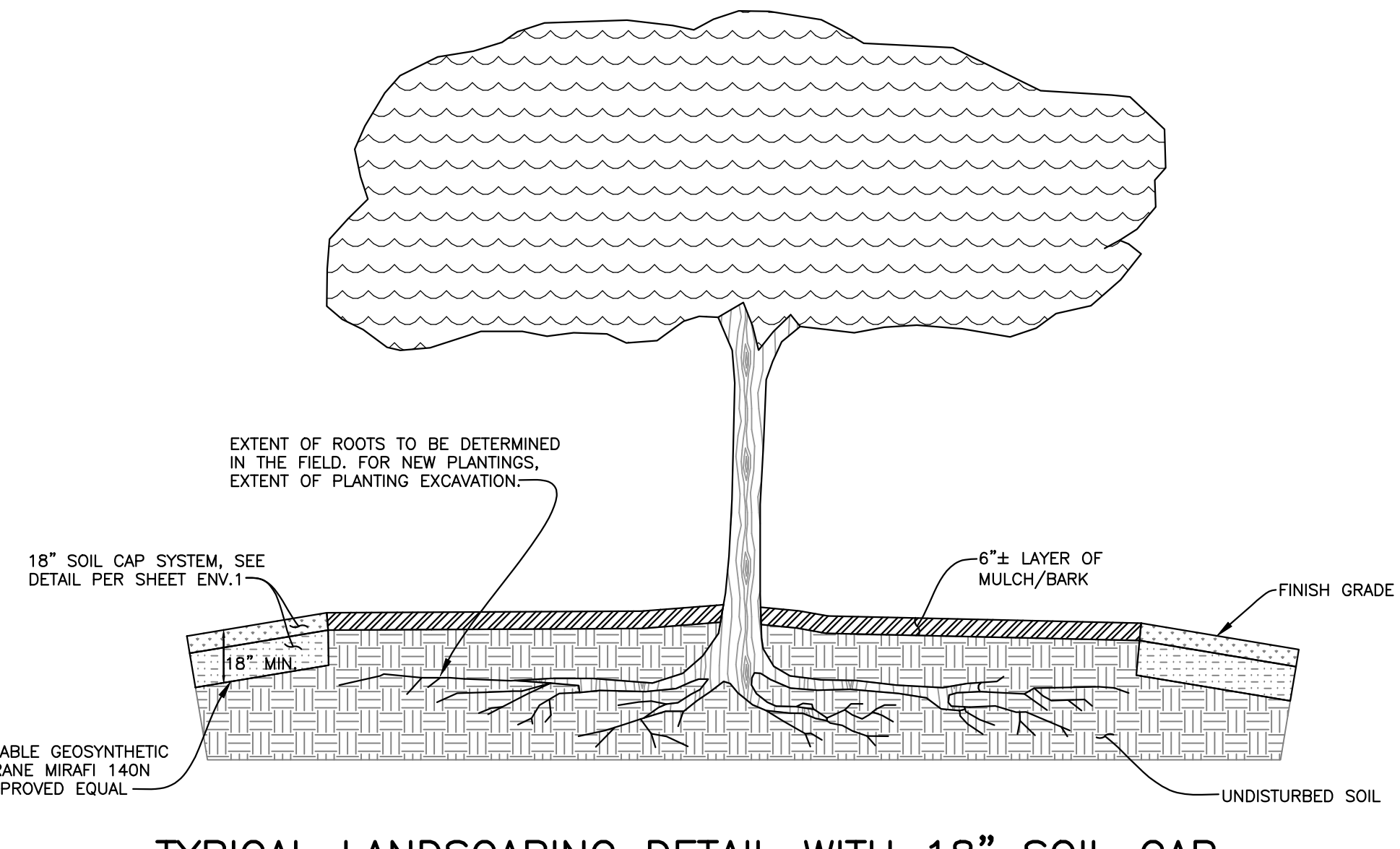
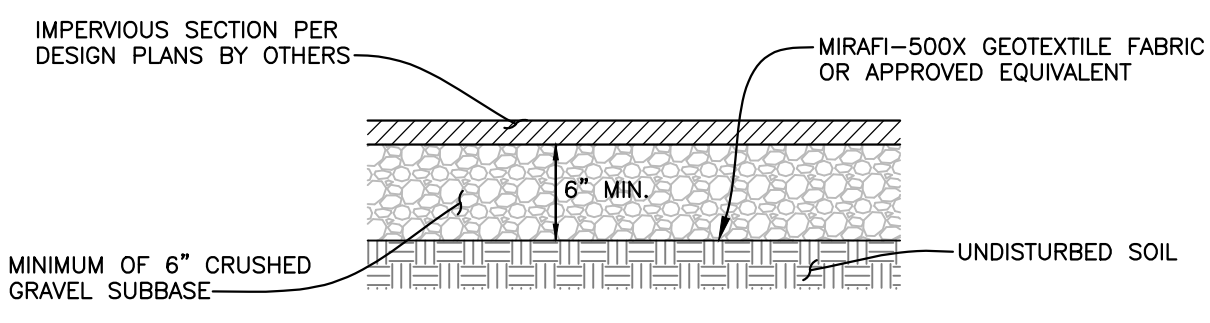
- THE BASEMAP HAS BEEN DEVELOPED FROM THE FOLLOWING PLANS:
  - "LOT MERGER/SUBDIVISION", DWG #21040-SU, ROSE LAND SURVEYING, REVISED 2/14/2023
  - "GRADING PLAN", DWG #C2.2, ENGINEERING VENTURES PC, DATED 03/03/2023
  - "SITE PLAN" DWG #1, KAS, INC., DATED 9/27/2022
- ADDITIONAL ENVIRONMENTAL INFORMATION IS AVAILABLE UPON REQUEST AND MAY BE LOCATED IN THE LATEST INVESTIGATION AND MONITORING REPORTS BY KAS, INC.
- ALL UTILITIES, PROPERTY LINES, AND SITE FEATURES ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF THIS PLAN AND ARE CONSIDERED APPROXIMATE. THIS PLAN IS NOT TO BE USED AS A BOUNDARY SURVEY.
- THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE CONSTRUCTION, CONTINUED USE AND MAINTENANCE OF THE CORRECTIVE ACTION SYSTEMS.

**SOIL MANAGEMENT AND EXCAVATION NOTES:**

- THE SITE IS A STATE-LISTED HAZARDOUS WASTE SITE #2022-5087. INVESTIGATIONS HAVE IDENTIFIED POLYCYCLIC AROMATIC HYDROCARBONS (PAHs), AND LEAD IMPACTS IN SOIL. URBAN FILL SOILS CONTAINING BRICK, WOOD AND SLATE WERE DISCOVERED. THESE COMPOUNDS AND MATERIALS WILL BE ENCOUNTERED DURING THE EXCAVATION. THE CONTRACTOR WILL COORDINATE WITH KAS, INC. 802-383-0486, FOR FIELD SCREENING OF ALL SOILS DURING CONSTRUCTION ACTIVITIES.
- APPROXIMATELY 3,361 CUBIC YARDS OR 5,042 TONS OF IMPACTED SOIL IS ANTICIPATED TO BE EXCAVATED BASED ON THE CORRECTIVE ACTION PLAN. SOILS WILL BE TEMPORARILY STOCKPILED ON AND COVERED WITH POLYETHYLENE SHEETING (MINIMUM THICKNESS OF 6 MIL.). KAS, INC. WILL COORDINATE THE PROPER TRANSPORTATION AND DISPOSAL OF THE SOIL TO A CERTIFIED FACILITY.
- DE-WATERING IS NOT ANTICIPATED TO OCCUR DUE TO THE EXCAVATION DEPTH BEING ABOVE THE DEPTH OF GROUNDWATER AS DESCRIBED IN PREVIOUS INVESTIGATIVE REPORTS. IF WATER IS ENCOUNTERED, THE CONTRACTOR SHALL CONTACT KAS, INC. IMMEDIATELY. DE-WATERING WITHOUT THE PROPER APPROVALS OR AN ALTERNATIVE METHOD OUTSIDE OF THE ONE DESCRIBED IN THE CORRECTIVE ACTION PLAN WILL RESULT IN FINES, WHICH WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- PROPER EXCAVATION TECHNIQUES AND SLOPING SHALL OCCUR TO PREVENT CAVE-INS AND DAMAGE TO THE EXISTING UTILITIES AND FEATURES.
- KAS, INC. HAS NOT TESTED AND ASSUMES NO RESPONSIBILITY FOR THE USE OF ANY ON-SITE SOIL AS STRUCTURAL FILL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE HEALTH AND SAFETY OF ALL WORKERS ON-SITE AND THE GENERAL PUBLIC BY PROVIDING ADEQUATE BARRIERS, WARNING SIGNS, AND PERSONAL PROTECTIVE EQUIPMENT, AS NECESSARY. ALL WORKERS WHO WILL BE POTENTIALLY EXPOSED TO CONTAMINATED SOILS SHALL BE HAZWOPER 40-HOUR TRAINED AND CONFORM TO OSHA REGULATIONS, TITLE 19, PART 1910.120. THE CONTRACTOR IS ALSO RESPONSIBLE FOR THE DEVELOPMENT OF A SITE-SPECIFIC HEALTH AND SAFETY PLAN.



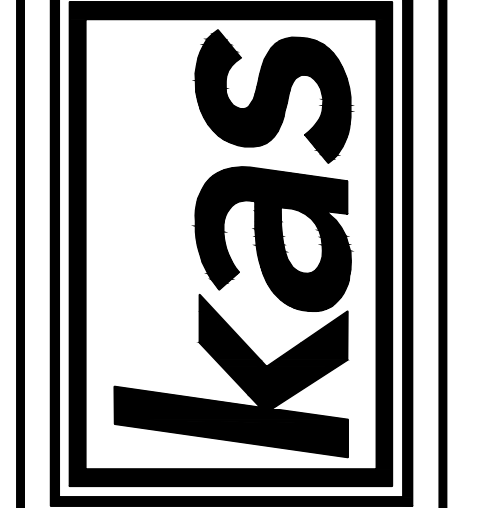
- 18" SOIL CAP NOTES:**
- FOR LANDSCAPING AREAS, SOIL CAP COVER SYSTEM MATERIALS MAY BE SUBSTITUTED WITH OTHER IMPORTED MATERIALS SUCH AS WOOD CHIPS, COMPOST, MULCH, ETC. THE TOTAL THICKNESS OF THE SOIL CAP MATERIALS ABOVE THE GEOTEXTILE FABRIC SHALL BE A MINIMUM OF 18".
  - BARRIER SOIL SHALL CONSIST OF VTRANS 703.02, 703.03, OR 703.4.
  - REFER TO LANDSCAPE DESIGN PLANS BY OTHERS FOR LANDSCAPING SPECIFICATIONS AND DETAILS.



FINAL DESIGN FOR PERMITTING PURPOSES ONLY

REVISIONS	BY
1. CLARIFY SITE BOUNDARY PER VTDEC COMMENTS, 9/11/2023	TBRH

Environmental Science and Engineering  
589 Avenue D, Suite 10  
PO Box 787  
Williston, VT 05495  
www.kas-consulting.com  
802 383 0486 P  
802 383 0490 F



**WINDSOR HOUSING TRUST**  
**LOT #1 CORRECTIVE ACTION PLAN**  
133 & 137 MAIN STREET  
WINDSOR, VERMONT 05089  
SMS #2022-5087

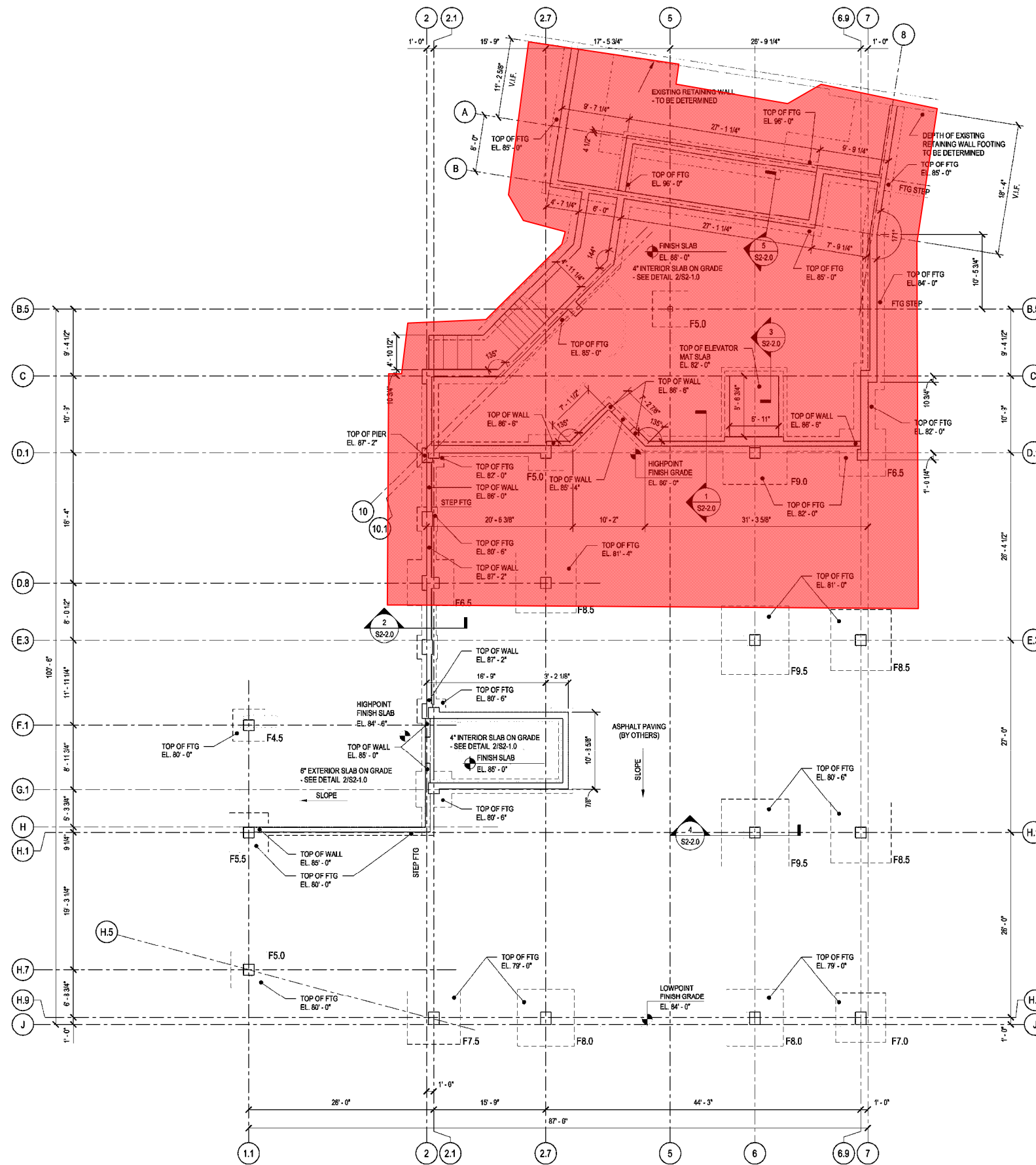
DRAWN TB
CHECKED CS/JR/SJD
DATE 6/30/2023
SCALE AS NOTED
JOB NO. 507210630
SHEET

**ENV.1**



# EXCAVATION AREAS - BUILDING

2231 Building Excavation 6' Avg - 4,887 SF



FOOTING SCHEDULE				
MARK	LENGTH	WIDTH	THICKNESS	REINFORCING
F4.5	4'-6"	4'-6"	1'-0"	(4) - #5 x 4'-2" E.W. BOT
F5.0	5'-0"	5'-0"	1'-0"	(5) - #5 x 4'-8" E.W. BOT
F5.5	5'-6"	5'-6"	1'-0"	(5) - #5 x 5'-2" E.W. BOT
F6.0	6'-0"	6'-0"	1'-0"	(6) - #5 x 5'-8" E.W. BOT
F6.5	6'-6"	6'-6"	1'-0"	(7) - #5 x 6'-2" E.W. BOT
F7.0	7'-0"	7'-0"	1'-2"	(8) - #5 x 6'-8" E.W. BOT
F7.5	7'-6"	7'-6"	1'-4"	(7) - #5 x 7'-2" E.W. BOT
F8.0	8'-0"	8'-0"	1'-4"	(8) - #5 x 7'-8" E.W. BOT

- 1 GARAGE LEVEL FOUNDATION PLAN  
1/8" = 1'-0"
- NOTES:
- ELEVATIONS SHOWN ARE BASED ON FIRST FLOOR SLAB ELEVATION OF 100'-0" WHICH REFERENCES CIVIL FINISH FLOOR ELEVATION 360.0.
  - BASEMENT TOP OF SLAB ELEVATION = 86'-6".
  - EAST STAIR TOP OF SLAB ELEVATION = 94'-6".
  - "F" DENOTES SPREAD FOOTING. SEE FOOTING SCHEDULE FOR SIZE AND REINFORCING.
  - "T.O.F." DENOTES TOP OF FOOTING ELEVATION.
  - "T.O.W." DENOTES TOP OF FOUNDATION WALL ELEVATION.
  - "T.O.P." DENOTES TOP OF PIER ELEVATION.
  - COORDINATE SUMP PIT LOCATION WITH ELEVATOR SUBMITTAL.
  - COORDINATE DOOR R.O.s WITH ARCH DWGS AND DOOR SUBMITTALS.

