
**Capstone Community Action, Inc.
111 Seminary Street
Barre, Vermont 05301**

VT DEC #2021-5040
KAS #512200594

CORRECTIVE ACTION PLAN

April 11, 2022

Prepared for:

Capstone Community Action, Inc.
20 Gable Place
Barre, VT 05641



589 Avenue D, Suite 10
PO Box 787
Williston, VT 05495

www.kas-consulting.com

802 383.0486 p
802 383.0490 f



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Certification Page:

This Corrective Action Plan for the Capstone Community Action, Inc. parking lot project located at 111 Seminary Street, Barre, Vermont, State of Vermont Department of Environmental Conservation Site #2021-5040, has been prepared by the following personnel.

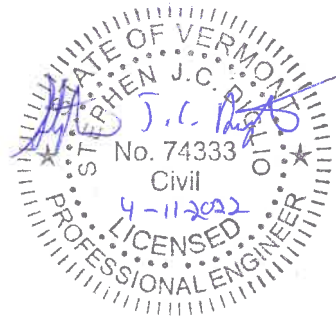
We certify under penalty of perjury that we are environmental professionals and that all content contained within this deliverable is to the best of our knowledge true and accurate.

Prepared By:

Clare Santos, P.E., Environmental Engineer

Reviewed By:

Stephen Diglio, P.E., Engineering Manager



Executive Summary

This Corrective Action Plan (CAP) has been prepared by KAS Inc. (KAS) for Capstone Community Action, Inc. (Capstone) to support redevelopment activities at 111 Seminary Street in Barre, Vermont (Site). Capstone plans to redevelop the Site into a parking lot for the adjacent Brook Street School, which is also owned by Capstone. The Site is enrolled in the Brownfields Reuse and Environmental Liability Limitation Act (BRELLA) program.

The Site consists of one parcel approximately 0.21-acres in size and was previously occupied by one residential structure. The property is believed to have been developed in the 1800's for residential use and has only been used for residential purposes since its development. The Site is currently vacant and the structure was recently demolished/removed in December 2021. Dense clusters of residential and commercial buildings are interspersed within the general vicinity of the property.

Corrective actions are required at the Site to mitigate the risk of direct contact exposure to polycyclic aromatic hydrocarbons (PAHs) and lead, which have been reported in soils. Soil testing indicates that these contaminants are above regulatory standards in shallow soils down to approximately 2 feet below grade. The source of these contaminants is attributed from historical fill. The Site's urban setting may also have contributed to the elevated PAH and lead levels in shallow soils. The Site is situated within the 100-year flood plain. Gunners Brook is located approximately 50 feet southeast of the Site. Groundwater has not been encountered in the subsurface investigations conducted to date, the maximum depth of which was 6 feet below grade. Based on historical investigations conducted at the adjacent school property, groundwater is estimated to be around 8 feet below grade.

This CAP has been prepared in accordance with the Vermont Department of Environmental Conservation (VT DEC) *Investigation and Remediation of Contaminated Properties Rule (I-Rule)* to mitigate potential direct contact risk to future Site users. Proposed corrective actions include the excavation of PAH and lead contaminated soils down to 2 feet below grade and off-site disposal as landfill alternative daily cover. Subsequently, a paved parking lot, grass areas, and stormwater treatment will be constructed as part of the proposed redevelopment.

The corrective action work is planned for the 2022 construction season and is estimated to be completed by the summer of 2022.



1.0 Introduction and Scope

This Corrective Action Plan (CAP) has been prepared by KAS Inc. (KAS) to address environmental and human health risks associated with the presence of contaminated soils at 111 Seminary Street, Barre, Vermont (Site). This work was conducted for Capstone Community Action, Inc. (Capstone), the property owner. This CAP has been prepared in accordance with the Vermont Department of Environmental Conservation (VT DEC) *Investigation and Remediation of Contaminated Properties Rule* (I-Rule). An I-Rule CAP checklist is provided in Appendix G.

The following is contact information for the property owner/responsible party:

Property Owner: Capstone Community Action, Inc.
Contact: David Fowler, Facility Manager
Email: dfowler@capstonevt.org
Phone: (802) 793-5559
Mailing: 20 Gable Street, Barre, VT 05641

1.1 Objectives of Corrective Action

The objectives of the corrective actions are to:

1. Minimize the potential for exposure to contaminated soil during excavation/construction activities; and,
2. Mitigate the potential for direct contact to future Site users via the excavation and disposal of contaminated soils as landfill alternative daily cover (ADC).

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. The Site is located in a mixed-use zoning district (MU-1) with a mix of residential, retail, service and office use. Unless residential use is restricted for the property, as documented in land records, the residential standard is the default standard applicable to the Site.

Table 1: Contaminants of Concern in Soil and Screening Values

Contaminant	Media	Vermont Screening Levels Residential (mg/kg)	VTDEC Background Soil Concentration, Urban (mg/kg)
Lead	Soil	400	-
Polycyclic Aromatic Hydrocarbons (PAHs)*	Soil	-	0.58

* Expressed as benzo(a)pyrene (BaP) total equivalent quotient (TEQ)



1.3 Evaluation of Corrective Action Alternatives Exemption

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 excavation) has been utilized at many other sites and has been shown to be reliable, cost effective, and effective at mitigating exposure to contaminants.

1.4 Redevelopment and Reuse Plan

Capstone owns and operates the Brook Street School, located at 45 Brook Street, as a Head Start/Early Learning Center. The school property currently has six parking spaces, which has long been recognized as inadequate for the number of children and staff served (e.g., about 62 children and 27 staff). The limited parking has resulted in past problems with on-street parking and near misses at, or near the intersection of Seminary and Brook streets. Capstone's goal for the redeveloped Site is to provide safe parking (drop-off and pickup) for the children and parents served by the school, as well as staff parking. A Proposed Site Plan (by Grenier Engineering, PC) is provided in Appendix A.

1.5 Scope of Corrective Action Plan

See Section 3.0.

1.6 Public Notice and CAP Approval

Once the CAP is reviewed and deemed complete by the VT DEC, a public comment period will be held for thirty (30) days. A notice of the CAP will be mailed to all adjoining property owners (Appendix B). The notice will consist of a completed VT DEC Official Notice form (Appendix B). 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 to begin in the spring of 2022. Upon completion of the CAP, a Corrective Action Construction Completion Report, per §35-608 of the I-Rule will be prepared and submitted to the VT DEC.

1.8 Site Closure, Institutional Control, and Long Term Monitoring/Reporting

The final step in the CAP is the issuance of a Certificate of Completion (COC) by the VT DEC. The COC will be filed with the Site land records.

2.0 Conceptual Site Model

2.1 Site Description and History

The Site consists of one parcel (SPAN No. 036-011-11189) approximately 0.21-acres in size. The property is located on the north side of Seminary Street within a mixed-use zoning area. The property is believed to have been developed in the 1800's for residential use and has been used for residential purposes only. The former 2-story residential structure was approximately 2,500-square feet in size and consisted of three apartment units and unfinished basement spaces. In December 2021, the structure was demolished/removed. Clean fill was imported to the Site to fill the excavation area up to approximately 6-inches below grade.

The property consists of leveled grounds throughout. No bedrock outcroppings, bodies of water or wetlands have been observed on the property. Two gravel driveways reside on the easterly and westerly side of the former structure.

The property is served with municipal water and sewer, as well as overhead electrical and telecommunication lines. No other utility corridors are known to run across the property. No storm drains are present on the property; however, several storm drains have been noted to be present along Seminary Street.

Dense clusters of residential and commercial buildings are interspersed within the general vicinity of the property.

Adjacent Properties:

Land uses adjacent to the property as of KAS' most recent site visit in August 2021 were as follows:

- North: Residential properties
- East: Residential properties and Gunners Brook
- South: Residential properties. Farther southeast, in a presumed hydraulically downgradient location, is an auto repair garage and hair salon.
- West: Brook Street School

The Brook Street School property is listed as a closed state hazardous waste site (SHWS, SMS #97-2298) due to the past release of heating oil from an underground storage tank (UST) on the school property. On November 14, 1997, a subsurface investigation was completed following the removal of the 8,000-gallon fuel oil UST.¹ Three (3) soil borings were advanced to saturated depths and completed as groundwater monitoring wells. Groundwater was measured to be less than 10 feet below grade and the groundwater was determined to flow towards the south. Low levels of petroleum compounds were reported in one monitoring well at concentrations below regulatory standards. An additional round of sampling occurred in June 1998, which confirmed that only low levels of petroleum compounds were present in groundwater at levels below regulatory standards. On August 21, 1998, the school site was issued a Site Management Activities Completed (SMAC) designation. Based on the information reviewed for the Brook Street School property, the past release of fuel oil to the subsurface is not believed to have impacted the subject property.

Historical land uses of the above adjacent properties are not known.

¹ ATC, 1998

2.2 Geology

Bedrock in the vicinity of the property consists of dark-gray to silvery-gray, lustrous, carbonaceous muscovite-biotite-quartz (+/-garnet) phyllite containing abundant beds of punky-brown-weathering, dark-bluish-gray micaceous quartz-rich limestone in beds ranging from 10 cm to 10 m thick.² The overburden deposits in the area of the property are mapped as silt, silty clay and clay.³

2.3 Hydrogeology

Gunners Brook is located approximately 50 feet southeast of the Site. The depth to groundwater beneath the adjacent school property was measured at approximately 8 feet below grade; groundwater flow direction was determined to be southerly. Groundwater characteristics for the Site are presumed to be similar to the adjacent school property, but have not been confirmed to date.

The Site is located within an AE Flood Hazard Area. According to Federal Emergency Management Agency (FEMA), AE flood zones are areas that present a 1% annual chance of flooding and a 26% chance over 30 years.

2.4 Previous Environmental Investigations

In January 2021, KAS conducted a Phase I Environmental Site Assessment of the subject property.⁴ No recognized environmental conditions (RECs) were identified. The use of historical fill beneath the Site was identified as a de minimis condition that could potentially affect the planned redevelopment at the Site.