PROGRESS SET  
NOT FOR CONSTRUCTION  
08/18/2023

**CENTRAL & MAIN**  
WINDSOR, VT

GARAGE LEVEL FOUNDATION PLAN  
DESIGN DEVELOPMENT SET



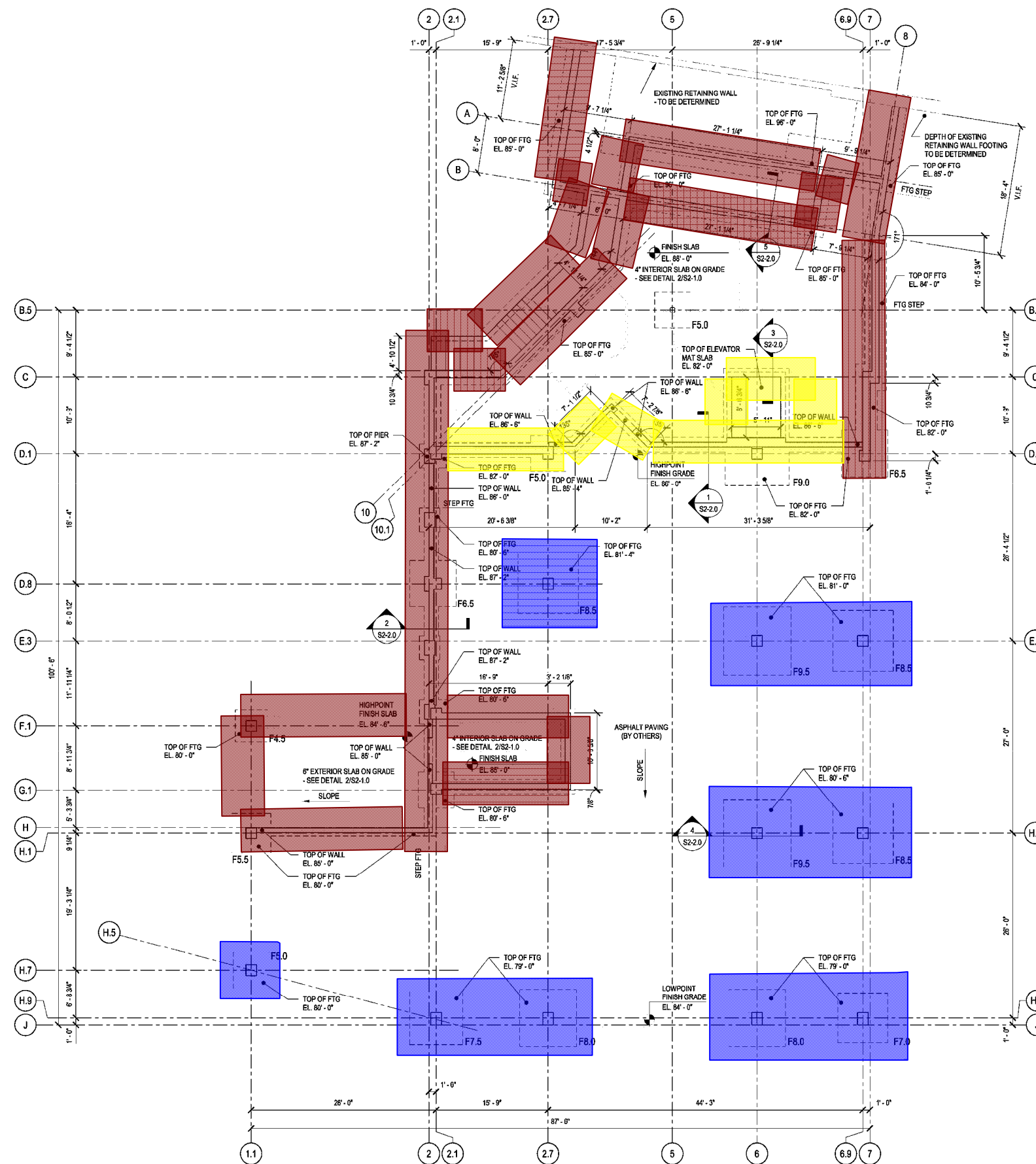
208 FLYNN AVENUE, SUITE 2A  
BURLINGTON, VERMONT 05401  
T. 802.863.6225

23143  
DATE: 06.27.23  
DRAWN: JTM/JLR

**S1-0.0**

# EXCAVATION AREAS - FOOTINGS

- 2231 CF2 Footing Excavation- 6' wide 6' deep - 402 LF
- 2231 Interior Footing Excavation- 6' wide 6' deep - 84 LF
- 2231 Iso Footing Excavation 6' - 1,561 SF



FOOTING SCHEDULE				
MARK	LENGTH	WIDTH	THICKNESS	REINFORCING
F4.5	4'-6"	4'-6"	1'-0"	(4) - #5 x 4'-2" E.W. BOT
F5.0	5'-0"	5'-0"	1'-0"	(5) - #5 x 4'-8" E.W. BOT
F5.5	5'-6"	5'-6"	1'-0"	(5) - #5 x 5'-2" E.W. BOT
F8.0	8'-0"	8'-0"	1'-0"	(8) - #5 x 5'-8" E.W. BOT
F6.5	6'-6"	6'-6"	1'-0"	(7) - #5 x 6'-2" E.W. BOT
F7.0	7'-0"	7'-0"	1'-2"	(8) - #5 x 6'-8" E.W. BOT
F7.5	7'-6"	7'-6"	1'-4"	(7) - #5 x 7'-2" E.W. BOT
F8.0	8'-0"	8'-0"	1'-4"	(8) - #5 x 7'-8" E.W. BOT

- 1 GARAGE LEVEL FOUNDATION PLAN  
1/8" = 1'-0"
- NOTES:
- ELEVATIONS SHOWN ARE BASED ON FIRST FLOOR SLAB ELEVATION OF 100'-0" WHICH REFERENCES CIVIL FINISH FLOOR ELEVATION 360.0.
  - BASEMENT TOP OF SLAB ELEVATION = 86'-6".
  - EAST STAIR TOP OF SLAB ELEVATION = 94'-8".
  - "F" DENOTES SPREAD FOOTINGS. SEE FOOTING SCHEDULE FOR SIZE AND REINFORCING.
  - "T.O.F." DENOTES TOP OF FOOTING ELEVATION.
  - "T.O.W." DENOTES TOP OF FOUNDATION WALL ELEVATION.
  - "T.O.P." DENOTES TOP OF PIER ELEVATION.
  - COORDINATE SUMP PIT LOCATION WITH ELEVATOR SUBMITTALS.
  - COORDINATE DOOR R.O.s WITH ARCH DWGS AND DOOR SUBMITTALS.

**CENTRAL & MAIN**  
WINDSOR, VT

GARAGE LEVEL FOUNDATION PLAN  
DESIGN DEVELOPMENT SET

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DUNCAN + WISNIEWSKI ARCHITECTURE  
A Professional Corporation

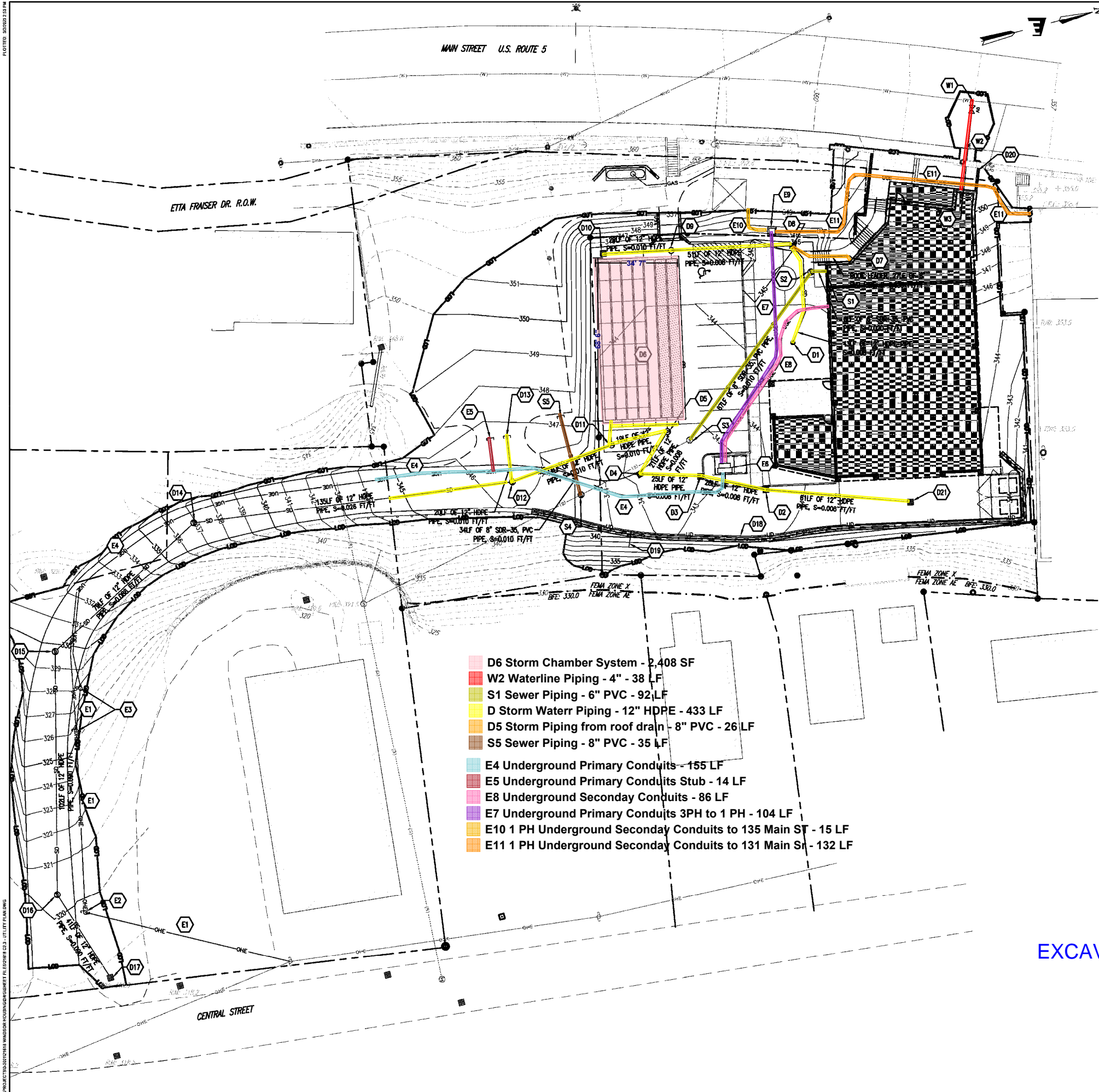
**ENGINEERING VENTURES PC**

208 FLYNN AVENUE, SUITE 2A  
BURLINGTON, VERMONT 05401  
T. 802.863.6225

PROGRESS SET  
NOT FOR CONSTRUCTION  
08/18/2023

23143  
DATE: 06.27.23  
DRAWN: JTM/JLR

**S1-0.0**



**STORMWATER SCHEDULE**

- D1 12" DIA. NYLOPLAST AREA DRAIN  
RIM: 342.34  
INV. OUT (12" HDPE): 338.71  
SUMP: 336.71
- D2 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 343.36  
INV. IN (12" HDPE): 339.08  
INV. OUT (12" HDPE): 339.08  
SUMP: 337.08
- D3 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 342.55  
INV. IN (12" HDPE): 338.84  
INV. OUT (12" HDPE): 338.59  
SUMP: 336.59
- D4 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 342.55  
INV. IN (12" HDPE): 338.38  
INV. OUT (12" HDPE): 338.13  
SUMP: 336.13
- D5 4' I.D., PRECAST CONCRETE, MANHOLE (FLAT TOP) WITH INTERNAL WEIR. WEIR ELEV: 340.46  
RIM: 342.94  
INV. IN (12" HDPE): 337.96  
INV. OUT (12" HDPE BYPASS): 338.00  
INV. OUT (12" HDPE): 337.71
- D6 UNDERGROUND STORMWATER CHAMBER SYSTEM ADS SC-740 STORMTECH CHAMBERS 7 ROWS, 9 CHAMBERS PER ROW TOP OF STONE ELEV.: 340.71 TOP OF CHAMBER ELEV.: 340.21 BOT. OF CHAMBER ELEV.: 337.71 BOT. OF STONE ELEV.: 337.21
- D7 6" DIA. ROOF DRAIN ENTRANCE, INV. ELEV.: 342.00
- D8 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 344.80  
INV. IN (6" PVC): 341.10  
INV. IN (12" HDPE): 338.37  
INV. OUT (12" HDPE): 338.37  
SUMP: 336.37
- D9 4' I.D., PRECAST CONCRETE, MANHOLE  
RIM: 344.39  
INV. IN (12" HDPE): 337.96  
INV. IN (12" HDPE): 340.21  
INV. OUT (12" HDPE): 337.71
- D10 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 344.50  
INV. OUT (12" HDPE): 340.50  
SUMP: 338.50
- D11 4' I.D., PRECAST CONCRETE, OUTLET CONTROL MANHOLE WITH INTERNAL WEIR. WEIR ELEV: 340.46  
RIM: 341.19  
INV. IN (12" HDPE BYPASS): 337.81  
INV. IN (12" HDPE SYSTEM): 337.71  
INV. OUT (12" HDPE): 336.71
- D12 4' I.D., PRECAST CONCRETE, MANHOLE  
RIM: 346.10  
INV. IN (12" HDPE STUB): 338.00  
INV. IN (12" HDPE): 336.25  
INV. OUT (12" HDPE): 336.0
- D13 12" DIA., CAPPED STUB FOR FUTURE DEVELOPMENT ON ADJACENT LOT
- D14 4' I.D., PRECAST CONCRETE, MANHOLE  
RIM: 336.93  
INV. IN (12" HDPE): 332.43  
INV. OUT (12" HDPE): 332.18
- D15 4' I.D., PRECAST CONCRETE, MANHOLE  
RIM: 329.70  
INV. IN (12" HDPE): 325.20  
INV. OUT (12" HDPE): 324.95
- D16 4' I.D., PRECAST CONCRETE, MANHOLE  
RIM: 320.32  
INV. IN (12" HDPE): 315.82  
INV. OUT (12" HDPE): 315.57
- D17 CORE AND BOOT NEW OPENING IN EXISTING CATCH BASIN  
INV. IN (12" HDPE): 314.80  
EXIST. INV. OUT (12" HDPE): T.B.D. IN FIELD
- D18 6" DIA., PERFORATED, PVC WALL DRAIN
- D19 DAYLIGHT WALL DRAIN ON SLOPE BELOW WALL. FIELD FIT INVERT ELEVATION BASED ON ACTUAL WALL DESIGN/INSTALLATION.
- D20 PROVIDE A 6", THROUGH WALL, SCUPPER DRAIN  
INV. ELEV.: 358.14
- D21 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 343.40  
INV. OUT (12" HDPE): 339.56  
SUMP: 337.56
- D22 4' I.D., PRECAST CONCRETE, CATCHBASIN  
RIM: 343.40  
INV. OUT (12" HDPE): 339.56  
SUMP: 337.56

**WATER SCHEDULE**

- W1 STAINLESS STEEL TAPPING SLEEVE AND VALVE ON EXISTING WATER MAIN. EXISTING LINE SIZE T.B.D.
- W2 3/8" OF 4" D.I. WATER LINE. COMBINED FIRE SUPPLY AND DOMESTIC WATER SERVICE
- W3 4" WATER LINE SERVICE ENTRANCE, INV. ELEV.: 351.44. REFER TO MEP PLANS FOR INTERNAL SEPARATION OF FIRE SUPPLY AND DOMESTIC WATER SERVICE PLUMBING

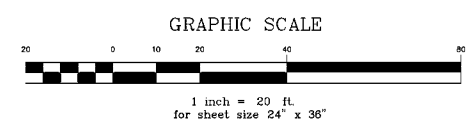
**SEWER SCHEDULE**

- S1 SEWER SERVICE ENTRANCE, INV. ELEV.: 338.30
- S2 4' I.D., PRECAST CONCRETE MANHOLE  
RIM: 344.78  
INV. IN (8" SDR-35 PVC): 338.18  
INV. OUT (8" SDR-35 PVC): 338.08
- S3 EXISTING CONCRETE MANHOLE ADJUST RIM ELEV. FROM 339.90 TO 342.86  
INV. IN (8" SDR-35 PVC): MATCH EXISTING (T.B.D.)  
INV. OUT (EXISTING): T.B.D.
- S4 4' I.D., PRECAST CONCRETE MANHOLE ON EXISTING SEWER LINE  
RIM: 344.80  
INV. IN (8" SDR-35): MATCH EXISTING PIPE INVERT (T.B.D.)  
INV. IN (EXISTING): MATCH EXISTING PIPE INVERT (T.B.D.)  
INV. OUT (EXISTING): MATCH EXISTING PIPE INVERT (T.B.D.)
- S5 8" DIA., CAPPED STUB FOR FUTURE DEVELOPMENT ON ADJACENT LOT