In July 2021, KAS conducted shallow soils testing⁵ in preparation for future excavation/site redevelopment activities. Six (6) soil borings were advanced (SB21-1 through SB21-6) via a Geoprobe drill rig to a maximum depth of approximately 2 feet below grade, the locations of which are shown on the Site Map (Appendix A). Soils were screened with a photoionization detector and the results did not exceed background levels. The nature of the soils at 1 to 2 feet below grade at borings SB21-2, SB21-5, and SB21-6 showed the characteristic of historical fill (e.g., evidence of brick, coal, coal ash and wood). Six (6) discrete soil samples (1 to 2 feet below grade) were collected for arsenic, lead, and PAH analysis. All samples were below the standard for arsenic. Lead results showed elevated levels at SB21-5 and SB21-6 (e.g., greater than 100 mg/kg), with the concentration exceeding the soil standard in SB21-6. For PAHs, the total BaP TEQs were above the urban background standard of 0.58 mg/kg in three (3) of the six (6) samples (e.g., SB21-3, SB21-5, and SB21-6), with the highest concentration being 1.8174 mg/kg at SB21-6.

As part of the July 2021 soils investigation, two (2) composite soil samples, identified as Composite A and Composite B, were collected for waste characterization purposes. Both samples comprised of soils from all six (6) borings, with Composite A and Composite B from 0-1 foot and 1-2 foot depth intervals, respectively. Composite samples are representative of mixed or excavated soils. Although composite samples cannot be compared to Vermont soil standards, they can still provide general and useful information about the contaminants of concern. The total BaP TEQs reported for Composite A and Composite B samples were 1.35147 mg/kg and 0.40769 mg/kg, respectively. This indicates that PAH levels generally decrease with depth. Similarly, lead concentrations

² VT DEC Database

³ *ibid*

⁴ KAS, January 2021

⁵ KAS, August 2021

decreased with depth, with Composite A and Composite B samples being 220 mg/kg and 52 mg/kg, respectively. Given the elevated lead concentration in Composite A, the sample was analyzed for toxicity characteristic leaching procedure (TCLP). The TCLP for lead was reported at 1.2 mg/L, which is below the hazardous waste threshold of 5.0 mg/L. To satisfy other waste characterization requirements, additional analysis for potential contaminants of concern, other than PAHs and lead were conducted. No other potential contaminants of concern were identified.

In August 2021, KAS conducted an additional subsurface investigation to evaluate PAH and lead contamination in deeper soils, and as part of the development of the soil management strategy. Three (3) test pits were excavated to a maximum depth of approximately 6 feet below grade, at the approximate locations shown on the Site Map (Appendix A). From test pit TP-3, two (2) discrete samples were collected, one from a depth interval of 2-4 feet and the other from 4-6 feet. Both samples were well below the standard for PAHs and lead. Two (2) composite samples, identified as Comp-1 and Comp-2, were also collected for waste characterization purposes. Both composite samples comprised of soils from test pits TP-1 and TP-2, with Comp-1 and Comp-2 from 2-4 foot and 4-6 foot depth intervals, respectively. The results of the composite sampling support the previous finding that PAHs and lead decrease with depth. Groundwater was not encountered during the August 2021 subsurface investigation.

Overall, the data collected to date show that PAH and lead contaminated soils are present onsite down to 2 feet below grade. The contaminants decrease with depth and are below the Vermont soil standards in soils greater than 2 feet below grade. A summary of soil analytical data is provided in Appendix C.

2.5 Contaminants, Distribution, Fate and Transport

Based on soil data collected to date, shallow soils (e.g., down to 2 feet below grade) are contaminated with PAHs. PAHs are a group of semi-volatile organic compounds that are generally associated with urban settings. PAHs are common byproducts of the combustion of fossil fuels and are found in creosote, coal, crude oil, and gasoline. Lead and arsenic were also detected in shallow soils, with lead exceeding the applicable standard. These metals can be present in the environment as a result of naturally occurring and anthropogenic sources (i.e., leaded gasoline and lead-based paint).

PAHs and lead are attributed to the historical fill and/or the urban setting. 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.

2.6 Sensitive Receptor Risk Assessment

A sensitive receptor risk assessment of the area surrounding the property is provided below, and a determination of the potential risk to identified receptors has been made based on proximity to the impacted areas, groundwater flow direction, contaminant mobility and volatility, and contaminant concentration levels in soil. To date one sensitive receptor (soil) has been identified as being contaminated with PAHs and lead. These contaminants are attributed to historical fill and possibly the Site's urban setting.

A Vicinity Map is provided in Appendix A. The property and surrounding area are serviced by the municipal water supply system. According to the Vermont Agency of Natural Resources Atlas mapping tool (<http://anrmaps.vermont.gov/websites/anra/>), there may be eight (8) private wells within 2,000 feet of the Site with the closest well located approximately 0.25 miles to the east.



Based on this information and the absence of groundwater impacts identified onsite, there does not appear to be a risk to nearby drinking water supplies at this time.

There is currently no building onsite and the future plans do not include a building. Therefore, the potential for vapor intrusion is not applicable. Also, the contaminants of concern do not pose a threat to indoor air based on their chemical properties.

The nearest surface water body is Gunners Brook, which is located approximately 50 feet east of the property and flows to the south-southwesterly into the Stevens Branch River. Given the absence of groundwater impacts identified onsite, there does not appear to be a risk to nearby by surface waters at this time.

The property is served by electric, water, sewer, and telecommunication services. Given the type of impacts noted onsite, the depth of groundwater and the absence of groundwater impacts at the Site, utility corridors do not appear to be a risk at this time.

2.7 Potential Exposure Pathways

Potential exposure pathways to soil impacts identified at the property have been evaluated. Routes of potential exposure to current and future site users include absorption via dermal contact and/or ingestion of soil. Impacted soils have been identified at shallow depths (e.g., down to 2 feet below grade) across the property.

3.0 Corrective Action Plan

PAH and lead contaminated soils are present in shallow soils (e.g., down to 2 feet below grade) at the Site. Direct contact with PAH and lead in soils is a risk for future Site users and construction workers during Site redevelopment (e.g., earthwork/excavation activities). The corrective action chosen for the PAH and lead contaminated soil is excavation and disposal. Subsequently, a paved parking lot, grass areas, and stormwater treatment will be constructed as part of the proposed redevelopment. Proposed stormwater treatment includes a grass swale and two catch basins, which will be connected to an existing stormwater line within the Seminary Street right-of-way.

3.1 Soil Management Plan

In general, the proposed site grading post-redevelopment will be similar to existing grades. The exception is the stormwater swale. Up to approximately 591 cubic yards of soils will require excavation in order to accommodate the proposed parking surface and greenspace. This total estimated cut volume has been estimated based on the area of excavation (7,975 square feet) and depth of excavation (2 feet) as summarized in the table below. The excavation area is shown on the Proposed Site Plan with KAS Markups (Appendix A). The fence line is considered to be the extent of the property for the purpose of the CAP.

Table 2: Soil Excavation and Disposal Estimates

Description	Amount	Units
Excavation area	7,975	Square feet
Excavation depth	2	Feet
Excavation volume	15,950	Cubic feet (ft ³)
Soil disposal volume (ft ³ ÷ 27)	591	Cubic yards (yd ³)
Soil disposal tonnage (yd ³ x 1.5)	886	Tons

It is anticipated that the excavated soils will be disposed of as alternative daily cover (ADC) at the Casella landfill in Coventry, Vermont. As such, no large debris or foreign material (i.e., rubble from the former foundation, plastic, etc.) shall be included in soils slated for ADC. Previous soil sampling and analysis has been reviewed by Casella. Based on the data collected to date (Appendix C), Casella requires one (1) additional waste characterization sample for soils near the northerly and westerly Site boundary. The composite soil sample will be analyzed for PAHs, lead, and arsenic. Confirmatory Toxicity Characteristic Leaching Procedure (TCLP) analysis will be required if lead or arsenic exceed 100 mg/kg. The soil samples will be collected manually via a hand auger. In the unlikely event that the TCLP lead exceeds the hazardous waste threshold for lead (e.g., 5 mg/L), Casella will not be able to self-approve the soil for reuse as ADC and would need to seek approval from the VT DEC.

Excavated soils, from 0-2 feet in depth, will be live loaded onto transport trucks and brought directly to the Coventry landfill. The primary truck route is anticipated to be Route 14 (Maple Street) to and from Seminary Street. Excavated soils, from 0-2 feet in depth, will not be reused onsite as backfill.

Temporary stockpiles, of excavated soils slated for the landfill, is not planned. However, the potential need for a temporary stockpile exists for any excavation project (e.g., due to transport truck scheduling issue or if unexpected and uncharacterized contaminated soil is encountered during excavation). 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 for the presence of Gunners Brook (to the east), the Site being in a flood hazard area, and adjacent residential properties. To mitigate potential 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 located in areas not subject to flooding or excessive sheet flow during storm events. Given that the Site is within a flood zone, best effort will be made by the contractor to avoid stockpiling during or prior to heavy rainfall (i.e., reschedule excavation). In summary, stockpiles (if necessary) will be placed within an area designed and constructed to contain the materials from all sides and prevent runoff and dispersion.

Soils deeper than 2 feet below grade are not considered to be regulated based on soil data collected to date (see Section 2.4) and are considered outside the scope of the CAP soil management plan. Therefore, excess soils that may be generated during excavations in deeper soils (e.g., stormwater piping and catch basins) will be managed under typical earthwork activities as part of the general construction and redevelopment of the Site. Soil beneath the roadway right-of-way, trees (existing or proposed), and materials/rubble associated with the former residential structure are also considered to be outside the scope of the CAP.

3.2 Soil and Pavement Construction

After excavation and disposal of the PAH and lead contaminated soils, a paved parking lot, grass areas, and stormwater treatment will be constructed as part of its redevelopment. A cross-section detail for the proposed pavement, grass areas, and swale are provided in the Proposed Site Plan (Appendix A). These proposed construction activities are beyond the scope of the CAP.

3.3 Erosion Control

The potential area impacted by the Site redevelopment will be less than 1 acre. Therefore, a soil erosion control plan, which is intended to minimize off-site migration during construction activities, is not required. However, standard erosion control measures, per the Vermont Low Risk Site Handbook, will be used to minimize soil migration during CAP implementation.

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.

3.4 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 installation of the barrier system 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 D.



3.5 Corrective Action Maintenance Plan

Since the CAP involves removal of the PAH and lead contaminated soil, long-term maintenance is not required pursuant to the I-Rule.

3.6 Institutional Controls

Institutional controls are intended to help minimize potential future human exposure to residual contamination, and to ensure that engineered controls remain protective over time. Since the CAP involves removal of the PAH and lead contaminated soil, it is expected that land use restrictions will not be incorporated into the Certificate of Completion, which will be issued by the VT DEC after CAP completion.