**ELECTRICAL SCHEDULE**

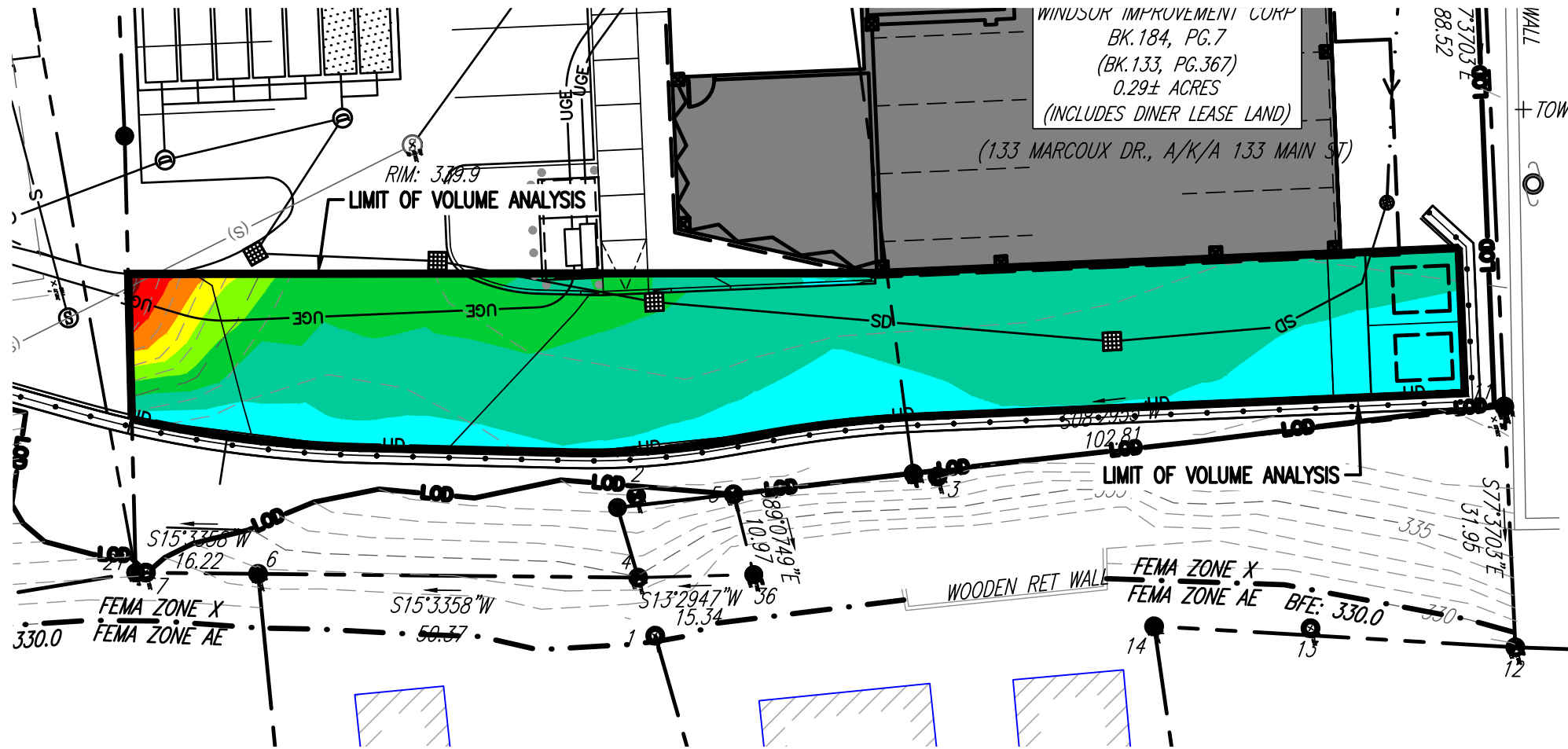
- E1 OVERHEAD THREE-PHASE LINE EXTENSION
- E2 UTILITY POLE
- E3 UTILITY POLE WITH CONDUIT RISERS
- E4 UNDERGROUND CONDUITS, THREE-PHASE ELECTRICAL LINE EXTENSION FROM RISER POLES TO TRANSFORMER
- E5 CAPPED UNDERGROUND CONDUIT STUBS FOR FUTURE DEVELOPMENT ON ADJACENT LOT
- E6 3-PHASE ELECTRICAL TRANSFORMER ON GMP K-30.4 VAULT WITH BOLLARDS FOR PROTECTION
- E7 UNDERGROUND CONDUITS, ONE-PHASE EXTENSION FROM 3-PHASE TRANSFORMER TO 1-PHASE TRANSFORMER
- E8 UNDERGROUND CONDUITS, SECONDARY SERVICE TO BUILDING ELECTRICAL ROOM
- E9 1-PHASE ELECTRICAL TRANSFORMER ON FIBERGLASS VAULT
- E10 UNDERGROUND CONDUITS, SECONDARY SERVICE TO 135 MAIN STREET BUILDING
- E11 UNDERGROUND CONDUITS, SECONDARY SERVICE TO 131 MAIN STREET BUILDING. REQUIRES CAREFUL COORDINATION AROUND BUILDING CONSTRUCTION

**EXCAVATION AREAS - UTILITY TRENCHES**



Stamp	
Date	
Description	
No.	
<p>208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-654-2225 18 Mechanics Street, Suite E03, Lebanon, NH 03786 • 603-442-8333 414 Union Street, Schenectady, NY 12305 • 518-639-9514 www.engineeringventures.com</p>	
<p>DUNCAN WISNIEWSKI ARCHITECTS 255 SOUTH CHAMPLAIN STREET BURLINGTON, VERMONT</p>	
<p>UTILITY PLAN CENTRAL &amp; MAIN</p>	
<p>TOWN OF WINDSOR, WINDSOR COUNTY, VERMONT</p>	
Sheet Title:	
Project Title:	
EV Project #	21618
Drawn By:	JWF
Checked By:	NAP
Scale:	1" = 20'
Date:	03/03/2023
C2.3	





Number	Minimum Elevation	Maximum Elevation	Area	Color
1	-4.00	-3.00	4.84	Dark Red
2	-3.00	-2.00	24.51	Red
3	-2.00	-1.00	39.05	Orange
4	-1.00	0.00	47.97	Yellow
5	0.00	1.00	75.77	Light Green
6	1.00	2.00	482.49	Green
7	2.00	3.00	2181.99	Teal
8	3.00	4.00	815.29	Cyan
9	4.00	5.00	0.50	Blue
10	5.00	6.00	0.29	Dark Blue
11	6.00	7.20	3.36	Very Dark Blue

NAME	CUT FACTOR	FILL FACTOR	2D AREA	CUT	FILL	NET
21618_SRF_VOL	1.0000	1.0000	3,676.0600 SQ. FT.	5.78 CU.YD.	336.24 CU.YD.	330.46 CU.YD.
TOTALS			3,676.0600 SQ. FT.	578 CU.YD.	336.24 CU.YD.	330.46 CU/YD.

CUT/FILL ANALYSIS FOR PAVED DRIVEWAY

## VOLUME CALC. NOTES

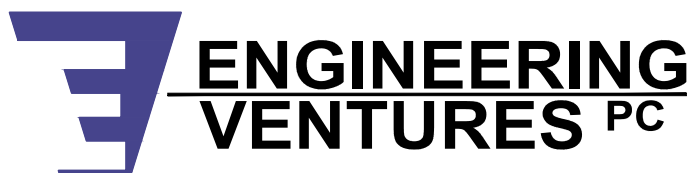
1. THE EARTHWORK VOLUME ANALYSIS PERFORMED HERE ASSUMES THAT THE TOP 12" OF NATIVE MATERIAL, WITHIN THE ANALYSIS LIMITS, WILL BE REMOVED.
2. THE EARTHWORK VOLUME ANALYSIS ASSUMES THAT THE TOP 2.3' OF THE FINISHED GRADE WILL CONSIST OF SELECT ROADWAY MATERIALS AND ASPHALT PAVING AND AS SUCH HAVE BEEN ELIMINATED FROM THIS ANALYSIS.
3. NO SOIL EXPANSION OR COMPACTION FACTORS HAVE BEEN USED ON THIS ANALYSIS.
4. EARTHWORK VOLUMES HERE REPRESENT THE DIFFERENCE BETWEEN STRIPPED SUBGRADE/EXISTING GROUND AND THE BOTTOM OF THE PROPOSED SELECT ROADWAY MATERIALS.

## FILL VOLUME CALCULATIONS CENTRAL & MAIN

TOWN OF WINDSOR, WINDSOR COUNTY, VERMONT

DUNCAN WISNIEWSKI ARCHITECTS  
255 SOUTH CHAMPLAIN STREET  
BURLINGTON, VERMONT

SEPTEMBER 12, 2023



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85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333  
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## **Appendix B**

### **Architectural Renderings**

**Windsor Housing Project (Lot 1)  
133 Main Street  
Windsor, Vermont**

**Architectural Renderings**

Source: <https://www.homemattershere.org/central-and-main-windsor/>



View from Main Street and of Windsor Diner



View from Main Street

**Windsor Housing Project (Lot 1)  
133 & 137 Main Street  
Windsor, Vermont**

**Architectural Renderings**

Source: <https://www.homemattershere.org/central-and-main-windsor/>



View east/back side of proposed building



View parking lot area and southeast side of proposed building



## Appendix C

### Adjoining Property Owner Information & Public Notice Form

**Windsor Housing Project (Lot 1)  
133 & 137 Main Street  
Windsor, Vermont**

**Adjoining Property Owners**

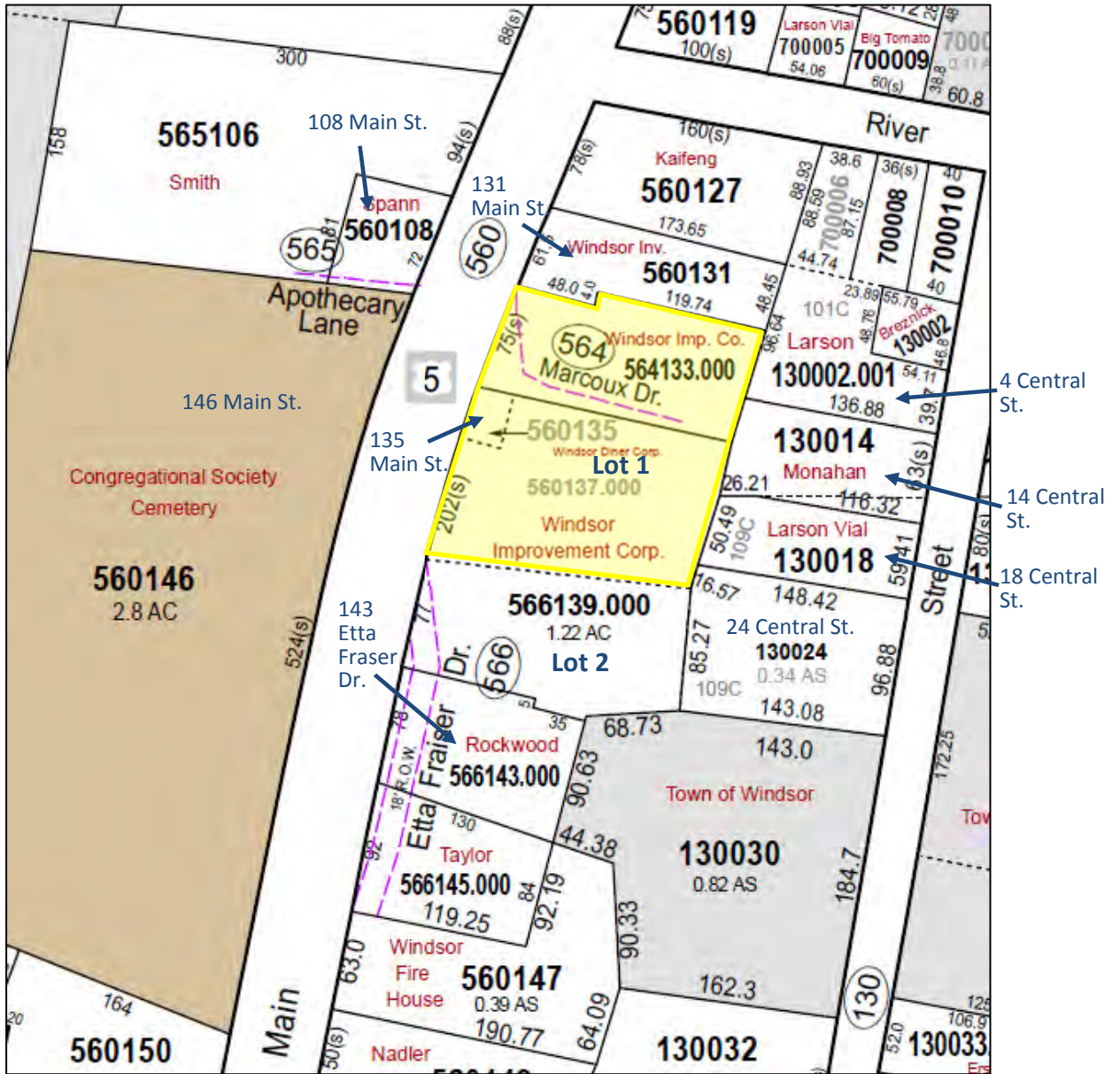
Direction / Description	Parcel ID	Street Address	Property Owner & Mailing Address
West / Commercial (diner)	560135	135 Main Street	Daniel Kirby d/b/a Dan's Windsor Diner 135 Main Street Windsor, VT
West / Residential	560108	108 Main Street	Spann, Kurt & Neily, Elizabeth Trustee 33 River Street Woodstock, VT 05091
West / Cemetery	560146	146 Main Street	Congregational Society PO Box 298 Windsor, VT 05089
North / Mixed Use Commercial Building	560131	131 Main Street	Windsor Investments, LLC PO Box 730 Quechee, VT 05059
South / Mixed Use Commercial/Residential	566143	143 Etta Frasier Drive	Kabray Rockwood c/o River Valley Properties PO Box 66 Windsor, VT 05089
East / Residential	130018	18 Central Street	Larson Vial, LLC PO Box 66 Windsor, VT 05089
East / Residential	130002	4 Central Street	
East / Residential	130014	14 Central Street	Deborah Monahan 45 Vandevere Lane Colubus, NJ 08022
East / Residential	130024	24 Central Street	Windsor Improvement Corp. PO Box 445 Windsor, VT 05089

Note:

Information obtained from the Town of Windsor Tax Parcel Maps (<https://www.windsorvt.org/town-lister>) and the Windsor, VT Land Records Portal (<https://windsor.lr-1.com/>); mailing address from April 2022 Windsor, VT Parcel Map Data



# Tax Parcel Map



Excerpted from Town of Windsor Tax Parcel Maps (<https://www.windsorvt.org/town-lister>)