4.0 Permitting, Monitoring and Reporting

4.1 Permits / Approvals

The following permits and approvals are needed to implement the CAP. These are identified below along with any applicable contact names and telephone numbers of the permit issuing entities.

- VT DEC Approval (Mr. Rob Farley, 802-622-4162 or rob.farley@vermont.gov);
- Town of Barre (Planning & Zoning, 802-479-2595).

Additional permits for redevelopment activities outside of the remedial cleanup will also be required including, but not limited to, an Act 250 Minor Permit Application, and zoning permit. These permits and approvals are in progress or have already been obtained.

4.2 Contractors and Sub-Contractors

The contractors and/or sub-contractors will be based on availability and will be solicited by competitive procurement following completion of the bid package, which is anticipated to be finalized in spring 2022.

4.3 Reporting

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

4.4 Schedule

Implementation of the CAP is expected to start in the spring of 2022. CAP completion is expected by the summer of 2022. The following are specific target dates and milestones:

Table 3: Implementation Schedule

Target Completion Date	Estimated Duration	Milestone Description
April 15, 2022	30 days	Regulatory review and approval of CAP
May 15, 2022	30 days	Final approval of CAP (following 30-day public comment period).
May - June 2022	1 month	CAP implementation
July 2022	2 weeks	Corrective action construction completion report completed/submitted.
December 2022	6 months	Certificate of Completion is issued by the VT DEC.

4.5 Cost

KAS has prepared a cost estimate for the corrective actions specified herein, contaminated soil management, soil disposal and subsequent CAP completion report. The estimated costs are representative of the remedial system design elements, as described within this CAP, that are



necessary to mitigate exposure to Site contaminants. Civil engineering/design, geotechnical, and other components of the Site's redevelopment design are not included within these costs.

KAS used past project experience and the Vermont Agency of Transportation two-year averaged price list to estimate the cost of the proposed corrective actions. The estimated cost to implement the corrective actions as described within this CAP is approximately \$92,960, allowing for a 15% contingency. A detailed cost estimate is provided in Appendix F.



5.0 References

ATC Associates Inc., *Initial Site Investigation Report*, Brook Street School, Barre, Vermont, VT DEC Site #97-2298, March 1998.

KAS, Inc., *Phase I Environmental Site Assessment*, 111 Seminary Street, Barre, Vermont 05641, January 7, 2021.

KAS, Inc., *Soil Testing*, Proposed Parking Lot Project, 111 Seminary Street, Barre, Vermont, August 17, 2021.

VANR Natural Resources Atlas, viewed online at <http://anrmaps.vermont.gov/websites/anra/>.

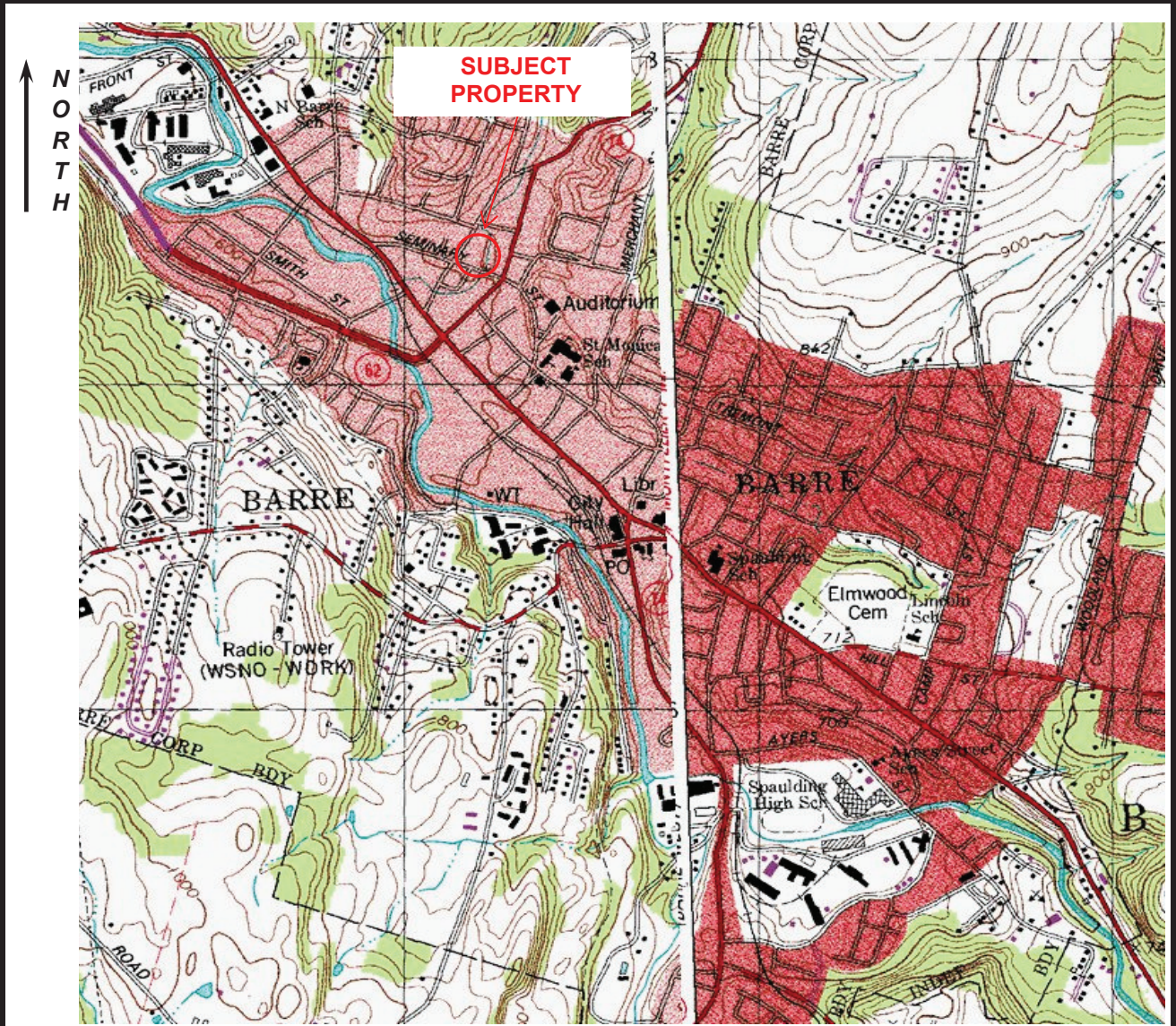
VT DEC, *Investigation and Remediation of Contaminated Properties Rule*, July 6, 2019.



Appendix A

Maps & Plans

- 1) Site Location Map**
- 2) Vicinity Map**
- 3) Site Map**
- 4) Proposed Site Plan
(by Grenier Engineering, PC)**
- 5) Proposed Site Plan with KAS Markups**



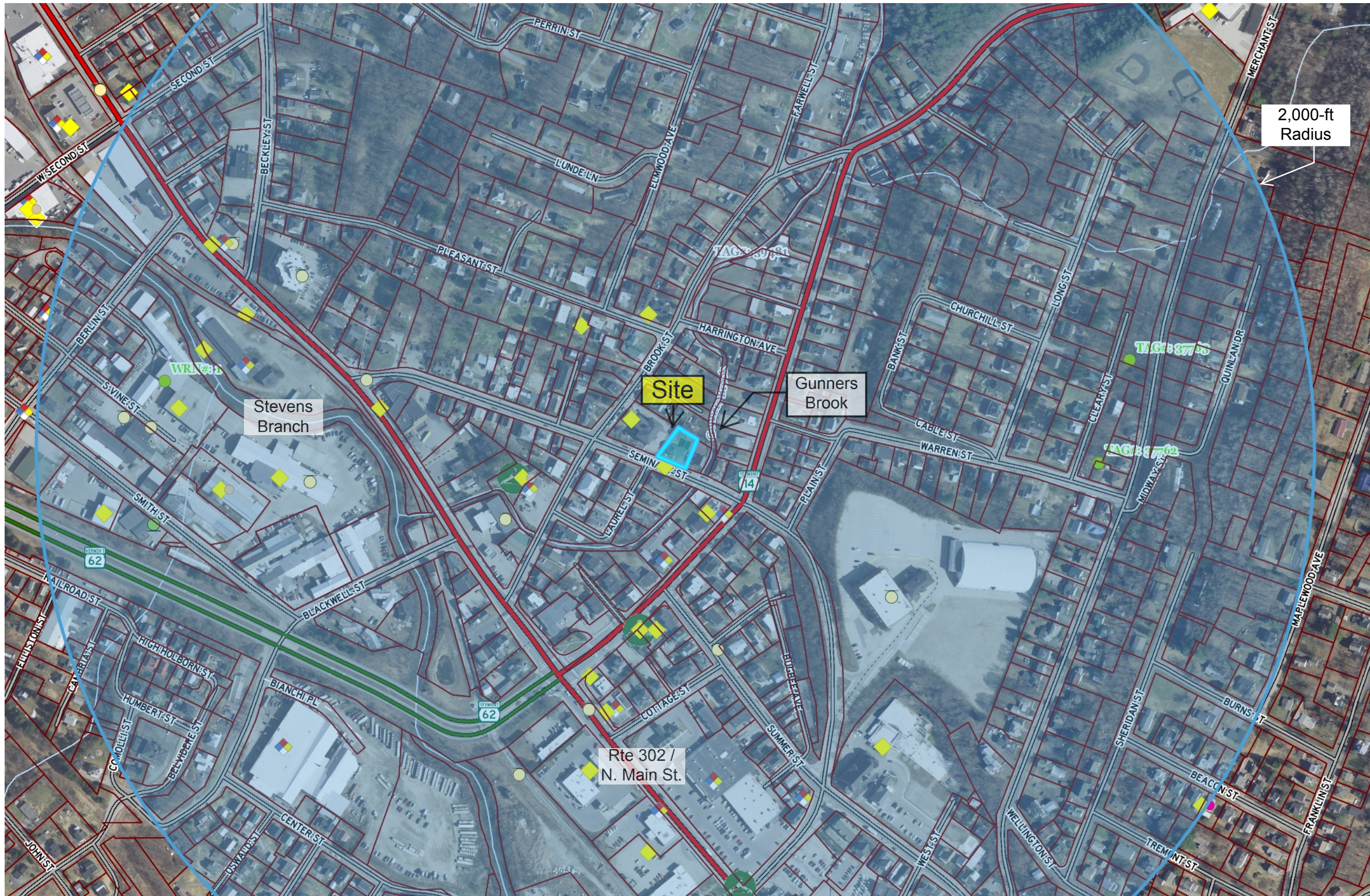
KAS Job Number: 512200594
 Source: Topoquest