## Appendix D

### Contaminant Summary Tables



**Summary of Soil Analytical Data - Shallow Depths  
Lot #1, 133 - 137 Main Street  
Windsor, Vermont**

Soil Boring ID (depth):	SB7-S	SB8-S	SB9-S	SB10-S	SB11-S	SB12-S	SB13-S	SB14-S	SB15-S	SB16-S	SB17-S	SB18-S	VSS - Resident Soil	VT Urban Background Standard
Sample Depth (below grade)	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"	0 - 18"		
Sample Date:	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22		
<b>SVOCs (mg/kg)</b>														
Naphthalene	<b>0.09</b>	<b>0.082</b>	<b>0.14</b>	<b>0.043</b>	<b>0.62</b>	<b>0.12</b>	<b>0.075</b>	<b>0.017</b>	<b>0.054</b>	<b>0.13</b>	<b>0.056</b>	<b>0.021</b>	2.7	-
2-Methylnaphthalene	<b>0.051</b>	< 0.04	< 0.07	< 0.04	<b>0.24</b>	<b>0.043</b>	< 0.04	< 0.008	<b>0.018</b>	< 0.04	<b>0.023</b>	< 0.008	-	-
1-Methylnaphthalene	<b>0.033</b>	< 0.04	< 0.07	< 0.04	<b>0.16</b>	< 0.04	< 0.04	< 0.008	<b>0.012</b>	< 0.04	<b>0.019</b>	< 0.008	-	-
Acenaphthylene	<b>0.31</b>	<b>0.30</b>	<b>0.49</b>	<b>0.24</b>	<b>11</b>	<b>1.6</b>	<b>0.19</b>	<b>0.061</b>	<b>0.26</b>	<b>1.1</b>	<b>0.23</b>	<b>0.059</b>	-	-
Acenaphthene	<b>0.031</b>	<b>0.056</b>	<b>0.13</b>	< 0.04	<b>0.095</b>	< 0.04	< 0.04	< 0.008	<b>0.016</b>	<b>0.043</b>	<b>0.017</b>	< 0.008	-	-
Fluorene	<b>0.074</b>	<b>0.14</b>	<b>0.19</b>	< 0.04	<b>0.49</b>	<b>0.097</b>	< 0.04	< 0.008	<b>0.038</b>	<b>0.17</b>	<b>0.063</b>	<b>0.011</b>	2,301	-
Phenanthrene	<b>0.83</b>	<b>2.5</b>	<b>2.2</b>	<b>0.39</b>	<b>4.7</b>	<b>2.2</b>	<b>0.63</b>	<b>0.11</b>	<b>0.61</b>	<b>2.1</b>	<b>0.90</b>	<b>0.19</b>	-	-
Anthracene	<b>0.24</b>	<b>0.66</b>	<b>0.51</b>	<b>0.12</b>	<b>3.9</b>	<b>0.78</b>	<b>0.12</b>	<b>0.026</b>	<b>0.21</b>	<b>0.89</b>	<b>0.16</b>	<b>0.059</b>	-	-
Fluoranthene	<b>1.4</b>	<b>3.5</b>	<b>4.0</b>	<b>0.97</b>	<b>18</b>	<b>6.0</b>	<b>2.6</b>	<b>0.36</b>	<b>1.4</b>	<b>8.4</b>	<b>1.5</b>	<b>0.53</b>	2,301	-
Pyrene	<b>1.2</b>	<b>2.9</b>	<b>3.1</b>	<b>0.82</b>	<b>17</b>	<b>4.9</b>	<b>2.6</b>	<b>0.33</b>	<b>1.2</b>	<b>6.9</b>	<b>1.2</b>	<b>0.42</b>	-	-
Benzo(a)anthracene	<b>0.89</b>	<b>1.6</b>	<b>1.8</b>	<b>0.49</b>	<b>17</b>	<b>4.0</b>	<b>2.0</b>	<b>0.20</b>	<b>0.82</b>	<b>5.4</b>	<b>0.74</b>	<b>0.28</b>	-	-
Chrysene	<b>1.0</b>	<b>1.7</b>	<b>2.1</b>	<b>0.59</b>	<b>16</b>	<b>4.1</b>	<b>2.7</b>	<b>0.24</b>	<b>0.91</b>	<b>5.6</b>	<b>0.91</b>	<b>0.33</b>	-	-
Benzo(b)fluoranthene	<b>1.5</b>	<b>2.1</b>	<b>2.8</b>	<b>0.84</b>	<b>36</b>	<b>6.4</b>	<b>4.4</b>	<b>0.36</b>	<b>1.2</b>	<b>6.8</b>	<b>1.2</b>	<b>0.47</b>	-	-
Benzo(k)fluoranthene	<b>0.53</b>	<b>0.71</b>	<b>1.1</b>	<b>0.31</b>	<b>13</b>	<b>2.6</b>	<b>1.4</b>	<b>0.13</b>	<b>0.46</b>	<b>2.6</b>	<b>0.38</b>	<b>0.19</b>	-	-
Benzo(a)pyrene	<b>1.1</b>	<b>1.8</b>	<b>2.2</b>	<b>0.64</b>	<b>25</b>	<b>4.7</b>	<b>3.1</b>	<b>0.29</b>	<b>1.0</b>	<b>5.6</b>	<b>0.90</b>	<b>0.37</b>	0.07	-
Indeno(1,2,3-cd)pyrene	<b>0.53</b>	<b>1.1</b>	<b>1.2</b>	<b>0.42</b>	<b>8.6</b>	<b>2.3</b>	<b>2.6</b>	<b>0.21</b>	<b>0.82</b>	<b>2.9</b>	<b>0.72</b>	<b>0.11</b>	-	-
Dibenzo(a,h)anthracene	<b>0.13</b>	<b>0.25</b>	<b>0.26</b>	<b>0.098</b>	<b>2.9</b>	<b>0.62</b>	<b>0.58</b>	<b>0.047</b>	<b>0.19</b>	<b>0.76</b>	<b>0.16</b>	<b>0.021</b>	-	-
Benzo(g,h,i)perylene	<b>0.46</b>	<b>0.95</b>	<b>0.89</b>	<b>0.36</b>	<b>5.6</b>	<b>1.8</b>	<b>2.7</b>	<b>0.20</b>	<b>0.69</b>	<b>2.3</b>	<b>0.57</b>	<b>0.076</b>	-	-
TEQ as Benzo(a)pyrene*	<b>1.5283</b>	<b>2.5388</b>	<b>3.0531</b>	<b>0.91669</b>	<b>34.206</b>	<b>6.6201</b>	<b>4.5967</b>	<b>0.41554</b>	<b>1.47951</b>	<b>7.9016</b>	<b>1.33071</b>	<b>0.47923</b>	0.07	0.580

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable standards are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA

\* Sum of Toxicity Equivalent Quotients (TEQs) provided in laboratory report. Toxicity Equivalent Factors (TEFs) used by laboratory are consistent with those provided in I-Rule (July 6, 2019).





**Summary of Soil Analytical Data - Intermediate Depths**  
**Lot #1, 133 - 137 Main Street**  
**Windsor, Vermont**

Soil Boring ID (depth):	SB7-I	SB8-I	SB9-I	SB10-I	SB11-I	SB12-I	SB13-I	SB14-I	SB15-I	SB16-I	SB17-I	SB18-I	VSS - Resident Soil	VT Urban Background Standard
Sample Depth (below grade)	2 - 3'	3'	3 - 4'	3 - 4'	2'	2'	2 - 4'	3 - 4'	3 - 4'	3 - 4'	3 - 4'	3 - 4'		
Sample Date:	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22	07/06/22		
SVOcs (mg/kg)														
Naphthalene	< 0.009	<b>0.042</b>	< 0.008	<b>0.18</b>	< 0.008	< 0.008	<b>0.038</b>	< 0.008	< 0.009	< 0.008	<b>0.019</b>	< 0.008	2.7	-
2-Methylnaphthalene	< 0.009	< 0.04	< 0.008	<b>0.047</b>	< 0.008	< 0.008	<b>0.014</b>	< 0.008	< 0.009	< 0.008	< 0.008	< 0.008	-	-
1-Methylnaphthalene	< 0.009	< 0.04	< 0.008	< 0.04	< 0.008	< 0.008	<b>0.016</b>	< 0.008	< 0.009	< 0.008	< 0.008	< 0.008	-	-
Acenaphthylene	< 0.009	<b>0.15</b>	< 0.008	<b>0.56</b>	< 0.008	< 0.008	<b>0.10</b>	< 0.008	<b>0.015</b>	<b>0.014</b>	<b>0.059</b>	< 0.008	-	-
Acenaphthene	< 0.009	< 0.04	< 0.008	<b>0.062</b>	< 0.008	< 0.008	<b>0.026</b>	< 0.008	< 0.009	< 0.008	< 0.008	< 0.008	-	-
Fluorene	< 0.009	< 0.04	< 0.008	<b>0.13</b>	< 0.008	< 0.008	<b>0.054</b>	< 0.008	< 0.009	< 0.008	<b>0.016</b>	< 0.008	2,301	-
Phenanthrene	< 0.009	<b>0.32</b>	<b>0.017</b>	<b>2.1</b>	< 0.008	< 0.008	<b>0.80</b>	< 0.008	<b>0.085</b>	<b>0.068</b>	<b>0.28</b>	< 0.008	-	-
Anthracene	< 0.009	<b>0.10</b>	< 0.008	<b>0.47</b>	< 0.008	< 0.008	<b>0.18</b>	< 0.008	<b>0.018</b>	<b>0.0098</b>	<b>0.030</b>	< 0.008	-	-
Fluoranthene	< 0.009	<b>0.81</b>	<b>0.052</b>	<b>4.4</b>	< 0.008	<b>0.018</b>	<b>1.1</b>	< 0.008	<b>0.29</b>	<b>0.15</b>	<b>0.49</b>	< 0.008	2,301	-
Pyrene	< 0.009	<b>0.69</b>	<b>0.050</b>	<b>3.9</b>	< 0.008	<b>0.019</b>	<b>1.1</b>	< 0.008	<b>0.26</b>	<b>0.13</b>	<b>0.40</b>	< 0.008	-	-
Benzo(a)anthracene	< 0.009	<b>0.44</b>	<b>0.031</b>	<b>2.4</b>	< 0.008	<b>0.014</b>	<b>0.59</b>	< 0.008	<b>0.15</b>	<b>0.072</b>	<b>0.19</b>	< 0.008	-	-
Chrysene	< 0.009	<b>0.47</b>	<b>0.032</b>	<b>2.6</b>	< 0.008	<b>0.014</b>	<b>0.63</b>	< 0.008	<b>0.15</b>	<b>0.081</b>	<b>0.26</b>	< 0.008	-	-
Benzo(b)fluoranthene	< 0.009	<b>0.72</b>	<b>0.052</b>	<b>3.4</b>	< 0.008	<b>0.028</b>	<b>0.80</b>	< 0.008	<b>0.22</b>	<b>0.12</b>	<b>0.37</b>	< 0.008	-	-
Benzo(k)fluoranthene	< 0.009	<b>0.22</b>	<b>0.017</b>	<b>1.1</b>	< 0.008	<b>0.0098</b>	<b>0.26</b>	< 0.008	<b>0.076</b>	<b>0.041</b>	<b>0.14</b>	< 0.008	-	-
Benzo(a)pyrene	< 0.009	<b>0.57</b>	<b>0.041</b>	<b>2.9</b>	< 0.008	<b>0.022</b>	<b>0.67</b>	< 0.008	<b>0.18</b>	<b>0.095</b>	<b>0.27</b>	< 0.008	0.07	-
Indeno(1,2,3-cd)pyrene	< 0.009	<b>0.23</b>	<b>0.034</b>	<b>2.0</b>	< 0.008	<b>0.022</b>	<b>0.46</b>	< 0.008	<b>0.13</b>	<b>0.072</b>	<b>0.24</b>	< 0.008	-	-
Dibenzo(a,h)anthracene	< 0.009	<b>0.052</b>	< 0.008	<b>0.42</b>	< 0.008	< 0.008	<b>0.095</b>	< 0.008	<b>0.025</b>	<b>0.014</b>	<b>0.048</b>	< 0.008	-	-
Benzo(g,h,i)perylene	< 0.009	<b>0.18</b>	<b>0.030</b>	<b>1.6</b>	< 0.008	<b>0.021</b>	<b>0.39</b>	< 0.008	<b>0.11</b>	<b>0.063</b>	<b>0.21</b>	< 0.008	-	-
TEQ as Benzo(a)pyrene*	ND	<b>0.76367</b>	<b>0.052902</b>	<b>4.1136</b>	ND	<b>0.28512</b>	<b>0.95323</b>	ND	<b>0.25591</b>	<b>0.135891</b>	<b>0.39966</b>	ND	0.07	0.580

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable standards are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA

\* Sum of Toxicity Equivalent Quotients (TEQs) provided in laboratory report. Toxicity Equivalent Factors (TEFs) used by laboratory are consistent with those provided in I-Rule (July 6, 2019).



**Summary of Soil Analytical Data - Native Depths**  
**Lot #1, 133 - 137 Main Street**  
**Windsor, Vermont**

Soil Boring ID (depth):	SB7-N	SB11-N	SB12-N	SB15-N	VSS - Resident Soil	VT Urban Background Standard
Sample Depth (below grade)	3 - 4'	3 - 4'	3 - 4'	4 - 6'		
Sample Date:	07/06/22	07/06/22	07/06/22	07/06/22		
<b>SVOCs (mg/kg)</b>						
Naphthalene	< 0.008	< 0.008	< 0.008	< 0.007	2.7	-
2-Methylnaphthalene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
1-Methylnaphthalene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Acenaphthylene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Acenaphthene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Fluorene	< 0.008	< 0.008	< 0.008	< 0.007	2,301	-
Phenanthrene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Anthracene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Fluoranthene	< 0.008	< 0.008	< 0.008	< 0.007	2,301	-
Pyrene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Benzo(a)anthracene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Chrysene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Benzo(b)fluoranthene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Benzo(k)fluoranthene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Benzo(a)pyrene	< 0.008	< 0.008	< 0.008	< 0.007	0.07	-
Indeno(1,2,3-cd)pyrene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Dibenzo(a,h)anthracene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
Benzo(g,h,i)perylene	< 0.008	< 0.008	< 0.008	< 0.007	-	-
TEQ as Benzo(a)pyrene*	ND	ND	ND	ND	0.07	0.580

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable standards are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA

\* Sum of Toxicity Equivalent Quotients (TEQs) provided in laboratory report. Toxicity Equivalent Factors (TEFs) used by laboratory are consistent with those provided in I-Rule (July 6, 2019).



Summary of Soil Analytical Data - Shallow Depths  
Lot #1, 133 - 137 Main Street  
Windsor, Vermont

Soil Boring ID (depth):	SB9-S	SB12-S	SB15-S	SB18-S	VSS - Resident Soil	EPA RSL - Resident Soil
Sample Depth (below grade)	0 - 18"	0 - 18"	0 - 18"	0 - 18"		
Sample Date:	07/06/22	07/06/22	07/06/22	07/06/22		
<b>METALS (mg/kg)</b>						
Total Arsenic	5.3	4.7	5.0	4.4	16	0.68
Total Lead	410	98	73	22	400	400

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

EPA RSL = Environmental Protection Agency Regional Screening Level (May 2022 EPA Regional Screening Level Summary Table)

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable Vermont standard are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA



Summary of Soil Analytical Data - Intermediate Depths  
Lot #1, 133 - 137 Main Street  
Windsor, Vermont

Soil Boring ID (depth):	SB9-I	SB12-I	SB15-I	SB18-I	VSS - Resident Soil	EPA RSL - Resident Soil
Sample Depth (below grade)	3 - 4'	2'	3 - 4'	3 - 4'		
Sample Date:	07/06/22	07/06/22	07/06/22	07/06/22		
<b>METALS (mg/kg)</b>						
Total Arsenic	<b>3.9</b>	<b>4.5</b>	<b>4.5</b>	<b>3.3</b>	16	0.68
Total Lead	<b>12</b>	<b>9.8</b>	<b>41</b>	<b>4.8</b>	400	400

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

EPA RSL = Environmental Protection Agency Regional Screening Level (May 2022 EPA Regional Screening Level Summary Table)

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable Vermont standard are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA



Summary of Soil Analytical Data - Native Depths  
Lot #1, 133 - 137 Main Street  
Windsor, Vermont

Soil Boring ID (depth):	SB7-N	SB11-N	SB12-N	SB15-N	VSS - Resident Soil	EPA RSL - Resident Soil
Sample Depth (below grade)	3 - 4'	3 - 4'	3 - 4'	4 - 6'		
Sample Date:	07/06/22	07/06/22	07/06/22	07/06/22		
<b>METALS (mg/kg)</b>						
Total Arsenic	<b>3.7</b>	<b>3.6</b>	<b>3.6</b>	<b>3.7</b>	16	0.68
Total Lead	<b>5.4</b>	<b>5.6</b>	<b>7.0</b>	<b>4.2</b>	400	400

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

EPA RSL = Environmental Protection Agency Regional Screening Level (May 2022 EPA Regional Screening Level Summary Table)

VSS = Vermont Soil Standards (Investigation and Remediation of Contaminated Properties Rule (I-Rule), July 6, 2019)

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

Detection limits and reported concentrations at or above the the applicable Vermont standard are shaded.