Residential Lot
111 Seminary St, Barre, VT

Site Location Map

Date: 12/18/20	Drawing No.	Scale: NTS	By: JR
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LEGEND

- Rare Threatened Endangered Species
 - Threatened or Endangered
 - Rare
- Significant Natural Community
- Wildlife Management Areas**
 - Fee ownership
 - Non-fee interest
- Riparian Lands
- Other FW Lands**
 - Access Area
 - FWD miscellaneous property
 - Fish Culture Station
- Wetland - VSWI**
 - Class 1 Wetland
 - Class 2 Wetland
 - Buffer
- Landfills**
 - ▲ OPERATING
 - ▲ CLOSED
- Land Use Restrictions**
 - Class IV GW Reclass
 - Class VI GW Reclass
 - Deed Restriction
 - Easement
 - Land Record Notice
 - Other
- ◆ Hazardous Site
- ◆ Hazardous Waste Generators
- ◆ Brownfields
- ▲ Salvage Yard
- Aboveground Storage Tank
- Underground Storage Tank (working)
- Dry Cleaner
- Private Wells**
 - Incorrectly Located
 - GPS Located
 - Screen Digitized
 - E911 Address Matched
 - Welldriller/Clarion
 - Unknown Location Method
- Public Water Sources**

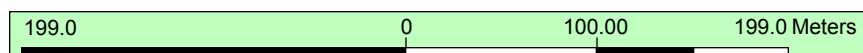
2,000-ft
Radius

Site

Gunners
Brook

Stevens
Branch

Rte 302 /
N. Main St.

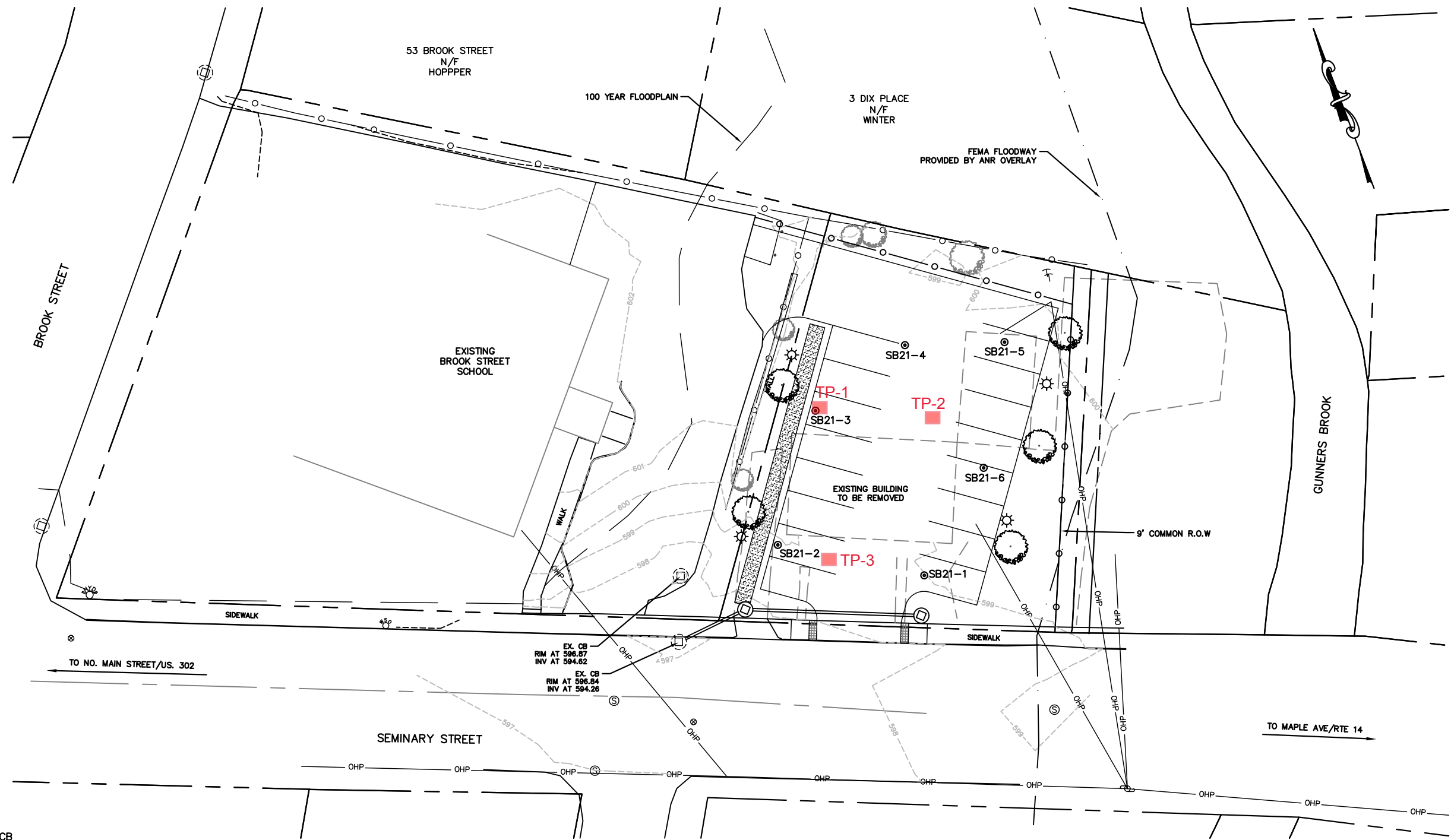


DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.
















THIS MAP IS NOT TO BE USED FOR NAVIGATION

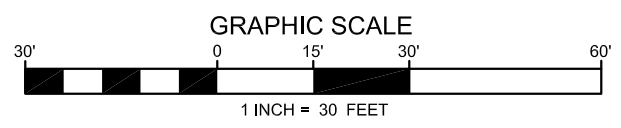
1: 3,909
1in = 326 ft.
1cm = 39 meters

NOTES
Map created using ANR's Natural Resources Atlas Capstone, 111 Seminary Street, Barre, VT



LEGEND

-  EX. CB
-  PRO. CB & STORM DRAIN
-  PROPERTY LINE - APPROXIMATE PER
-  RIGHT OF WAY/EASEMENT
-  FLOODWAY
-  100 YEAR FLOODPLAIN
-  EX. EDGE OF ROAD/DRIVE
-  PRO. EDGE OF DRIVE/PARKING
-  PRO. CHAIN LINK FENCE
-  EX. CONTOURS
-  PRO. GRASS SWALE
-  PRO. TREE
-  SB21-1
-  SOIL BORING
-  Test Pit



NOTES:
 1. BASE MAP PROVIDED BY CAPSTONE.
 2. ALL UTILITIES AND PROPERTY LINES ARE CONSIDERED APPROXIMATE.

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

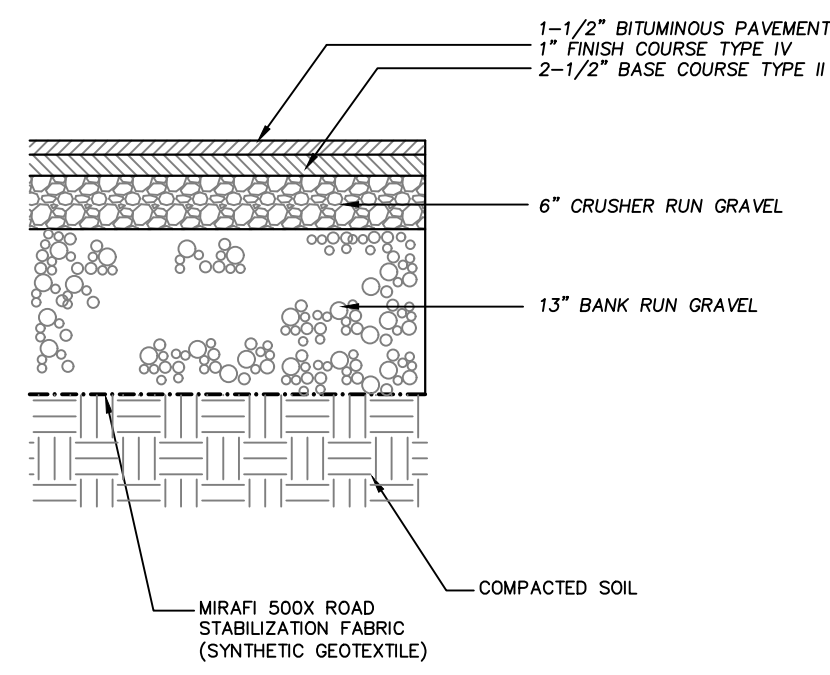


111 SEMINARY STREET
 BARRE, VERMONT

SITE MAP

DATE: 8/17/21	DWG. #: 1	SCALE: 1"=30'	DRN: TMB	APP: JR
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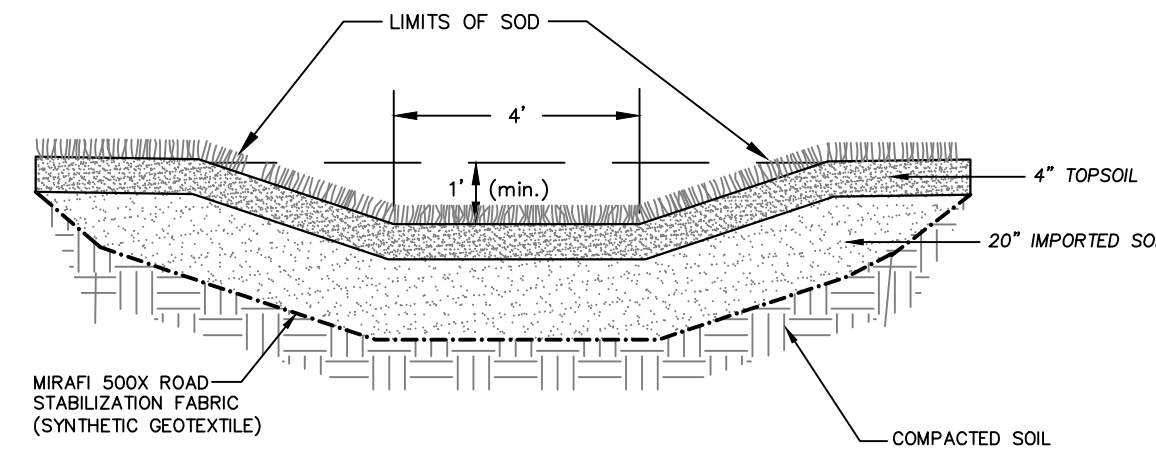
KAS #512200594



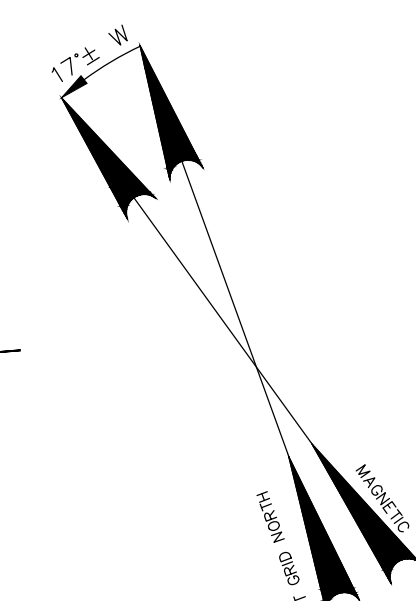
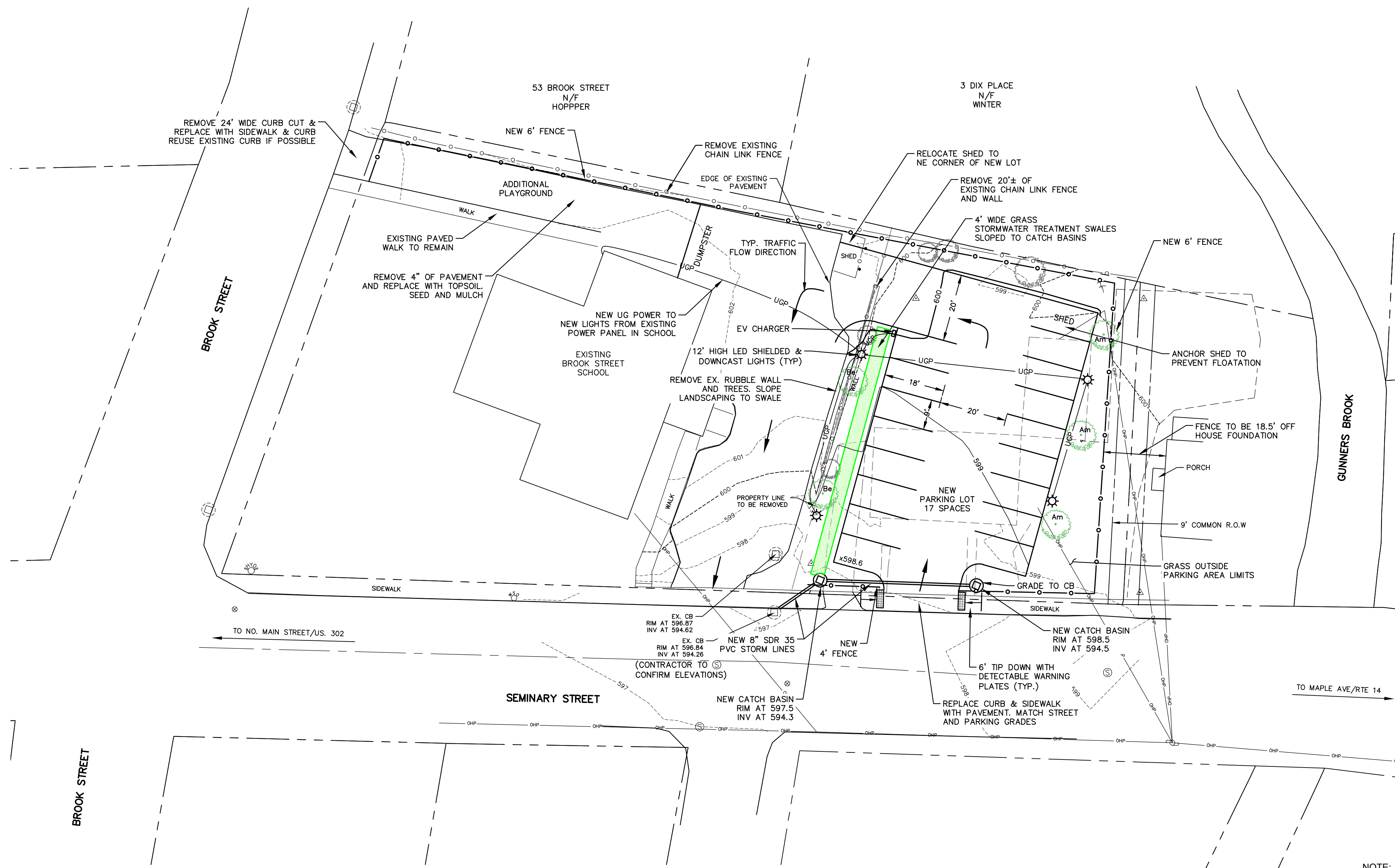
TYPICAL PAVED PARKING AREA
N75

SWALE NOTES:

- 1) SWALES SHALL BE CONSTRUCTED AT THE BEGINNING OF THE PROJECT, IMMEDIATELY AFTER STRIPPING OF THE SITE.
- 2) LINE SWALE WITH SOD OR 4" OF TOPSOIL AND JUTE NETTING, ADEQUATELY PINNED IN PLACE TO PREVENT MOVEMENT.
- 3) REPLACE OR REPAIR SOD AS NEEDED DURING THE CONSTRUCTION PERIOD.



GRASS SWALE DETAIL
N75



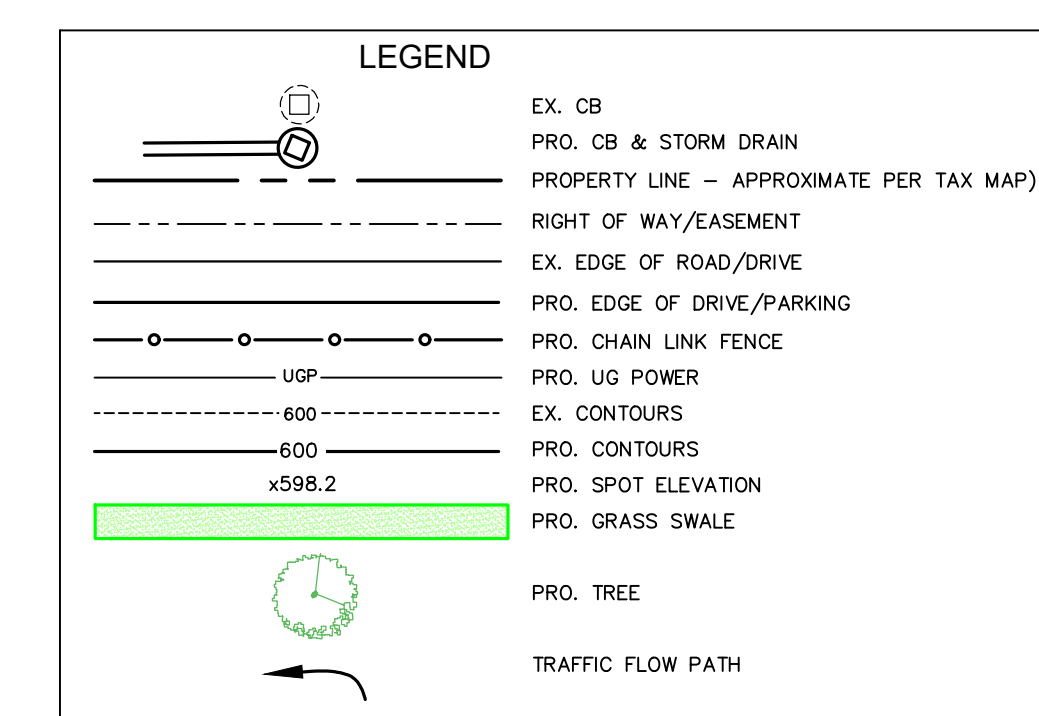
TREE PLANTING SCHEDULE

B: BETULA 'ROYAL FROST BIRCH': DARK-PURPLE LEAVES, STRIKING FALL ORANGE COLOR, WHITE BARK. 30-40' TALL X 18-20' WIDE - 1.5-3"

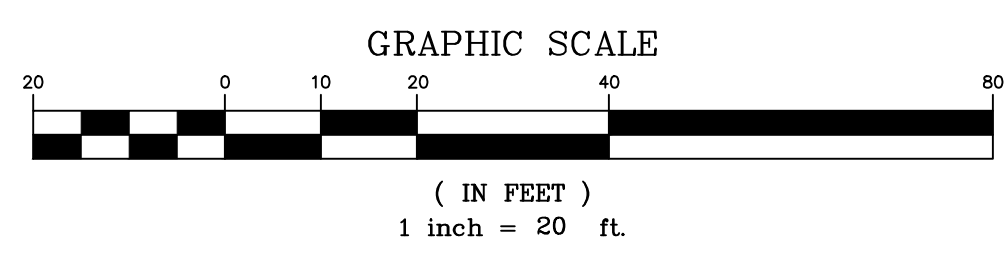
Am: AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' 20-25' TALL X 15-20' WIDE. 2.5"

FENCE

NEW FENCE TO BE BLACK CF ASCOT STD SPACING 3 RAIL FLUSH WITH BOTTOM ALUMI-GUARD PANEL.



THIS IS NOT A SURVEY
PROPERTY LINES SHOWN ARE APPROXIMATE ONLY BASED ON INFORMATION TAKEN FROM THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI) AND WERE NOT SURVEYED BY THIS OFFICE.