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA



**Summary of Soil Analytical Data - QAQC**  
**Lot #1, 133 - 137 Main Street**  
**Windsor, Vermont**

Soil Boring ID (depth in feet):	SB18-S	Duplicate-3	RPD (%)	SB13-S	Duplicate-4	RPD (%)
Sample Date:	07/06/22	07/06/22		07/06/22	07/06/22	
<b>PAHs (mg/kg)</b>						
Naphthalene	<b>0.082</b>	<b>0.023</b>	112.4	<b>0.075</b>	<b>0.077</b>	-2.6
2-Methylnaphthalene	< 0.04	<b>0.0083</b>	-	< 0.04	< 0.04	-
1-Methylnaphthalene	< 0.04	< 0.007	-	< 0.04	< 0.04	-
Acenaphthylene	<b>0.30</b>	<b>0.089</b>	108.5	<b>0.19</b>	<b>0.24</b>	-23.3
Acenaphthene	<b>0.056</b>	<b>0.0095</b>	142.0	< 0.04	< 0.04	-
Fluorene	<b>0.14</b>	<b>0.020</b>	150.0	< 0.04	< 0.04	-
Phenanthrene	<b>2.5</b>	<b>0.32</b>	154.6	<b>0.63</b>	<b>0.67</b>	-6.2
Anthracene	<b>0.66</b>	<b>0.084</b>	154.8	<b>0.12</b>	<b>0.16</b>	-28.6
Fluoranthene	<b>3.5</b>	<b>0.67</b>	135.7	<b>2.6</b>	<b>2.4</b>	8.0
Pyrene	<b>2.90</b>	<b>0.60</b>	131.4	<b>2.6</b>	<b>2.3</b>	12.2
Benzo(a)anthracene	<b>1.6</b>	<b>0.38</b>	123.2	<b>2.0</b>	<b>1.8</b>	10.5
Chrysene	<b>1.7</b>	<b>0.45</b>	116.3	<b>2.7</b>	<b>2.4</b>	11.8
Benzo(b)fluoranthene	<b>2.1</b>	<b>0.63</b>	107.7	<b>4.4</b>	<b>3.9</b>	12.0
Benzo(k)fluoranthene	<b>0.71</b>	<b>0.20</b>	112.1	<b>1.4</b>	<b>1.3</b>	7.4
Benzo(a)pyrene	<b>1.8</b>	<b>0.50</b>	113.0	<b>3.1</b>	<b>2.8</b>	10.2
Indeno(1,2,3-cd)pyrene	<b>1.1</b>	<b>0.39</b>	95.3	<b>2.6</b>	<b>2.2</b>	16.7
Dibenzo(a,h)anthracene	<b>0.25</b>	<b>0.083</b>	100.3	<b>0.58</b>	<b>0.50</b>	14.8
Benzo(g,h,i)perylene	<b>0.95</b>	<b>0.33</b>	96.9	<b>2.7</b>	<b>2.1</b>	25.0
TEQ as Benzo(a)pyrene*	<b>2.5388</b>	<b>0.72545</b>	111.1	<b>4.5967</b>	<b>4.1054</b>	11.3

Soil Boring ID (depth):	SB 15-N	Duplicate-5	RPD (%)
Sample Date:	07/06/22	07/06/22	
<b>METALS (mg/kg)</b>			
Total Arsenic	<b>3.7</b>	<b>2.6</b>	34.9
Total Lead	<b>4.2</b>	<b>3.4</b>	21.1

NOTES:

All values reported in mg/kg, dry, unless otherwise indicated.

<xx = Compound not detected above detection limit (xx)

Results reported above detection limits are indicated in bold

"-" indicates not analyzed or that a screening level is not provided in the I-Rule/EPA

\* Sum of Toxicity Equivalent Quotients (TEQs) provided in laboratory report. Toxicity Equivalent Factors (TEFs) used by laboratory are consistent with those provided in I-Rule (July 6, 2019).

RPD - Relative Percent Difference



## Appendix E

### VT DEC Stockpile Form



State of Vermont  
Department of Environmental Conservation  
Waste Management & Prevention Division  
1 National Life Drive – Davis 1  
Montpelier, VT 05620-3704  
(802) 828-1138

MANAGEMENT OF NON-HAZARDOUS CONTAMINATED SOIL  
REQUEST FORM  
July 2021

This form is to be used to assist in the compliance with the Investigation and Remediation of Contaminated Properties Rule (IRule) §35-803. This form takes the place of the ANR Off-site Soil Treatment Form and is to be used for the movement, stockpiling, treatment, or disposal of non-hazardous contaminated soils, both on-site and off-site. This form should be included with Soil Management Plans and Corrective Action Plans, as applicable. DEC Site Manager approval must be received, as signified by signature in Section 4, prior to the initiation of soil management work.

**Section 1. General Information**

Soil Source Site Name: \_\_\_\_\_

Address: \_\_\_\_\_

Facility ID#: \_\_\_\_\_ and/or Spill #: \_\_\_\_\_ and/or SMS Site #: \_\_\_\_\_

Will soils be temporarily stockpiled on-site or off-site for more than 90 days or between December 1<sup>st</sup> and April 1<sup>st</sup>?

Yes  No if Yes, date range: \_\_\_\_\_ to \_\_\_\_\_.

Disposal Facility: \_\_\_\_\_

Quantity of Soils: \_\_\_\_\_ cubic yards

Soil Contaminants: \_\_\_\_\_

**Check proposed soil management scenario below:**

- Soil will be live loaded and transported to disposal facility. **If yes, skip to Section 4. (primary method)**
- Soil to be temporarily stored on/off site, then transported to disposal facility. **If yes, complete entire form.(potentially)**
- Soil is Staying On-Site for Treatment. **If yes, complete entire form.**
- Soil is Destined for Off-Site Stockpile, Management and Treatment. **If yes, complete entire form.**

**Section 2. Soil Stockpile Siting Criteria Checklist**

- There are no potable drinking water supplies within 300-foot radius of the Soil Stockpile. This limit may need to be extended if water supplies are shown to be hydraulically down gradient.
- Soil Stockpile is not within zone one or two of a groundwater source protection area.
- \*There are no sensitive environments within 100 feet of the treatment location including, but not limited to:
  - Waterways (e.g., stream, river, lake, pond, wetland or floodplain zone);
  - State or Federally listed threatened or endangered species or habitat;
  - Class I or II groundwater zone;
  - Residence; or **There are residential properties adjacent to the Site.**
  - Property boundary



- Public access to the soil is prohibited through posting no trespassing or other means approved by Secretary.
- If the owner of the soil stockpiling parcel is different from the soil generator, written approval from the landowner that also grants access to the Secretary, has been obtained before stockpiling begins. *N/A*
- \*\*The municipality in which the soils will be stockpiled or treated has been notified in writing of the soil stockpiling or treatment location. If applicable, local permits should be obtained. **Municipal approval documents (letter, permit, etc.) attached.** *N/A*
- ANR Atlas generated Map including the latitude and longitude of the location in decimal degrees where the soil will be stockpiled. Minimum acceptable accuracy is plus-or-minus 15 feet. **Map attached.** *Location, within property boundary, to be determined by contractor (if needed)*

\*If setback criteria from sensitive receptors cannot be achieved, please provide written explanation.

\*\*This is a requirement for off-site stockpiling of soils only.

---

### **Section 3. Ownership Information**

<b>Location of Soil Stockpile</b>		<b>Generator/Owner of Soil/Responsible Party</b>	
Street Address	_____	Street Address	_____
	_____		_____
Company Name	_____	Company Name	_____
Landowner Name	_____	Owner Name	_____
Landowner Phone #	_____	Owner Phone #	_____
Landowner email	_____	Owner email	_____

---

### **Section 4. Signature Section**

#### **Responsible Party:**

**As the party responsible for compliance with the Investigation and Remediation of Contaminated Properties Rule and applicable statutes, I hereby certify that the representations made on this form are to the best of my knowledge true and correct.**

\_\_\_\_\_  
Name of Owner/Operator Representative (printed) Company Title

\_\_\_\_\_  
Signature Date



**Landowner:**

As landowner of the soil treatment stockpile location, I hereby give approval to the soil generator to stockpile the soil volume cited above at the above referenced location. In addition, I hereby grant property access to DEC investigators for the purpose of inspecting the Soil Stockpile at any reasonable time.

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**DEC Site Manager Approval:**

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Signature of DEC Site Manager

\_\_\_\_\_  
Date of Approval





## **Appendix F**

### **Health and Safety Plan**

**HEALTH AND SAFETY PLAN  
FOR PETROLEUM CONTAMINATED SITES**

**Prepared for:**

**Windsor Housing Project  
133, 137, 139 Main Street  
Windsor, VT 05089**

**Project #: 507210630**

***KAS, INC.***  
P.O. Box 787  
589 Avenue D, Suite 10  
Williston, VT 05495

**Date: June 22, 2023**

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# KAS, INC.

## DIRECTIONS TO THE HOSPITAL: Mt. Ascutney Hospital, 289 County Rd., Windsor

3 min (1.2 miles)

via State St

Fastest route now due to traffic conditions

135 Main St

Windsor, VT 05089

↑ Head north on Main St toward Apothecary Ln

469 ft

↶ Turn left onto State St

0.7 mi

↷ Turn right onto County Rd

0.3 mi

↶ Turn left

167 ft

↷ Slight left

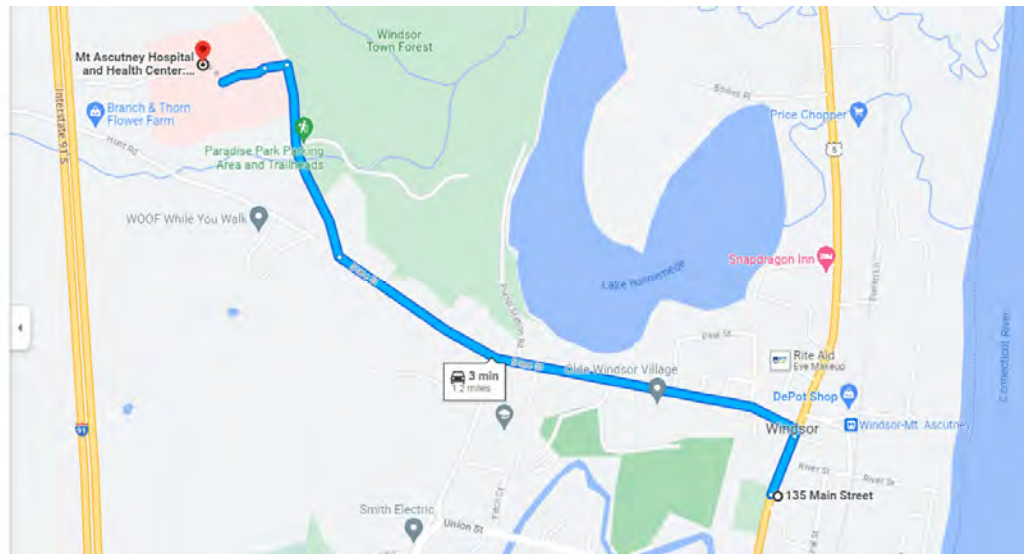
Destination will be on the right

341 ft

Mt Ascutney Hospital and Health Center:

Primary Care - Windsor

289 County Rd, Windsor, VT 05089



(source: Google Maps)

## SITE EVACUATION MAP (source: Google Earth Pro):





KAS, INC.  
HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT LOG

I have read this Health and Safety Plan and understand its contents. I agree to fully comply with it.

<u>Name</u>	<u>Organization</u>	<u>Date</u>	<u>Time</u>
-------------	---------------------	-------------	-------------

KAS, INC.  
WORKER/VISITOR LOG

<u>NAME</u>	<u>ORGANIZATION</u>	<u>DATE</u>	<u>TIME IN</u>	<u>TIME OUT</u>
-------------	---------------------	-------------	----------------	-----------------

## GENERAL

This site-specific Health and Safety Plan has been developed for site investigations and monitoring at petroleum-contaminated sites. This plan (and subsequent revisions) shall be in effect throughout the duration of the project. All personnel, regardless of their professional affiliation, are subject to the requirements of this plan when they are in the area defined as the site.

### 1. OPERATIONAL INFORMATION

#### 1.A. Chain of Command - Responsible Individuals

Jeremy Roberts \_\_\_\_\_, Project Manager  
On-Site KAS Personnel \_\_\_\_\_, Project Supervisor  
On-Site KAS Personnel \_\_\_\_\_, Site Safety Officer  
\_\_\_\_\_, Assistant Site Safety Officer

Non KAS Personnel:

The chain of command for this project is as follows:

Immediate job coordination issues and/or scheduling will be brought to the attention of the Project Manager. If the project is of a size where there is no Project Manager assigned, issues will be brought to the attention of the Project Supervisor.

Issues relative to personnel health and safety will be brought to the attention of the Site Safety Officer.

Job progress meetings and issues requiring Corporate coordination and KAS input will be coordinated by the Project Manager or Project Supervisor.

## 1.B Emergency Notification

A list of all State and Local Police, Ambulance, and Rescue Departments and a listing complete with routes to hospitals and emergency facilities shall be maintained by the Site Safety Officer. The list must include phone numbers and quickest routes to areas facilities. The Site Safety Officer shall also contact the hospitals or emergency treatment center and inform them of an injured worker. Advice on the transportation method, and if necessary, decontamination or treatment shall be offered.

Facilities to be posted on the site are listed below, including telephone numbers.

Police Department: Phone \_\_\_\_\_ 911 \_\_\_\_\_

Address \_\_\_\_\_

Fire Department: Phone \_\_\_\_\_ 911 \_\_\_\_\_

Address \_\_\_\_\_

EMS Unit: Phone \_\_\_\_\_ 911 \_\_\_\_\_

Address \_\_\_\_\_

Hospital: \_\_\_\_\_ 911 \_\_\_\_\_

Address:

## 1.C. Site Personal Protective Equipment (PPE)

Personal Protection Equipment (PPE) for this site will be Level D or Level D Plus, as described in Section 4 of this plan, and as dependent upon the task(s) to be conducted.

<u>Task</u>	<u>Level of Protection</u>
Water/product level monitoring	D
Water sampling	D
Soil screening/ sampling	D
Product bailing	D
O & M of Remedial Systems	D
Drilling/ Soil Borings/ Monitoring	
Well Installation	D Plus
Trenching	D Plus
Tank Pull Inspection	D Plus
Drum changes	D Plus (hard hat optional)

PPE will be automatically upgraded to higher levels if the action limits for Level D are exceeded (see Section 4.C). The Site Supervisor or the Site Safety Officer has the authority to change the PPE level to suit the site conditions in accordance with the prescribed limits contained in this plan.

#### 1.D. Fire Extinguisher Location

At least one fire extinguisher shall be kept in an accessible location on the KAS support vehicle. In addition, a fire extinguisher must be kept in an accessible location on any drill rig used on site.

#### 1.E. First Aid

A first aid kit is located in the KAS support vehicle on-site.

#### 1.F. Worker/Visitor Log

The attached logs must be completed for each worker or visitor to the site.

#### 1.G. Plan Acknowledgment Form

Each worker or visitor must read and understand this plan and then sign the attached acknowledgment form before being allowed on-site.

#### 1.H. Daily Air Monitoring Record

The attached Daily Air Monitoring Record must be completed by the end of each work day.

#### 1.I. EMERGENCY CONTINGENCY PLANS

The following Emergency Contingency Plan represent the most likely emergencies to be encountered on-site. These Emergency Plans shall be followed if they have to be activated. The Site Supervisor has senior authority to implement and modify the plans to suit particular situations until a higher authority is physically on-site. All workers also carry the responsibility to initiate emergency plans if the situation presents and the Site Supervisor is not in the immediate area.

## EMERGENCY CONTINGENCY PLAN

### 1.1.1. EVACUATION

It is possible that a site emergency could necessitate evacuating all personnel from the site. If such a situation develops, the Site Safety Officer, or designated representative, shall notify the Project Supervisor, or vice versa, of the event and they shall ensure that the evacuation is carried out in a calm, controlled fashion.

All personnel shall exit the site and congregate in an area designated by the Project Supervisor and/or Site Safety Officer during the daily tailgate safety meeting. The route of evacuation will be dependent on wind direction, severity and type of incident, etc.

The Project Supervisor and/or Site Safety Officer shall ensure that all personnel are accounted for. If someone is missing the Site Safety Officer shall alert emergency personnel.

### 1.1.2. MEDICAL EMERGENCY

The following procedures should be followed in the event of a medical emergency involving illness or injury to on-site personnel.

EMS units should be called immediately, unless the injury or illness is determined to be minor, not requiring emergency care.

Site operations should be shut-down and the site should be immediately secured. The area in which the injury or illness occurred shall be considered off-limits until the cause of the illness or injury is known.

Assess the nature of the injury or illness and insure the site is safe for additional personnel to enter and provide care to the injured/ ill person(s).

Assess the victim's condition, noting the level of consciousness and any cardiac or respiratory involvement. Administer first aid treatment to the injured person(s).

- 1) Check to see if the victim is conscious by talking loudly to them and gently jostling their shoulders.
- 2) If the victim is unconscious, check to see if they are breathing. Place an ear directly above their mouth and nose, at the same time looking toward the abdomen to watch for rise and fall of the chest cavity.
- 3) If the victim is not breathing, notify an EMS unit immediately, if one has not already been contacted. Administer rescue breathing if trained in this procedure, and check for a pulse.
- 4) If the victim is not breathing but maintains a pulse, continue rescue breathing (if trained) until the victim breathes on their own or until EMS rescue staff arrives.
- 5) If the victim is not breathing and has no pulse, administer Cardiopulmonary Resuscitation (if trained in this procedure) until EMS staff arrives and takes over, or until the victim recovers.

If site work has been conducted at Personal Protective Level C or higher, the victim should be decontaminated as soon as possible after removal from the contaminated environment. This should be done in a non-contaminated area well away from the source of the problem.