NOTE: ORIGINAL PLAN 24" x 36" - OTHER SIZES NOT TO SCALE

No.	Date	Revision	By
1	4/28/21	ADD TREES & LIGHTING	MJB
2	8/30/21	REVISED	MJB
3	1/17/22	REVISED DETAILS	TJM
4	3/10/22	REVISED NOTES	TJM
5	3/21/22	REVISED NOTES FOR BIDDING	TJM
6	3/27/22	ADDED EV CHARGER	TJM
7	3/31/22	RELOCATED EV CHARGER	TJM
8	4/04/22	REVISED DETAILS	TJM

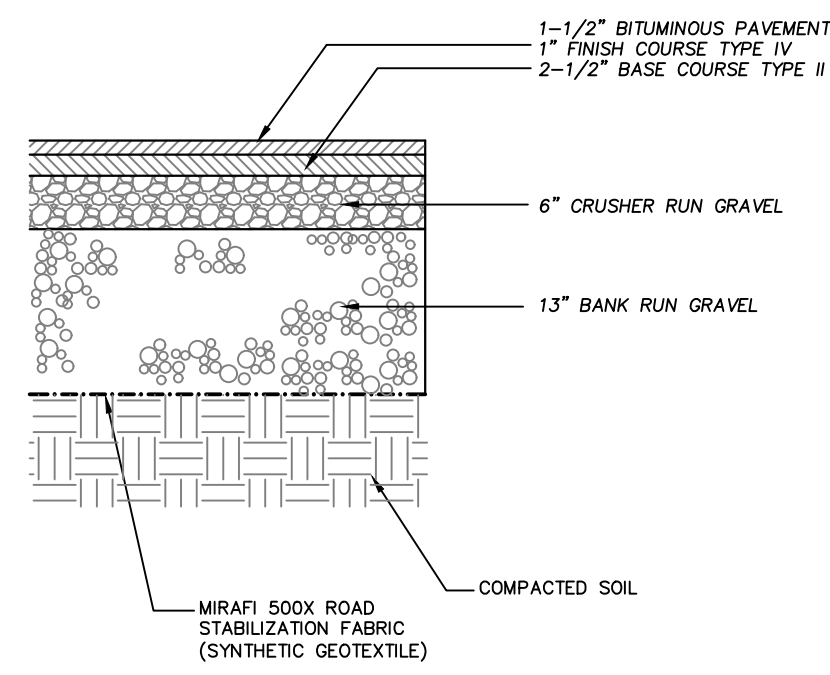
PROPOSED SITE PLAN
CAPSTONE COMMUNITY ACTION, INC.

111 SEMINARY STREET BARRE CITY

GRENIER
ENGINEERING, PC
155 DEMERITT PLACE #2

P.O. Box 445
Waterbury, VT 05676
TEL (802) 244-6413
FAX (802) 244-1572
grenierengineering.com

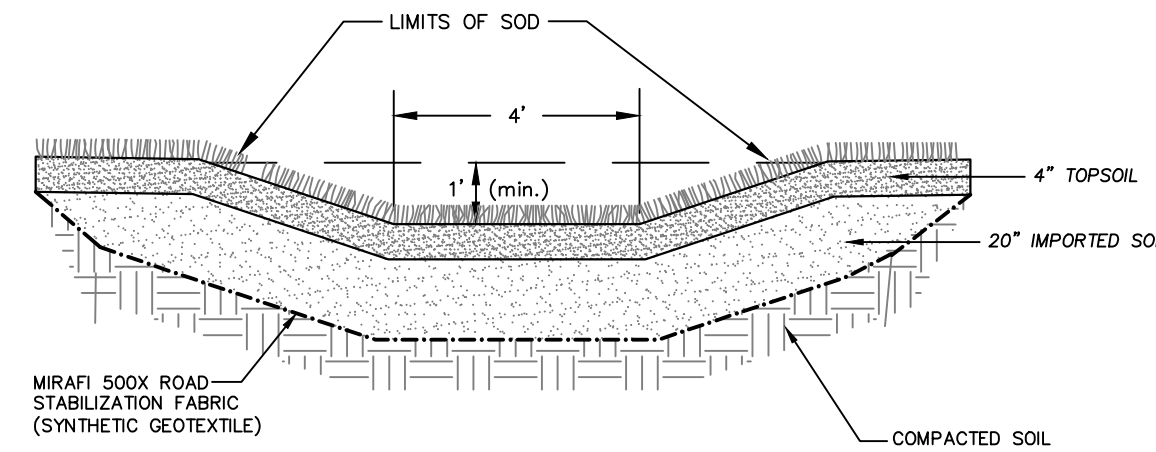
Date: 4.13.21
Scale: 1" = 20'
Designed: DRM
Drawn: JAD/TJM
Checked: DRM
Sheet No: C-1



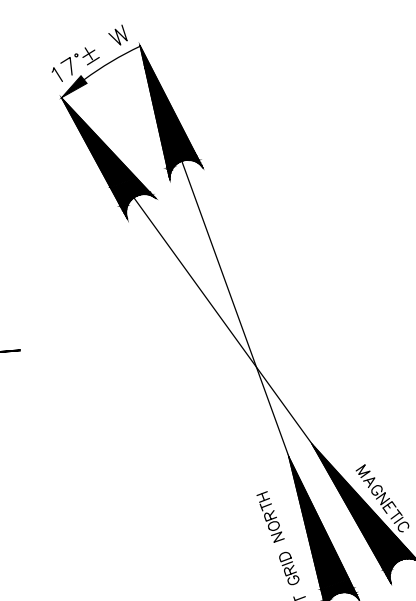
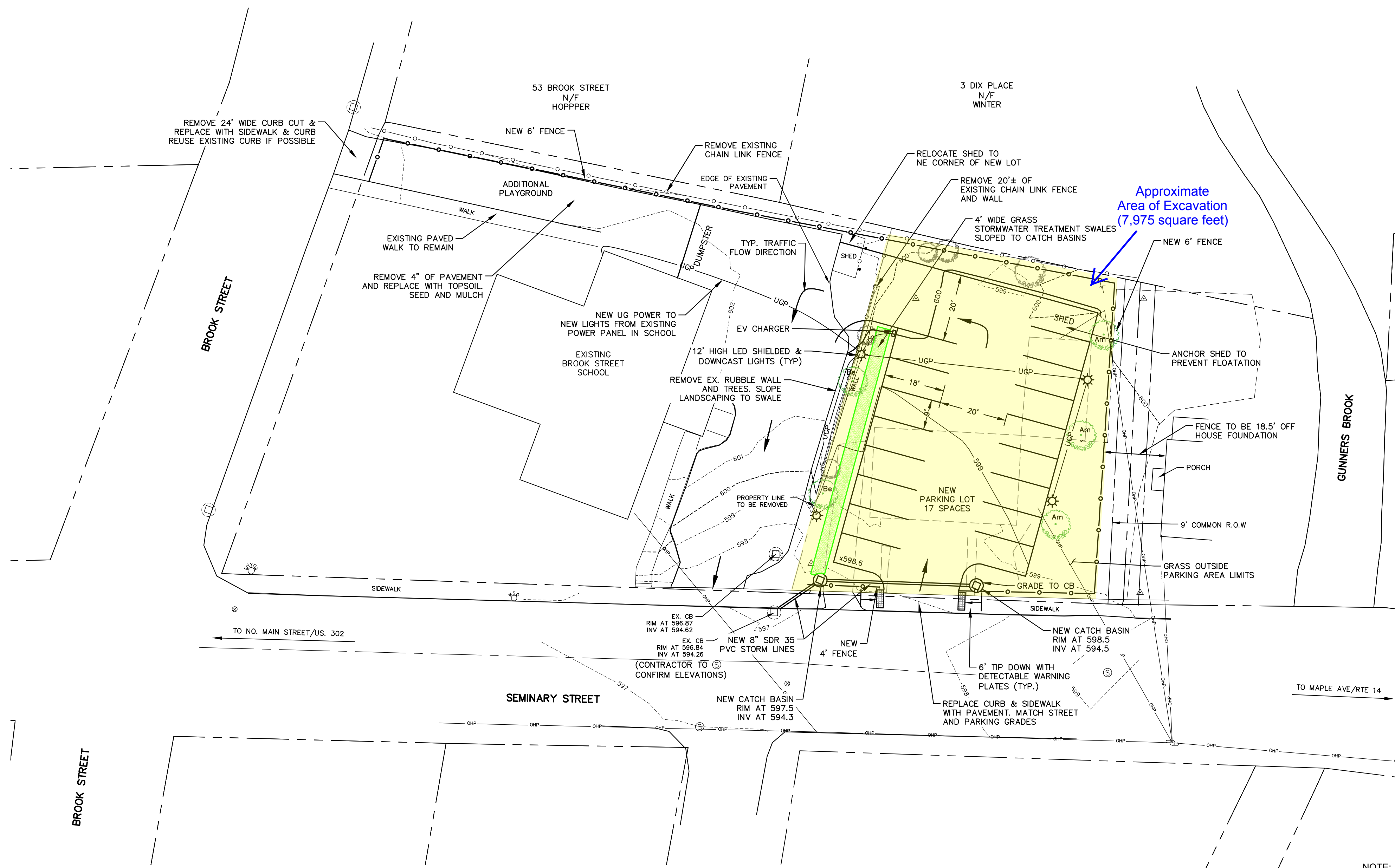
TYPICAL PAVED PARKING AREA
N75

SWALE NOTES:

- 1) SWALES SHALL BE CONSTRUCTED AT THE BEGINNING OF THE PROJECT, IMMEDIATELY AFTER STRIPPING OF THE SITE.
- 2) LINE SWALE WITH SOD OR 4" OF TOPSOIL AND JUTE NETTING, ADEQUATELY PINNED IN PLACE TO PREVENT MOVEMENT.
- 3) REPLACE OR REPAIR SOD AS NEEDED DURING THE CONSTRUCTION PERIOD.



GRASS SWALE DETAIL
N75



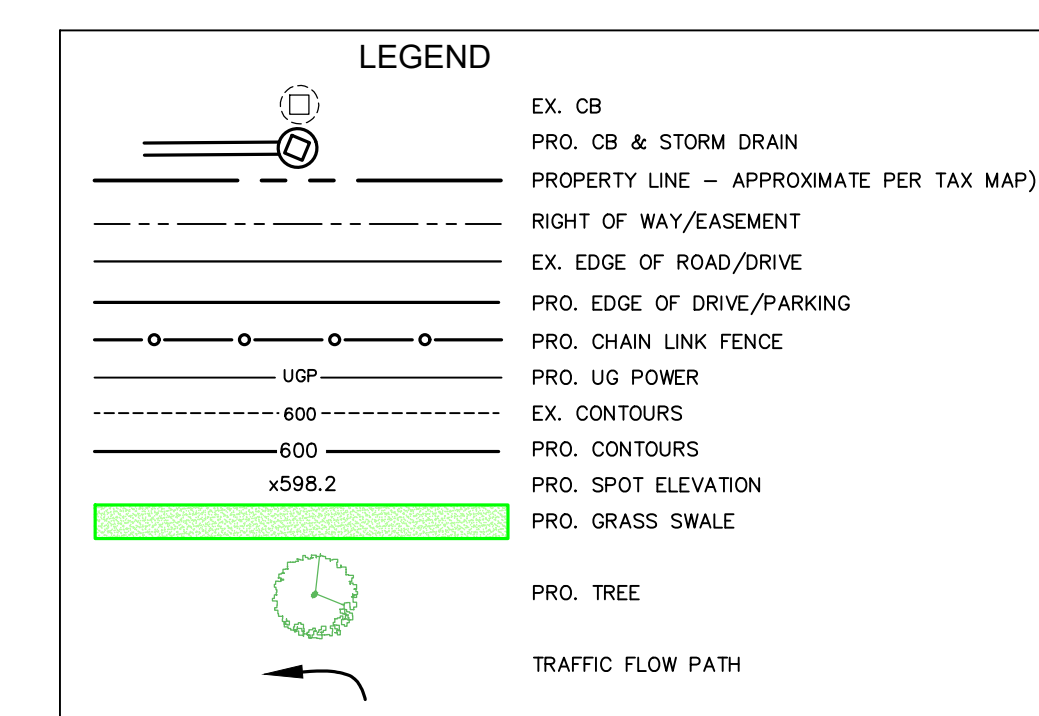
TREE PLANTING SCHEDULE

B: BETULA 'ROYAL FROST BIRCH': DARK-PURPLE LEAVES, STRIKING FALL ORANGE COLOR, WHITE BARK. 30-40' TALL X 18-20' WIDE - 1.5-3"

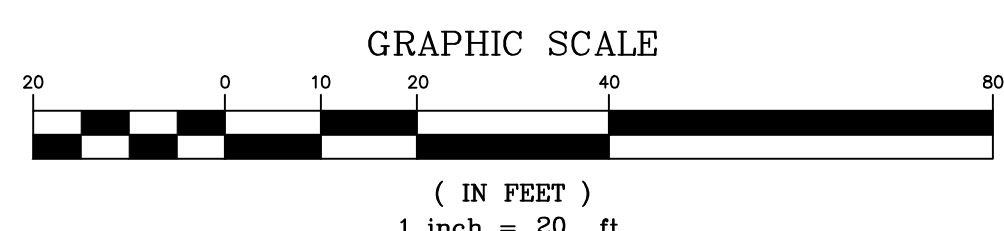
Am: AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' 20-25' TALL X 15-20' WIDE. 2.5"

FENCE

NEW FENCE TO BE BLACK CF ASCOT STD SPACING 3 RAIL FLUSH WITH BOTTOM ALUMI-GUARD PANEL.



THIS IS NOT A SURVEY
PROPERTY LINES SHOWN ARE APPROXIMATE ONLY BASED ON INFORMATION TAKEN FROM THE VERMONT CENTER FOR GEOGRAPHIC INFORMATION (VCGI) AND WERE NOT SURVEYED BY THIS OFFICE.




NOTE: ORIGINAL PLAN 24" x 36" - OTHER SIZES NOT TO SCALE

No.	Date	Revision	By
1	4/28/21	ADD TREES & LIGHTING	MJB
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7	3/31/22	RELOCATED EV CHARGER	TJM
8	4/04/22	REVISED DETAILS	TJM

PROPOSED SITE PLAN with KAS Markups

CAPSTONE COMMUNITY ACTION, INC.

111 SEMINARY STREET BARRE CITY



GRENIER
ENGINEERING, PC
155 DEMERITT PLACE #2

P.O. Box 445
Waterbury, VT 05676
TEL (802) 244-6413
FAX (802) 244-1572
grenierengineering.com

Date: 4.13.21
Scale: 1" = 20'
Designed: DRM
Drawn: JADITJM
Checked: DRM
Sheet No: C-1



Appendix B

Adjacent Property Owner Information & Public Notice Form

Adjacent Property Owners

Direction / Description	Parcel Number & Address	Property Owner Contact Information
East / Residential	1295-0107.0000 107 Seminary St., Barre, VT	Seventy Four South Main Limited Company 188 S. Main St., Barre, VT 05641
West / School	0240-0045.0000 45 Brook St., Barre, VT	Capstone Community Action, Inc. Attn: David Fowler 20 Gable Place, Barre, VT 05641
North / Residential	0475-0003.0000 3 Dix Place, Barre, VT	Jon & Paula Winter 3 Dix Place, Barre, VT 05641
South / Residential	1295-0116.0000 116 Seminary St., Barre, VT	Oliver Twombly PO Box 283, Barre, VT 05641-0283

Note: Information obtained from City of Barre, VT GIS Mapping (https://www.axisgis.com/Barre_CityVT/)



State of Vermont
Department of Environmental Conservation
Waste Management & Prevention Division
Davis Building - 1st Floor, One National Life Drive
Montpelier, VT 05620-3704

OFFICIAL NOTICE

Dear _____,

This is an official notice that a draft Corrective Action Plan (CAP) has been prepared by _____ on behalf of _____ for the _____ site. Vermont law requires that adjoining and/or impacted property owners receive notice of this CAP, as well as being provided a 30 day public comment period.

The CAP approval process includes a public comment period and an opportunity to request a public meeting. Note that in order to appeal a final CAP approval, comments must be submitted during the public comment period.

To view the draft CAP, please visit the Environmental Notice Bulletin (ENB) at ENB.VERMONT.GOV, and enter the site number: _____ in the "Permit #" space. Do not include spaces or dashes.

For further information, please visit the following website:
DEC.VERMONT.GOV/PERMITS/ENB/GENERAL.

FOR QUESTIONS CONTACT:

Waste Management & Prevention Division, Sites Management Section (SMS)

SMS Site Manager: _____

SMS Site Manager email address: _____

(802) 828-1138

SITE NUMBER

NAME OF POTENTIALLY RESPONSIBLE PARTY

LOCATION OF CORRECTIVE ACTION STREET ADDRESS/ROUTE

TOWN(S) WHERE PROPOSED CORRECTIVE ACTION WILL TAKE PLACE



Appendix C

Summary of Soil Analytical Data



Summary of Soil Analytical Data - Shallow Soils
111 Seminary Street
Barre, Vermont

Soil Boring ID (depth):	Composite A (0-1')	Composite B (1-2')	SB21-1 (1-2')	SB21-2 (1-2')	SB21-3 (1-2')	SB21-4 (1-2')	SB21-5 (1-2')	SB21-6 (1-2')	VSS - Resident Soil	VT Urban Background Standard
Sample Date:	07/20/21	07/20/21	07/20/21	07/20/21	07/20/21	07/20/21	07/20/21	07/20/21		
SVOCs (mg/kg)										
Naphthalene	0.065	0.015	0.018	< 0.008	0.033	0.010	0.019	0.23	2.7	-
2-Methylnaphthalene	0.027	< 0.008	< 0.009	< 0.008	0.014	< 0.008	< 0.009	0.071	-	-
1-Methylnaphthalene	0.021	< 0.008	< 0.009	< 0.008	0.010	< 0.008	< 0.009	0.064	-	-
Acenaphthylene	0.33	0.080	0.14	0.030	0.14	0.028	0.14	0.39	-	-
Acenaphthene	0.014	< 0.008	< 0.009	< 0.008	0.0091	< 0.008	< 0.009	0.026	-	-
Fluorene	0.052	0.011	0.015	< 0.008	0.024	< 0.008	0.024	0.11	2,301	-
Phenanthrene	0.74	0.22	0.25	0.066	0.37	0.071	0.58	1.8	-	-
Anthracene	0.14	0.048	0.047	0.012	0.079	0.011	0.10	0.18	-	-
Fluoranthene	1.5	0.51	0.61	0.18	0.80	0.21	1.2	2.4	2,301	-
Pyrene	1.4	0.43	0.55	0.16	0.71	0.18	1.0	2.2	-	-
Benzo(a)anthracene	0.76	0.25	0.29	0.082	0.39	0.099	0.59	1.0	-	-
Chrysene	0.97	0.29	0.41	0.12	0.49	0.12	0.69	1.5	-	-
Benzo(b)fluoranthene	1.2	0.37	0.52	0.14	0.61	0.17	0.84	1.7	-	-
Benzo(k)fluoranthene	0.45	0.14	0.19	0.058	0.21	0.061	0.29	0.59	-	-
Benzo(a)pyrene	0.88	0.27	0.37	0.10	0.45	0.12	0.59	1.2	0.07	-
Indeno(1,2,3-cd)pyrene	0.80	0.23	0.32	0.085	0.37	0.090	0.43	1.1	-	-
Dibenzo(a,h)anthracene	0.19	0.051	0.071	0.018	0.083	0.021	0.10	0.23	-	-
Benzo(g,h,i)perylene	0.68	0.20	0.28	0.078	0.34	0.081	0.37	1.0	-	-
TEQ as Benzo(a)pyrene*	1.35147	0.40769	0.55631	0.1494	0.67259	0.17763	0.87959	1.8174	-	0.58
Metals										
Total Arsenic (mg/kg)	9.6	9.3	7.9	9.0	6.0	11	11	6.1	16	-
Total Lead (mg/kg)	220	52	51	33	92	74	260	490	400	-
TCLP Lead (mg/L)	1.2	-	-	-	-	-	< 0.5	1.7	-	-

NOTES:

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

EPA RSL = Environmental Protection Agency Regional Screening Level (May 2020 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 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).