## EMERGENCY CONTINGENCY PLAN

Extreme care should be used to avoid cross-contamination to rescuer personnel. The victim should be washed by water spray or safety shower. Contaminated protective clothing should be removed after washing. The victim should be covered with plastic or fitted with a Tyvek suit. The SCBA or respirator should be removed last, except in the case of a critical injury where the victim requires respiratory support. The victim should not be transported until decontamination is performed to the degree that other personnel will not be unduly subjected to cross-contamination.

Instantaneous real-time air monitoring with photoionization detectors should be performed to ascertain if the illness or injury was caused by potential exposure to hazardous materials. Monitoring should be done both upwind and downwind of the incident site.

The Fire Department should be notified if additional help is immediately needed, or if access to water for decontamination of the victim is not available at the site.

If the victim appears to be critically injured, transport them to the nearest Emergency Room as soon as possible. The victim should not be transported to the hospital in anything other than an EMS Unit staffed by qualified personnel.

If the victim's condition appears to be non-critical, and is anything more severe than minor cuts or bruises, they can be transported to the nearest hospital in a vehicle other than a EMS Unit staffed by qualified personnel.

If the victim has sustained extremely minor injuries or a minor illness, it will be up to the discretion of the Site Safety Officer whether or not the victim should be treated on-site, and whether the victim may resume work. If the Site Safety Officer determines that the victim may not continue to work, the victim should be decontaminated and relieved of duty for the day. A physician or the victim's family physician should be contacted by the victim.

Any incident shall be documented both in the project file and on an Injury/Illness Report Form available from KAS management personnel.

### 1.1.3. ACCIDENTAL CONTAMINATION

The following procedures shall be instituted immediately in the event of contamination of any person on-site by Hazardous Materials.

If emergency rescue is needed to remove the victim from the contaminated area, notify EMS, Police, and Fire units immediately.

Absolutely no emergency rescue is to be attempted without trained emergency rescuers.

If the victim is able to move under their own power, escort them to a non-contaminated area as soon as possible.

The site should be shut-down and immediately secured. The area in which the contamination occurred shall be considered off limits until the arrival of trained personnel who are properly equipped with the appropriate personal protective equipment and monitoring instrumentation.

## EMERGENCY CONTINGENCY PLAN

Assess the victim's condition for the nature of injury or contamination. The victim should be considered symptomatic if they exhibit any evidence of abnormal symptoms. Monitor the level of consciousness and any cardiac or respiratory involvement. Use special care to insure that you do not become contaminated as well. If any abnormal symptoms are present, notify EMS, Police, and Fire Department units immediately.

Attempt to identify the exact type of material involved. If the material cannot be positively identified, attempt to acquire a grab sample. Use extreme caution if the danger of being contaminated exists.

The victim should be decontaminated as soon as possible after removal from the contaminated environment. This should be done in a non-contaminated area well away from the source of the problem. Extreme care shall be taken to avoid cross-contamination. The victim should be washed by water spray or safety shower. Contaminated protective clothing should be removed after washing. The victim should be covered with plastic or fitted with a Tyvek suit. The SCBA or respirator should be removed last, except in the case of critical injury where the victim requires respiratory support. The victim should not be transported until decontamination is performed to the degree that other personnel will not be unduly subjected to cross-contamination.

If the victim appears to be critically injured (i.e. unconscious, cardiac or respiratory abnormalities, seizures, etc.), support the victim's vital functions. Administer CPR if needed.

The Fire Department should be notified if additional help is immediately needed, or, if access to water to wash and decontaminate the victim is not available at the site.

If the victim appears to be symptomatic, the victim should be decontaminated and then transported to the nearest Emergency Room or appropriate medical assistance facility as soon as possible. The victim should not be transported other than by an EMS unit staffed by qualified personnel.

The incident shall be documented both in the project file and on an Injury/Illness report form.

### 1.1.4. FIRE

The following procedures shall be instituted immediately in the event of a fire on-site.

The site should be shut-down and immediately secured. The area in which the fire occurred should be considered off limits until the cause can be determined. All nonessential site personnel shall be evacuated from the site to a safe, secure area. Notify the Fire Department immediately.



## EMERGENCY CONTINGENCY PLAN

The four classes of fire along with their constituents are as follows:

- Class A - Wood, cloth, paper, rubber, many plastics, ordinary combustible materials.
- Class B - Flammable liquids, gases and greases.
- Class C - Energized electrical equipment.
- Class D - Combustible metals such as magnesium, titanium, sodium, potassium.

Small fires on site may be actively attacked for control and extinguishing. Extreme care shall be taken while in this operation and protective clothing should be worn to protect personnel. If the fire involves hazardous materials, positive pressure self contained breathing apparatus is mandatory.

The Site Safety Officer, or his/her representative, shall be responsible for all fire fighting activities on the site until a Fire Department is present.

All approaches to the fire should be from the upwind side if possible. Distance from personnel to the fire should be close enough to ensure proper attack of the extinguishing material, but far enough away to ensure that personnel are safe. The proper extinguisher shall be utilized for the Class(es) of fire present on the site.

If possible, the fuel source should be cut off or separated from the fire. Care must be taken when performing operations involving shut-off of valves and manifolds, if present.

No attempt should be made against large fires. These should be handled by the Fire Department.

All fire extinguishers should be recharged and inspected by qualified personnel after any use. All equipment shall be properly decontaminated prior to repair/recharging.

### 1.1.5. RELEASE OF HAZARDOUS MATERIAL

The following procedures shall be instituted immediately in the event of a spill or air release of a hazardous material on site.

Site activities should be shut down and immediately secured. The area in which the spill or release occurred shall be considered off limits until the cause can be determined and site safety can be evaluated. All nonessential site personnel shall be evacuated from the site to a safe, secure area.

The spilled or released product should be immediately identified and appropriate measures, such as dikes or berms, instituted to halt and contain the flow. If the spill extends into waterways, the Coast Guard and the National Response Center (1-800-424-8802) and appropriate State and Local Agencies should be notified immediately. Spill booms should be put in place in an attempt to curb downstream contamination.

## EMERGENCY CONTINGENCY PLAN

Instantaneous real-time air monitoring with ionization and combustible gas indicators should be started. Monitoring should be performed both upwind and downwind of the spill site or release point. Results of the air monitoring will determine the appropriate level of Personal Protective Equipment.

If the released material is unknown, Level B protection is mandatory. Samples of the material should be acquired to facilitate identification of the material.

If the results of the air monitoring show that the levels of contaminants exceed immediately dangerous to life or health (IDLH) values, the site shall be immediately evacuated and the appropriate Federal, State, County, and local regulatory authorities and emergency response personnel should be notified.

Notify the Police and Fire Department immediately if contaminants are found to have migrated off site into populated areas, a large spill of flammable products is involved, or, the material is considered acutely toxic or exceeding published IDLH values.

The procedures listed above shall be instituted if there is a discovery of an acutely toxic material in much larger quantities than expected. In this case, all personnel on the site should be cleared to a safe area and briefed in a tailgate safety meeting.

The spill or release shall be reported to the appropriate Federal, State, County and Local regulatory authorities per the reporting standards of those regulatory agencies.

## 2. SITE HISTORY AND TASK DESCRIPTION

Historical uses of the Site and/or nearby properties have resulted in subsurface contamination of polycyclic aromatic hydrocarbons (PAHs) and lead in soil at levels above the Vermont regulatory standard. Previous use of the properties was residential and historical fire(s) have apparently occurred on former onsite structures. The PAHs and metal in soil is attributed to the historical use of fill onsite, the Site being in a long-time established urban environment, and/or from the historical fire(s). Fill soils containing brick, wood and slate have been observed throughout the Site down to an average depth of approximately 4.0 feet below grade. Due to the contamination in soil, corrective actions are required as part of the Site redevelopment.

The corrective actions chosen include the following:

1. A soil management plan to ensure that impacted soils disturbed during construction are managed appropriately, does not migrate, and does not present a risk to potential sensitive receptors during construction;
2. Installation of engineered barriers to isolate impacted soils that will remain; and,
3. Use of institutional controls to ensure engineered controls remain effective over time.

### **3. WORK AREAS**

Work and support areas shall be established based on ambient air data at the work sites. They shall be established in order to contain contamination within the smallest areas possible and shall ensure that each person on the site has the proper personal protective equipment for the area or zone in which work is to be performed.

Adequate safety instruction signs shall be placed in areas where admittance is restricted due to a hazardous environment.

Personnel shall not be permitted on the site alone during the following site activities:

- all work conducted in Level C or above
- Confined Space Entry activities
- trenching and pipe installation for remedial system installation
- drilling activities

Personnel in these situations shall use the "Buddy System", in groups of two or more, while on site. Non-KAS personnel (i.e., drillers, excavators) may serve in the capacity of a "Buddy" while on site conducting the above-noted activities.

Personnel may be on-site alone for Level D site activities, if Confined Space Entry activities are not in progress.

### **4. PROTECTIVE EQUIPMENT**

#### **4.A. Protective Clothing**

Protective clothing shall be worn by all persons on site as directed by the Site Supervisor and/or Site Safety Officer for the job.

#### **4.B. Personnel Protection Requirements and Methods**

Action levels are those concentrations of which an upgrade in protective clothing or equipment is required. Organic vapor concentrations are to be continuously monitored in the field by use of an HNu, or a device of similar capability, with readings being taken in the breathing space occupied by the field personnel to determine whether an action level has been exceeded.

The Site Safety Officer shall designate the appropriate level of protection for personnel entering the work area as determined by the predetermined action level. It shall be the responsibility of each contractor to supply their personnel with the required personal protective equipment and to ensure that they are knowledgeable and proficient in its use. The Site Safety Officer has the authority to reject the credentials of any person and disallow their entry to the site if he/she feels that any person is insufficiently qualified or protected for the tasks at hand.

Respiratory protection shall be selected for use as warranted by breathing zone air monitoring and type of site work being performed. Levels of Protection are as follows, listed in order from highest to lowest protection:

### **Level A Protection**

Level A should be selected when the highest level of respiratory, skin and eye protection is needed. Level A is generally used when extremely hazardous substances are known to be present in high atmospheric concentrations and where Level B splash gear does not offer adequate protection against any dermal-active substances present or where materials and concentrations are unknown. Level A is used where air-borne compound(s) exceeding the Immediately Dangerous to Life or Health limit may be encountered.

- Approved, positive pressure-demand, self contained breathing apparatus (SCBA) or airline
- Full encapsulating, chemical-resistant clothing
- Gloves (outer/inner), chemical resistant
- Chemical-resistant disposable outer-boot coverings,
- Boots with toe and shank protection
- Hard hat
- All seams between protective clothing items will be sealed with duct tape
- Two-way radio communications

### **Level B Protection**

Level B should be selected when the type and atmospheric concentrations of substances have been identified and the highest level of respiratory protection is required, but a lesser level of skin protection is needed. Generally Level B protection is used in situations where the chemical(s) is known, the atmosphere is oxygen deficient (less than 19.5%), no IDLH concentrations of substances which pose a respiratory hazard are present, or where dermal contact with a hazardous substance is unlikely.

- Approved, positive pressure-demand, self contained breathing apparatus (SCBA) or airline
- Chemical-resistant clothing
- Gloves (outer/inner), chemical resistant
- Chemical-resistant disposable outer-boot coverings
- Boots with protective toe and shank
- Hard hat
- All seams between protective clothing items will be sealed with duct tape

### **Level C Protection**

Level C should be selected when the type of air contaminants have been identified, concentrations have been measured, and the criteria for using air-purifying respirators are met, and skin-exposure to dermal-hazardous compounds are not expected. Appropriate cartridges must be available removal of the subject contaminant(s) to be encountered. The atmospheric concentration of oxygen must be greater than and equal to 19.5% (but not in excess of 23%). Use of Level C requires continuing measurement of air contaminants to ensure that IDLH concentrations do not exist and that the concentrations of the contaminants present do not exceed the service limits of the respirator.

- Approved, full face or half-face air purifying, cartridge/canister-equipped respirator
- Chemical-resistant clothing

- Gloves (outer/inner), chemical resistant
- Chemical-resistant disposable outer-boot coverings,
- Boots with protective toe and shank
- Hard hat
- All seams between protective clothing items will be sealed with duct tape

#### **Level D Protection:**

Level D should be selected when the contaminants are known, when airborne contaminant levels are below appropriate TLV limits, and there is no hazard for direct skin contact. At a minimum, Level D protection shall require use of the following protective equipment.

- Standard work uniform
- Substantial boots
- Goggles or safety glasses w/ side shields
- Latex gloves
- Chemical resistant outer gloves are required for work tasks involving contact with pure petroleum products.

In addition, certain work site tasks will require additional personal protective equipment to protect against injury around heavy machinery and overhead hazards, as well as potential splash hazards. These tasks will be conducted in **Level D Plus protection**

#### **Level D Plus**

- all PPE listed for Level D above  
except boots must have protective toe and shank
- hard hat

No person may be assigned a task requiring the use of respiratory protection equipment without first being properly trained in its use and limitations and having passed the appropriate OSHA physical. Before the wearing of any respiratory protection equipment is permitted, the wearer must first complete a fit test, and must be completely aware of fitting procedures.

No person may be assigned a task requiring the use of respiratory equipment where it has been determined that that person has a physical limitation which might result in injury in conjunction with respiratory equipment use.

All respiratory equipment shall be properly fitted to worker(s) who will be using such equipment. All equipment shall be properly cleaned and inspected for work parts as often as necessary. SCBA's should be inspected once a month at a minimum. All respiratory equipment shall be cleaned and a fit test shall be satisfactorily passed before being worn by a different operator.

Any persons wearing glasses who must wear respiratory equipment must wear short-templed or no-templed glasses which may be taped to the wearers face, to prevent interference with the respiratory face piece.

Applicable protective clothing shall be selected and worn at all times by personnel exposed to, or in areas suspected of, contamination.

#### 4.C. Action Levels

All initial site access and activities will be done in Level D attire.

##### 4.C.1. Photoionization Detector Response in breathing zone (ppm):

0 to 100: Level D  
101 to 750: Level C  
751 to 10,000: Level B or A  
Above 3,000: Immediately vacate the area

##### 4.C.2. Combustible Gas Response

0.0 to 20.0% LEL: Continue with normal activity  
Above 20.0% LEL: Immediately vacate the area

Note: Confined Space activities have lower LEL levels.  
See KAS Confined Space Plan for levels.

##### 4.C.3. Oxygen Detector Response

0.0 to 19.5% Oxygen: Level B is mandatory  
19.5% to 23.0% Oxygen: Continue with normal activity  
Above 23.0% Oxygen: Immediately vacate the area

#### 4.D. Decontamination Procedures

Where high levels of site contamination are discovered such that respiratory, skin and eye protection are necessary, decontamination will be required. The support area will be positioned so that no one is permitted to enter or leave without passing through the decontamination station. At the boundary between the work and support areas, decontamination processes for equipment and personnel are required. All access to and from the work area will be through this section of the support area.

Decontamination shall be performed to protect workers from exposure to dangerous materials and to eliminate the hazard of contamination on equipment.

All water used in decontamination procedures, which is not treated at the site, shall be stored in portable storage tanks, until disposal takes place.

At each work location reusable sampling and personal protective equipment shall be decontaminated prior to sampling, between each sample, and after sampling. Sampling equipment shall be decontaminated by steam cleaning or washing with a mixture of Alconox and water, then rinsed twice with distilled water and allowed to air dry. All decontamination solutions shall be disposed at the work station where they were generated. Disposable sampling and personal protective equipment will be placed in plastic bags and temporarily stored in designated drums. These drums shall be disposed of according to regulatory guidelines.

The sequence of steps for removing and cleaning personal protective equipment follows:

- Wash gloves, boots, and outer disposable coveralls
- Rinse work gloves, boots, coveralls
- Remove outer boots (if used) and outer gloves
- Remove hard hat
- Remove disposable coveralls
- Remove respirator or masks
- Wash respirator
- Package and/or dispose of respirator or filters
- Dispose of all contaminated items in properly labeled drums
- If necessary, copy notes from contaminated paper onto clean paper while wearing inner gloves (surgical gloves) at decontamination station area.
- Remove latex gloves
- Dispose of latex gloves and contaminated note paper
- Wash hands and face.

## **5. SAFETY EQUIPMENT**

### **5.A. Color Code**

#### **5.A.1. Red**

Red shall be used to identify fire equipment; identify containers of flammable materials; stop bars/buttons on mechanical machinery used for emergency power disconnection.

#### **5.A.2. Yellow**

Yellow shall be used as the basic color for identifying caution. Physical hazards shall be marked by yellow signs.

### **5.B. Warnings and Notifications**

Signs and tags shall be of a design in accordance with 29 CFR 1910.145.d. Specific signs designated in this section are danger, caution, slow-moving vehicle, biological hazard, and safety instruction. Signs shall be worded in a clear, concise manner.

Tags shall be used for temporary situations, to warn of broken equipment or other similar hazard. Temporary hazards should be remedied as quickly as possible. Tags will be designed in accordance with 29 CFR 1920.145.f-2.

### **5.C. Communications for Entry Into Hazardous Areas**

Where large distances may separate workers or in extremely dangerous areas, a communication network shall be established. The use of hand signals may be employed in close areas where portable radios are inconvenient, or unavailable.



## **6. FIRE PREVENTION**

### **6.A. General Considerations**

Fire prevention and protection techniques shall be instituted on-site to minimize sparks. All smoking and utilization of tools requiring open flames will be used only with the express permission of the Site Safety Officer. A fire extinguisher must be maintained in the immediate vicinity of the open-flame work. Emergency procedures in case of fire shall be discussed with workers before every new work area location or new work activity begins. Diagrams of emergency routes shall be displayed in the work areas and in areas and any other areas where workers will break from work activities.

Only Fire Marshall approved metal safety cans will be used to transport and store flammable liquids.

All gasoline and diesel-driven engines requiring refueling must be shut down and allowed to cool before filling.

No open flame or spark is allowed in any area containing flammable liquids.

### **6.B. Explosive Gas Survey**

Before new work locations are entered in which there is a probability for the buildup of explosive vapors, an explosive gas survey shall be conducted. If there are no explosive gases or vapors, work activities may commence. If explosive levels are registered, then work activities shall stop and workers moved out of the immediate work area. Work shall not begin until explosive levels are no longer registering on the meter or the source of the explosive gases are found and corrected. During work activities, monitoring for explosive vapors shall be continuous.

## **7. ON-SITE MEDICAL PROVISIONS**

### **7.A. Accident Reporting**

When an emergency situation occurs, a warning procedure shall be initiated by the first person to recognize the situation. As appropriate, EMS, Fire, and Police Departments shall be notified immediately. In the event of an accident or injury of any type on-site, a report of the incident shall be completed immediately after appropriate first aid has been rendered. The Site Supervisor shall be responsible for remedial plan of action and for completing an injury report.

### **7.B. First Aid**

A first aid kit shall be located on site. It shall be the responsibility of the Site Supervisor/Safety Officer to notify all personnel as to the location and proper use of these items.

Vehicles used for site work shall be equipped with a first aid/safety kit and safety equipment.

## 7.C. Heat Stress

Heat stress may be of concern depending upon the ambient temperature. The heat stress of personnel on-site shall be monitored continually when heat stress potential is evident.

One or more of the following control measures can be used to help control heat stress:

Adequate replacement of lost body fluids. Personnel must replace water and salt lost from sweating. Personnel must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.

Replacement fluids can be a 0.1% salt water solution, a commercial mix or a combination of these and fresh water.

Establishment of a work regimen that will provide adequate rest periods for cooling down.

All breaks are to be taken in cool areas.

Personnel shall remove impermeable protective garments during rest periods.

Personnel shall not be assigned other tasks during rest periods.

All personnel shall be informed of the importance of adequate rest, acclimatization and proper diet in the prevention of heat stress.

### Heat Stress Monitoring

Heat stress may occur even in moderate temperatures and may present heat rash, heat cramps, heat exhaustion, and/or heat stroke.

Monitoring procedures shall be implemented to prevent heat stress arising from any of the following: environmental conditions, use of personal protective equipment, intensity of workload. Such procedures may include the following:

<u>Signs and Symptoms of Heat Stress</u>	<u>Treatment</u>
Heat rash - red rash on the skin	Increase fluid intake
Heat cramps - muscle spasms - pain in the hands, feet, and abdomen	Rest in cool areas
Heat exhaustion - pale, cool moist skin - heavy sweating - dizziness, nausea, fainting	Loosen clothing Apply cool water to skin surfaces
Heat stroke	Transport to nearest

- |                                   |                      |
|-----------------------------------|----------------------|
| - red, hot, usually dry skin      | hospital if symptoms |
| - lack of or reduced perspiration | are not reversed by  |
| - nausea                          | the above listed     |
| - dizziness and confusion         | measures;            |
| - strong, rapid pulse             |                      |
| - coma                            |                      |

#### 7.D. Cold Stress

If the project is conducted during cold weather, cold stress must be addressed.

Persons working outdoors in temperatures at or below freezing may become frostbitten. Extreme cold, even for a short time, may cause severe injury to the surface of the body, or result in profound generalized cooling, causing death. Areas of the body which have high surface-area-to volume ratios such as fingers, toes, and ears are the most susceptible.

Two factors heavily influence the development of a cold injury; ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with temperature. For instance, 10 degrees F., with a wind of 15 miles per hour is equivalent in chilling effect to still air at least 18 degrees below zero.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph is increased to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration soaked.

Local injury resulting from cold is generally termed frostbite. Frostbite of the extremities can be categorized into:

Frost nip or initial frostbite: characterized by sudden blanching or whitening of the skin.

Superficial frostbite: skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.

Deep frostbite: tissues are cold, pale and solid; extremely serious injury.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature. Its symptoms are usually exhibited in five stages: shivering, apathy/listlessness, unconsciousness/slow responses, freezing of the extremities, death.

Thermal socks, long poly or thermal underwear, hard hat liners and other cold weather gear can aid in the prevention of hypothermia. Cotton should be avoided due to its moisture retention characteristics.

Blankets, warm drinks (other than caffeinated coffee) and warm break areas are essential.

The overall goal is to keep from getting wet. If one does get wet, he/she should dry off and change clothes.

## 7.E. Emergency Notification

A list of all State and Local Police, Ambulance, and Rescue Departments and a listing complete with routes to all hospitals and emergency facilities shall be maintained by the Site Safety Officer (see Section 1 of this HASP). The list must include phone numbers and quickest routes to appropriate emergency facilities. The Site Safety Officer shall also contact the hospitals or emergency treatment center and inform them of an injured worker. Advice on the transportation method, and if necessary, decontamination or treatment shall be offered.

Facilities to be posted on the site are listed below.

- Police Department
- Fire Department
- EMS Unit
- Hospital

## 8. AIR QUALITY/AMBIENT AIR MONITORING

### 8.A. Preliminary Survey

All air monitoring will be conducted by a trained professional. The professional shall have adequate working experience. He/she will have a sound working knowledge of State and Federal Occupational, Safety and Health regulations, and formal training in occupational safety and health. The preliminary survey will be conducted using one or more of the following portable real-time instrumentation:

- Photoionization Detector
- Explosimeter
- Oxygen Meter
- Draeger type tube

### 8.B. Daily Surveys

Ambient air monitoring shall be conducted throughout the duration of all operations on site. A minimum of five locations around the perimeter of the site will be established and actively monitored during operations.

In the event that daily air analyses determine that ambient air quality exceeds recommended levels for the respiratory equipment utilized, the Project Site Supervisor/Site Safety Officer shall be notified immediately. The Project Site Supervisor/Site Safety Officer shall immediately inspect operating conditions at the site and attempt to determine the cause of the elevated levels in the ambient air. The Project Site Supervisor/Site Safety Officer may require changes in the operating procedures in order to reduce or eliminate elevated conditions.

In the event elevated levels persist after several attempts to reduce such levels, the Project Site Supervisor shall immediately stop all operations at that location and either remove workers from the location until conditions are improved or a higher level of PPE is employed.

Ambient air monitoring will be continued until safe levels are assured.

This program will be conducted and monitored by the Site Safety Officer or his/her designee. All equipment utilized for sampling shall be maintained and calibrated and shall be documented and included in project record documents.

#### 8.C. Records

Accurate records shall be kept of all air monitoring results. These records should include date, time, place of sample, air temperature, weather conditions, and a physical description of any obvious hazards that may influence the results of the tests. These records shall be maintained as part of the permanent job records by KAS, Inc.

#### 8.D. Hazard Assessment

Personnel present on-site shall be advised of all potential hazards associated with the substances that are present.

The following are physical and chemical parameters of typical gasoline:

Specific Gravity 60/60 deg. F	0.72 to 0.76
ODOR T. - Odor Threshold	Approximately 10 ppm
FL-P - Flash Point	- 50 F
Flammability Limit - Lower	1.3 %
Flammability Limit - Upper	6 %

*Source: The Merck Index, 10th Ed., 1983, Merck & Co., Inc., Rahway, NJ.*

Physical parameters of other petroleum products are presented in the Material Safety Data Sheets (MSDSs) included in Appendix A of this HASP.

The following are air quality limits for **gasoline** obtained from the MSDSs included in Appendix A.

TLV-TWA - Threshold Limit Value, Time-Weighted Average	300 ppm
TLV-STEL - Threshold Limit Value, Short-Term Exposure Limit	500 ppm
MUC - Maximum Use Concentration (OV Cartridge)	3,000 ppm

*Sources: VOSHA Table Z-1-A Limits for Air Contaminants Final Rule Limits, at <http://159.105.83.167/Portals/0/WP%20Safety/VTPELs.pdf>; ACGIH 2004*

#### *Slippery Surfaces:*

Skid proof soles are highly recommended.

#### *Organic Vapors:*

The inhalation of volatile organic vapors during any operation can pose a potential health hazard. Hazard reduction procedures include monitoring the ambient air with a PID and use of appropriate PPE. Workers should stand upwind of the source of contamination whenever possible. If ambient air levels in the breathing zone exceed the limits specified in Section 4C of this HASP, upgrades in PPE must be immediately undertaken.

*Flammable Vapors:*

Presence of flammable vapors can pose a potential fire hazard and health hazard. Hazard reduction procedures include monitoring the ambient air with an O<sub>2</sub>/LEL meter. If the LEL reading exceeds 20%, leave the site immediately and contact the Fire Department.

*Oxygen:*

Atmospheres that contain a level of oxygen greater than 23% pose an extreme fire hazard (the usual ambient oxygen level is approximately 20.5%). This hazard can be compounded by the fact that vapors typical of gasoline retailing facilities are highly flammable. All personnel encountering atmospheres that contain a level of oxygen greater than 23% must evacuate the site immediately and must notify the fire department. If oxygen level is less than 19.5%, do not enter the space.

*Vehicular Traffic:*

When working on or near traveled ways, all personnel will be required to wear a fluorescent safety vest. In addition, the following safety equipment procedures must be adhered to for day time work. To secure an ongoing work site overnight in a heavy traffic area, appropriate lighted barricades must be used.

TASK	TRAFFIC SAFETY EQUIPMENT
Soil boring samples	A
Drilling	A
Subsurface Entry	A
Well Installation	A
Well Maintenance	B
Well Survey	B
Well Gauging	B
Well Development	B
Sampling	B
Pump Test	B
Excavation	A

Safety Equipment Key :

A = Cones and barricades required- tapes and flags are recommended but optional.  
B = Cones are required - flags are recommended but are optional.

*Well Installation; Well Development; Well Gauging; Well Bailing; Soil & Groundwater Sampling:*

Skin and eye contact with contaminated groundwater and/or soil may occur during these tasks. Nitrile or Viton gloves and approved safety goggles should be worn when contact with contaminated substance and/or splash is possible. This PPE will be worn at the discretion of the Site Safety Officer, dependent on the task.

#### *Sample Preservation:*

When hydrochloric acid is used, skin and eye contact can occur. This hazard can be reduced with the use of Nitrile or Viton gloves and the use of safety goggles or glasses.

#### *Cleaning Equipment:*

Skin and eye contact with methanol, Alconox, or other cleaning substances can occur while cleaning equipment. This hazard can be reduced with the use of Nitrile or Viton gloves and the use of goggles or glasses.

#### 8.E. Engineering Controls

Where feasible, engineering controls shall be the primary means utilized to maintain containment exposure within the limits prescribed to be safe.

### **9. SITE SECURITY**

The Project Site Supervisor shall be responsible for the management of any security implemented at the site. Access to the site shall be at the discretion of the Site Supervisor.

No visitors shall be allowed without the approval of the Project Supervisor. Visitors shall not be permitted to enter known or suspected active hazardous work areas without proper indoctrination by the Site Safety Officer and Project Supervisor.

### **10 . PROGRESS MEETINGS/PERSONNEL TRAINING**

#### 10.A. Tailgate Safety Meetings

Tailgate safety meetings shall be held at the beginning of each shift at a central location in a non-contaminated area. All ongoing activities shall be discussed, and air monitoring results will be presented. Safety measures shall be reviewed to ensure all employees are aware of all precautionary methods and emergency procedures.

#### 10.B. Orientation/Indoctrination

Orientation and Indoctrination of all new personnel shall be conducted by the Project Site Supervisor/Site Safety Officer before new workers are allowed access to the work area. The indoctrination shall include discussion of work activities, chain of command, respiratory protection program, emergency work exits and any other applicable information governing everyday work activities.

#### 10.C. Training

All personnel are required to be trained in the following areas of health and safety awareness:

*Basic Safety:* this includes cause and prevention of slip, trip and fall hazards, safe drum handling and opening techniques, safe lifting techniques, heat stress illness and its prevention, etc.

*Hazardous Protection:* dealing with the identification, recognition and safe work procedures for toxic materials. This would include having knowledge of the use and limitation of applicable protective clothing, respirators, and decontamination procedures. Respirator fit tests for all personnel required to use respirators fall under this category. Information pertaining to routes of exposure, toxic effects, and specific nature of the job which could result in exposure shall be conveyed at this time.

#### 10.D. Worker and Community Right-To-Know

The following contaminants have been identified, or are suspected, in soil samples as being in excess of Vermont regulatory standards:

Contaminant	Media	Vermont Soil Standards (VSS) Residential (mg/kg)	Vermont Urban Background Standard (mg/kg)
Lead, total	Soil	400	-
Benzo(a)pyrene	Soil	0.07	0.58*

\*Total benzo(a)pyrene toxic equivalents

#### Health Effects:

Potential health effects from a chemical exposure are dependent on several exposure factors such as: toxicity of substances, duration of exposure, concentration during exposure and the overall health of the person exposed.

The following is a health analysis of these chemicals. Additional information on these chemicals can be found in the generic Material Safety Data Sheets attached in Appendix A.

#### *Lead*

Exposure to lead is associated with toxicity to every organ system that has been studied. Effects in the following systems are the major health effects of lead and are associated with blood lead levels  $\leq 10 \mu\text{g/dL}$  - neurological (children and adults), renal, cardiovascular, hematological, reproductive, and developmental.

#### *Benzo(a)pyrene / PAHs*

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people. Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people. The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.



## **11. CONTRACTOR/VISITOR COMPLIANCE**

All EPA, State and Federal regulations shall be adhered to by contractors and visitors during excavation, disposal and construction operations or any other site operation.

## **12. OCCUPATIONAL NOISE**

Requirements set forth in the OSHA Hearing Conservation Amendment (OSHA 1910.95) shall be adhered to during work on-site. Hearing protection shall be provided where sound pressure levels exceed 85 dBA, 8 hours per day, 90 dBA, 4 hours per day. Hearing protection shall be required where sound pressure levels exceed 90dBA. Hearing Protection shall be worn during all rotary drilling operations.

## **13. HEAVY EQUIPMENT OPERATIONS AND HEAVY MATERIALS HANDLING SAFETY**

The following information warrants extra attention regarding work around heavy equipment (drilling rigs, front and back hoe loaders, etc.) and heavy materials:

Use common sense

Hard hats shall be worn at all times on-site

Pay attention at all times

Maintain visual contact at all times

Establish hand signal communication when verbal communication is difficult. Designate one person per work group to give hand signals to equipment operators.

Be aware of footing at all times

All heavy equipment shall have backup alarms of some type  
Only qualified people are to operate heavy equipment

Use chains, hoists, straps, and any other equipment to safely aide in moving heavy materials

Never walk directly in back of, or to the side of, heavy equipment without the operator's knowledge

Never use a piece of equipment unless you are familiar with its operation

Pipe sections and other materials to be removed during any project may be extremely heavy. Make sure all precautions have been taken prior to moving. Let the equipment, not your body, do the moving.

Be sure that no underground or overhead power lines, sewer lines, gas lines, or telephone lines will present a hazard in the work area

Get help whenever you are in doubt about a material's weight. Use the "Buddy System"

Ensure that compressed air bottles are secured properly at all times.

#### **14. PLAN ACKNOWLEDGMENT**

All on-site workers, regardless of their affiliation, are required to have read this entire Health and Safety Plan, and must sign the accompanying form to acknowledge this.

#### **15. SITE SAFETY PERSONNEL RESPONSIBILITIES**

The responsibilities of all personnel involved in health and safety operations are stated below:

KAS, Inc. will oversee and act accordingly during all phases of the project. The following management structure will be used.

**Project Manager:**(If required by work scope)

The Project Manager shall be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. Specific duties will include:

- coordinating the activities of all subcontractors, to include informing them of the required personal protective equipment and insuring their signature acknowledging this Site Safety Plan,

- selecting a Site Safety Officer and field personnel for the work to be undertaken on site,

- ensuring that the tasks assigned are being completed as planned and on schedule,

- providing authority and resources to ensure that the Site Safety Officer is able to implement and manage safety procedures,

- preparing reports and recommendations about the project to clients and affected KAS personnel,

- ensuring that all persons allowed to enter the site (i.e., EPA, Contractors, State Officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site, and are knowledgeable as to the on-site copy of the specific site safety plan.

- ensuring that the Site Safety Officer is aware of all of the provision of this site safety plan and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan, and

ensuring that the Site Safety Officer or the Site Safety Officer's designee is making an effort to monitor site safety.

### **Site Safety Officer**

The Site Safety Officer shall be responsible for the overall coordination and oversight of the site safety plan. Specifically:

approving the selection of the types of (PPE) to be used on site for specific tasks,

evaluating weather and chemical hazard information and making recommendations to the Project Manager/Site Supervisor about any modifications to work plans or personal protection levels in order to maintain personal safety,

coordinate upgrading or downgrading PPE with Site Safety Officer, as necessary, due to changes in exposure levels, monitoring results, weather, other site conditions,

approving field personnel for work on-site, taking into consideration their level of safety training, their physical capacity, and their eligibility to wear the protective equipment necessary for their assigned tasks,

overseeing the air monitoring procedures as they are carried out by site personnel for compliance with all company health and safety policies,

monitoring the compliance of field personnel for the routine and proper use of the PPE that has been designated for each task,

routinely inspecting PPE and clothing to ensure that it is in good condition and is being stored and maintained properly,

stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or the public,

monitoring personnel who enter and exit the site and all controlled access points,

reporting any signs of fatigue, work-related stress, or chemical exposures to the Project Manager and/or Site Supervisor,

dismissing field personnel from the site if their actions or negligence endangers themselves, co-workers, or the public, and reporting the same to the Project Manager and/or the Site Supervisor,

reporting any accidents or violations of the site safety plan to the Project Manager and/or the Site Supervisor, and documenting the same for the project in the project records,

knowing emergency procedures, evacuation routes and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments,

ensuring that all project-related personnel have signed the acknowledgments form contained in this site safety plan,

coordinate upgrading and downgrading PPE , as necessary, due to changes in exposure levels, monitoring results, weather, and other site conditions, and

perform air monitoring with approved instruments in accordance with requirements stated in this Site Safety Plan.

### **Site Supervisor**

In the event that the Project Manager and the Site Safety Officer are not on site, the Site Supervisor shall assume all their responsibilities and authority.

### **Other Field Personnel**

All field personnel shall be responsible for acting in compliance with all safety procedures outlined in the Health and Safety Plan. Any hazardous work situations or procedures shall be reported to the Site Safety Officer so that corrective steps can be taken.

## **16. CONFINED SPACE ENTRY**

The reader is referred to the KAS Permit-Required Confined Spaces Program on file at KAS offices for more details on confined space entry protocols. A confined space:

- a) is large enough and so configured that a person can bodily enter and perform assigned work; and
- b) has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
- c) is not designed for continuous occupancy.

Included within this definition are excavations, storage tanks, impoundment, soils, pipelines, pits and vaults.

All personnel are urged to use caution in identifying any of the area listed above to their immediate Supervisor, and, to plan their approach to operations conducted in these areas to be in compliance with KAS's Confined Space Plan.

All personnel are urged to use all engineering controls possible to avoid entering these areas. Examples of this would include using remote sampling equipment, or, using a contractors back hoe bucket to collect soils for sampling, rather than personnel entering the excavation. Entry into a confined space is defined as breaking the plane of the opening to the confined space with any part of the body.

## **17. DRILLING SAFETY**

During the drilling operation (2) persons designated as "driller" and "helper" must be present on the rig at all times.

The immediate area around the rig shall be cordoned off with temporary barricades, fencing or cones to assist in preventing unauthorized entry.

Only personnel authorized by KAS are to be allowed within the area of drilling. If any unauthorized personnel enter the work area, KAS will shut down operations until the area is cleared.

The mast of the drilling rig must maintain a minimum clearance of 20 feet from any overhead electrical cables. The drilling rig must not be moved from its set up position without first putting down the mast.

All drilling operations shall cease immediately during any electrical storms. KAS, Inc. retains sole authority to shut down the drilling operations at any time a hazardous situation is deemed present.

## 18. EXCAVATING/TRENCHING SAFETY

All excavation and trenching work must comply with all safety regulatory agency rules. Prior to any excavation work, the existence and location of underground pipe, electrical conductors, etc. must be determined. The walls and spaces of all excavations more than four (4) feet deep or excavated below a building footing or foundation shall be guarded properly by shoring, sloping of the ground, or equivalent means.

Maximum Allowable Slopes are specified by OSHA for various soil types in 29 CFR Part 1926, Subpart P.

<u>Soil/ Rock Type</u>	<u>Maximum Allowable Slope (H:V) for Excavations less than 20 ft</u>	
Stable Rock	Vertical	(90 degrees)
Type A	3/4:1	(53 degrees)
Type B	1:1	(45 degrees)
Type C	1.5:1	(34 degrees)

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Type A soils: clays, silty clays, sandy clays, clay loam, and cemented soils (caliche, hardpan)  
Type B soils: silt, silt loam, sandy loam, unstable dry rock  
Type C soils: granular soils including gravel, sand, and loamy sand; submerged, unstable soil or rock

Daily inspections of excavations shall be made. If there is evidence of possible cave-ins or slides, all work in the excavation shall cease until the necessary safeguards have been taken.

Trenches more than four (4) feet deep shall have ladders or steps located so as to require no more than 25 feet of lateral travel between means of access.

All equipment such as pipe, tools, etc. shall be kept out of traffic lanes and access ways. Equipment shall be stored to prevent danger to personnel at any time.

Trenches shall be completely guarded on all sides in areas where pedestrian and vehicular traffic is expected. A minimum of two (2) feet from the edges will be maintained. Trench

guarding shall consist of wooden, metal, or heavy plastic barricades. Such barricades shall not be less than 36 inches high when erected.

Battery-lighted barricades shall be used to secure trenched areas left open overnight, as follows:

A minimum of two (2) battery-lighted barricades shall be used at corners, one on either side of the barricades.

At least one (1) battery-lighted barricade shall be used where vehicular traffic approaches the trench at the right angles.

Where trenches parallel roadways the distance between battery-lighted barricades should not exceed 40 feet.

All battery-lighted units should be regularly serviced to ensure equipment is operating.

Protection between barricades shall consist of at least 3/4 inch wide nylon tape (yellow or yellow and black). The tapes shall be stretched between barricades.

All barricaded sections immediately adjacent to where pedestrians cross trenches shall be guarded with a minimum of 2 by 2 inch wooded rails from the bridge to the first adjacent barricade. This barricade shall not be less than eight (8) feet horizontally to the top of the first barricade.

All pedestrian bridges shall be of sufficient strength to prevent no greater vertical deflection than 1/2 inch when a 250 pound weight is applied to the center of the bridge.

Handrails shall consist of an intermediate and top rail on both sides of the bridge. The top rail shall be a minimum of 42 inches high and capable of withstanding a lateral force of 200 pounds against the center of the top rail.

All surfaces which a person could reasonably contact should be sufficiently free of splinters, nails, or protrusions which may cause injury.

All bridges intended for vehicular traffic shall be constructed to withstand twice the load of the heaviest vehicle anticipated.

All trenches shall be back filled as soon as practical after work is completed and all associated equipment removed.

## 19. ELECTRICAL SAFETY

All electrical equipment and power cables in and around wells or structures suspected of containing chemical contamination must be equipped with a three-wire, ground lead. In accordance with OSHA 29 CFR 1926.404, approved ground fault circuit interrupters (GFCI) must be used for all 120 volt, single phase, 15 and 20 ampere receptacle outlets on the site which are in use by personnel and which are not part of the permanent wiring as defined by the NEC 1987.

The GFCI is a fast-acting circuit breaker which senses small imbalances in the circuit caused by current leakage to ground, and in a fraction of a second shuts off the electricity. However, the GFCI will not protect personnel from line-to-line contact hazards (such as a person holding two "hot" wires or a hot and neutral wire in each hand). The GFCI provides protection against the most common form of electrical shock hazard, the ground fault.

GFCIs can be used successfully to reduce electrical hazards on construction sites. Tripping of GFCIs, interruption of current flow, is sometimes caused by wet connectors and tools. It is good practice to limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors. Providing more GFCIs or shorter circuits can prevent tripping caused by the cumulative leakage from several tools or by leafages from extremely long circuits. (Adapted from OSHA 3007; Ground-Fault Protection on Construction Sites, 1987).

Electrical cords shall be inspected thoroughly prior to each work day for fraying of or damage to the cord. Electrical cords which are frayed or damaged will be permanently removed from service.

## APPENDIX A

Refer to the Agency for Toxic Substances and Disease Registry (ATSDR)  
for Additional Information on Contaminants of Concern  
(<https://wwwn.cdc.gov/TSP/index.aspx>)





## **Appendix G**

### **Cost Estimates**

Cost Estimate  
 Corrective Action Plan Implementation  
 Windsor Housing Project Lot #1  
 133 & 137 Main Street, Windsor, VT  
 September 2023

Cubic Yards Impacted Soil	3,361
Tons of Impacted Soil	5,042
Number of 22-ton trucks	168

Task	Category	Description	Qty	Per Unit Cost	Unit	Item Cost	Subtotals
<b>1.0 Final Design / Site Planning</b>							
		KAS Project Coordination / Bid Support	8	\$115.00	/hr	\$920.00	
		KAS Final Design / Bid Support	2	\$125.00	/hr	\$250.00	
		KAS Design Drafting Soil Management	4	\$115.00	/hr	\$460.00	
		KAS Principal Review	1	\$135.00	/hr	\$135.00	
		KAS Contractor Preparation / Coordination	3	\$115.00	/hr	\$345.00	<b>\$2,110</b>
<b>2.0 CAP / Construction Inspection and Oversight (5 DAYS)</b>							
		KAS Construction Inspection (5 Visits)	40	\$115.00	/hr	\$4,600.00	
		KAS Mileage (5 Visits)	1000	\$0.655	/ea	\$655.00	<b>\$5,255</b>
<b>3.0 CAP Soil Management (Excavation, Temporary Stockpile, and Backfill) Additional to Normal Construction*</b>							
		Excavation Contractor (Excavate, stockpile, and load)	3,361	\$26.95	/cy	\$90,578.95	
		Polyethylene Plastic Liner (min 6 mils thickness)	4	\$175.00	/roll	\$700.00	
		KAS - Obtain Waste Profile Approval from Casella	5	\$115.00	/hr	\$575.00	
		KAS Coordination - Landfill	8	\$115.00	/hr	\$920.00	
		Disposal as Landfill ADC	5,042	\$48.00	/ton	\$241,992.00	
		Disposal District Fee (N/A since ADC)	5,042	\$0.00	/ton	\$0.00	
		Transportation for Disposal as ADC	5,042	\$42.00	/ton	\$211,743.00	
		Transportation Fuel Surcharge (estimate only; based at 20%)	168	\$180.00	/load	\$30,249.00	<b>\$576,758</b>
<b>4.0 Cost Related to Engineered Barriers</b>							
		Geotextile fabric	656	\$3.20	/cy	\$2,100.62	
		Imported fill for soil/grass capping (~5,294 sf, 18" depth)	294	\$71.80	/cy	\$21,117.18	
		Imported fill for hard cover (~19,566 sf, 6" depth)	362	\$37.50	/cy	\$13,587.50	
		Excavation Contractor (backfill)	656	\$13.08	/cy	\$8,586.29	<b>\$36,805</b>
<b>5.0 Corrective Action Completion Report</b>							
		KAS Report	16	\$115.00	/hr	\$1,840.00	
		KAS Maps	8	\$85.00	/hr	\$680.00	
		KAS Review	2	\$135.00	/hr	\$270.00	
		KAS Review	2	\$125.00	/hr	\$250.00	
		KAS Administrative	1	\$65.00	/hr	\$65.00	<b>\$3,105</b>
<b>6.0 Institutional Control / Site Closure</b>							
		Project Coordination	3	\$115.00	/hr	\$345.00	
		Municipal Filing Fees	1	\$75.00	/ea	\$75.00	
		Administrative	2	\$65.00	/hr	\$130.00	<b>\$550</b>
						Total Cost	<b>\$624,583</b>
						15% Contingency	<b>\$93,687</b>
						Total Cost + Contingency	<b>\$718,271</b>

\* This budgetary cost estimate is for the additional costs associated with the environmental conditions of the site. Consequently, costs associated with the typical development of the site such as excavation and backfill are not included.

Cost Estimate  
 Corrective Action Plan Implementation  
 Windsor Housing Project Lot #2  
 139 Main Street, Windsor, VT  
 September 2023

Cubic Yards Impacted Soil	911
Tons of Impacted Soil	1,367
Number of 22-ton trucks	46

Task	Category	Description	Qty	Per Unit Cost	Unit	Item Cost	Subtotals
<b>1.0 Final Design / Site Planning</b>							
		KAS Project Coordination / Bid Support	8	\$115.00	/hr	\$920.00	
		KAS Final Design / Bid Support	2	\$125.00	/hr	\$250.00	
		KAS Design Drafting Soil Management	4	\$115.00	/hr	\$460.00	
		KAS Principal Review	1	\$135.00	/hr	\$135.00	
		KAS Contractor Preparation / Coordination	3	\$115.00	/hr	\$345.00	\$2,110
<b>2.0 CAP / Construction Inspection and Oversight (3 DAYS)</b>							
		KAS Construction Inspection (3 Visits)	24	\$115.00	/hr	\$2,760.00	
		KAS Mileage (3 Visits)	600	\$0.655	/ea	\$393.00	\$3,153
<b>3.0 CAP Soil Management (Excavation, Temporary Stockpile, and Backfill) Additional to Normal Construction*</b>							
		Excavation Contractor (Excavate, stockpile, and load)	911	\$26.95	/cy	\$24,551.45	
		Polyethylene Plastic Liner (min 6 mils thickness)	4	\$175.00	/roll	\$700.00	
		KAS - Obtain Waste Profile Approval from Casella	5	\$115.00	/hr	\$575.00	
		KAS Coordination - Landfill	8	\$115.00	/hr	\$920.00	
		Disposal as Landfill ADC	1,367	\$48.00	/ton	\$65,592.00	
		Disposal District Fee (N/A since ADC)	1,367	\$0.00	/ton	\$0.00	
		Transportation for Disposal as ADC	1,367	\$42.00	/ton	\$57,393.00	
		Transportation Fuel Surcharge (estimate only; based at 20%)	46	\$180.00	/load	\$8,199.00	\$157,930
<b>4.0 Cost Related to Engineered Barriers</b>							
		Geotextile fabric	402	\$3.20	/cy	\$1,287.70	
		Imported fill for soil/grass capping (~3,900 sf, 18" depth)	217	\$71.80	/cy	\$15,556.67	
		Imported fill for hard cover (~10,030 sf, 6" depth)	186	\$37.50	/cy	\$6,965.28	
		Excavation Contractor (backfill)	402	\$13.08	/cy	\$5,263.49	\$23,810
<b>5.0 Corrective Action Completion Report</b>							
		KAS Report	16	\$115.00	/hr	\$1,840.00	
		KAS Maps	8	\$85.00	/hr	\$680.00	
		KAS Review	2	\$135.00	/hr	\$270.00	
		KAS Review	2	\$125.00	/hr	\$250.00	
		KAS Administrative	1	\$65.00	/hr	\$65.00	\$3,105
<b>6.0 Institutional Control / Site Closure</b>							
		Project Coordination	3	\$115.00	/hr	\$345.00	
		Municipal Filing Fees	1	\$75.00	/ea	\$75.00	
		Administrative	2	\$65.00	/hr	\$130.00	\$550

Total Cost	\$190,658
15% Contingency	\$28,599
Total Cost + Contingency	\$219,257

\* This budgetary cost estimate is for the additional costs associated with the environmental conditions of the site. Consequently, costs associated with the typical development of the site such as excavation and backfill are not included.



## Appendix H

### IRule Corrective Action Plan Checklist

**Vermont Department of Environmental Conservation  
Waste Management and Prevention Division  
Sites Management Section  
I-Rule CORRECTIVE ACTION PLAN Checklist**

**Site Number:** VTDEC# 2022-5087

**Site Name:** Windsor Housing Project Lot #1

**Site Address:** 133 & 137 Main Street

**Site City/Town:** Windsor

**Report Title:** Corrective Action Plan

**Report Date:** September 14, 2023

**Consultant:** KAS, Inc.

**Report Author:** Clare Santos, P.E.

Deliverable	YES	N/A	Comments	WMPD Use Only	
				Adequate	Inadequate
<b>Subchapter 5. Corrective Action</b>					
<b>§35-505. Corrective Action Plan</b>					
Executive Summary	X				
Public Notice	X				
Performance standards	X				
Remedial Construction Plan	X				
Waste Management Plan	X				
Implementation schedule	X				
Corrective Action Maintenance Plan	X				
Institutional Control Plan	X				
Redevelopment and Reuse Plan	X				
QA/QC Plan		X			
Cost estimate	X				
Updated maps	X				
Tabular contaminant concentrations	X				
Cross-sections		X			
Proposed contractors and subcontractors	X				
P.E. Signature and certification	X				