TCLP = Toxicity Characteristic Leaching Potential



Summary of Soil Analytical Data - Deeper Soils
111 Seminary Street
Barre, Vermont

Soil Boring ID (depth):	Comp-1 (2-4', from TP-1 & TP-2)	Comp-2 (4-6', from TP-1 & TP-2)	TP-3 (2-4')	TP-3 (4-6')	VSS - Resident Soil	VT Urban Background Standard
Sample Date:	08/30/21	08/30/21	08/30/21	08/30/21		
SVOCs (mg/kg)						
Naphthalene	0.016	< 0.009	< 0.009	< 0.008	2.7	-
2-Methylnaphthalene	< 0.008	< 0.009	< 0.009	< 0.008	-	-
1-Methylnaphthalene	< 0.008	< 0.009	< 0.009	< 0.008	-	-
Acenaphthylene	0.025	< 0.009	0.014	0.011	-	-
Acenaphthene	< 0.008	< 0.009	< 0.009	< 0.008	-	-
Fluorene	< 0.008	< 0.009	< 0.009	< 0.008	2,301	-
Phenanthrene	0.14	< 0.009	0.024	0.022	-	-
Anthracene	0.010	< 0.009	< 0.009	< 0.008	-	-
Fluoranthene	0.20	< 0.009	0.065	0.059	2,301	-
Pyrene	0.16	< 0.009	0.058	0.051	-	-
Benzo(a)anthracene	0.067	< 0.009	0.028	0.026	-	-
Chrysene	0.092	< 0.009	0.041	0.035	-	-
Benzo(b)fluoranthene	0.13	< 0.009	0.059	0.049	-	-
Benzo(k)fluoranthene	0.043	< 0.009	0.021	0.017	-	-
Benzo(a)pyrene	0.085	< 0.009	0.037	0.031	0.07	-
Indeno(1,2,3-cd)pyrene	0.070	< 0.009	0.034	0.026	-	-
Dibenzo(a,h)anthracene	0.014	< 0.009	< 0.009	< 0.008	-	-
Benzo(g,h,i)perylene	0.064	< 0.009	0.032	0.025	-	-
TEQ as Benzo(a)pyrene*	0.126222	ND	0.049351	0.041305	-	0.58
Metals (mg/kg)						
Total Lead	55	7.6	6.6	8.7	400	-

NOTES:

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

EPA RSL = Environmental Protection Agency Regional Screening Level (May 2020 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)

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* 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).



Appendix D

Health and Safety Plan

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

Prepared for:

**111 Seminary Street
Barre, VT**

Project #: 512200594

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

Date: February 4, 2022

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ATTACHMENT A	Information on PAHs and Lead by the Agency for Toxic Substances and Disease Registry (ATSDR)	

KAS, INC.
EVACUATION MAP

DIRECTIONS TO THE HOSPITAL: Central Vermont Medical Center

111 Seminary St
Barre, VT 05641

Head east on N Seminary St toward Maple Ave
262 ft

Turn right at the 1st cross street onto Maple Ave
0.1 mi

Continue onto VT-62 W
3.1 mi

Turn right toward Fisher Rd
177 ft

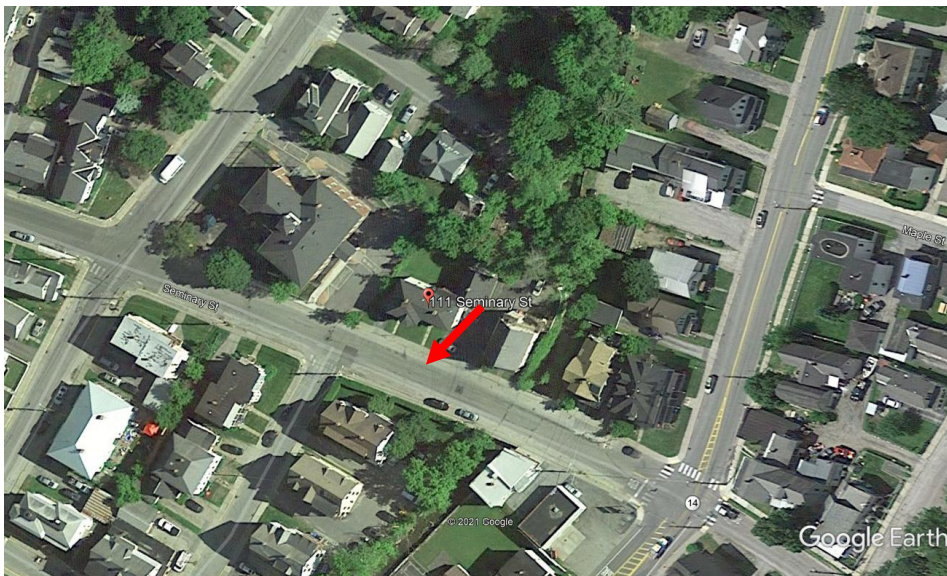
Slight right onto Fisher Rd
390 ft

Turn right

Destination will be on the right
207 ft

130 Fisher Rd
Berlin, VT 05602

SITE EVACUATION MAP:



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>
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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

Corrective actions are required at the Site to mitigate the risk of direct contact exposure to polycyclic aromatic hydrocarbons (PAHs) and lead, which have been reported in soils. Soil testing indicates that these contaminants are above soil standards in shallow soils down to approximately 2 feet below grade. The source of these contaminants is attributed from historical fill. The Site's urban setting may also have contributed to the elevated PAH and lead levels in shallow soils. The Site is situated within the 100-year flood plain. Gunners Brook is located approximately 50 feet southeast of the Site. Groundwater has not been encountered in the subsurface investigations conducted to date, the maximum depth of which was 6 feet below grade. Based on historical investigations conducted at the adjacent school property, groundwater is estimated to be around 8 feet below grade.

Proposed corrective actions include:

- Installation of engineered barriers including asphalt pavement and grass soil barriers, to mitigate the potential for direct contact with contaminated soil. An alternate soil barrier thickness of 12-inches is proposed based on the Site being fairly level and that 12-inches is considered to be a sufficient thickness in providing stable protection once vegetative cover is established. Also, a thicker cap is not proposed for it would result in a change in ground surface elevation that would negatively impact grading and drainage. The proposed pavement cap thickness is 23-inches thick;
- To accommodate the engineered barriers, contaminated soils will be excavated and disposed offsite as landfill alternative daily cover. If feasible, and if final site grading allows, contaminated soil may be placed back as fill beneath the engineered barriers; and,
- Institutional control plan to require long term monitoring, operations, and maintenance of the engineered barriers.

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 O₂/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 either groundwater or soil samples as being in excess of prescribed limits:

PAHs
Lead

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 chemicals or chemical constituents potentially contaminating this site are: PAHs and lead. 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.

PAHs

PAHs are a class of chemicals that occur naturally in coal, crude oil and gasoline. They are produced from the burning of coal, oil, gasoline, trash, and tobacco are burned. Benzo(a)pyrene is the most toxic parent PAH and is thus widely used as a key marker for environmental assessments. Exposure to this chemical via eye contact, skin contact, inhalation or ingestion may cause an allergic reaction including rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing. Studies have shown exposure can cause an allergic reaction, genetic defects, cancer, fetal development issues, and fertility issues.

Lead

Exposure to lead, via inhalation or ingestion of lead dust or soil, can affect the nervous system, kidneys, cardiovascular system and reproductive system. Symptoms may include abdominal pain, constipation, headaches, irritability, and memory problems. Children and pregnant women are most susceptible to the effects of lead.

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)
<hr/>		
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.

ATTACHMENT A

**Information on PAHs and Lead by the Agency for Toxic Substances and
Disease Registry (ATSDR)**

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl'ī-sī'klīk ä'r'ə-mät'īk hī'drə-kar'bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.

- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

Polycyclic Aromatic Hydrocarbons

How can PAHs affect my health?

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.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m³). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m³ averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m³ for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Lead - ToxFAQs™

What is lead?

Lead is a metal found naturally in the earth's crust. It can be found in all parts of our environment, including air, water, and soil. Lead can combine with other chemicals to make different compounds.



Lead is used in the production of batteries, ammunition, and metal products (solder and pipes). Because of health concerns, the use of lead in paints, ceramic products, caulking, and pipe solder has been dramatically reduced. The use of lead as an additive to automobile gasoline was banned in 1996 in the United States.

What happens to lead in the environment?

- Lead is an element, so it does not break down.
- When lead is released into the air, it may be transported long distances before it lands and stays on the ground.
- Once on the ground, lead can often stick to soil particles.
- Lead in soil can get into groundwater, but the amount of lead that moves into groundwater will depend on the lead compound and soil type.

How can I be exposed to lead?

- Eating food or drinking water that contains lead.
- Drinking water from pipes that were soldered with lead can cause exposure.
- Spending time or living in homes with lead-based paints can result in exposure when the paint breaks down and forms dust, which can get on your hands, or into your mouth and nose and be swallowed.
- Spending time in areas where the soil is contaminated with lead.
- Working in a job where lead is used or participating in certain hobbies where lead is used, such as making stained glass.
- Using healthcare products from other countries, alternative treatments, or folk remedies.

Lead can cause health problems in almost every organ and system in your body.

How can lead affect my health?

The effects of lead are the same whether it enters the body by breathing it in or eating it. Lead can affect almost every organ and system in your body. The nervous system is the main target for lead poisoning in children and adults. Long-term exposure can result in decreased learning, memory, and attention, and weakness in fingers, wrists, or ankles. Lead exposure can cause anemia (low iron in the blood) and damage to the kidneys. It can also cause increases in blood pressure, particularly in middle-aged and older individuals. Exposure to high lead levels can severely damage the brain and kidneys and can cause death. In pregnant women, exposure to high levels of lead may cause a miscarriage. In men, it can cause damage to reproductive organs.

Lead

How can lead affect children?

Children are more vulnerable to lead poisoning than adults because their nervous system is still developing. Children can be exposed to lead in their environment and before birth from lead in their mother's body. At lower levels of exposure, lead can decrease mental development, especially learning, intelligence, and behavior. Physical growth may also be decreased. A child who swallows large amounts of lead may develop anemia, severe stomachache, muscle weakness, and brain damage. Exposure to lead during pregnancy can also result in premature births. Some effects of lead poisoning in a child may continue into adulthood.

Can lead cause cancer?

Several agencies and organizations both in the United States and internationally have reviewed studies and made an assessment about whether lead can cause cancer.

- The Department of Health and Human Services (HHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens (causing cancer in people).
- The U.S. Environmental Protection Agency (EPA) has classified lead as a probable human carcinogen.
- The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans, and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

Can I get a medical test to check for lead?

A blood test is available to measure the amount of lead in your blood. Blood tests are commonly used to screen children for lead poisoning. Your doctor can draw blood samples and send them to appropriate laboratories for analysis. If you think you or anyone in your family has been exposed to lead, contact your doctor, nurse, or poison control center.

How can I protect my family from lead exposure?

- Avoid exposure to sources of lead.
- Do not allow children to chew or mouth surfaces that may have been painted with lead-based paint.
- If your home contains lead-based paint (built before 1978), or if you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house to remove lead dust and lead tracked in soil.
- Certain water pipes may contain lead, so if you know that pipes have lead solder, you should avoid drinking from that source.
- Check for lead in some products such as toys and jewelry and avoid such products.
- Lead is sometimes in candies imported from other countries or traditional home remedies; find out if yours has any lead and avoid using these products or giving them to children.
- You can learn more about preventing lead poisoning here: <https://www.cdc.gov/nceh/lead/faqs/lead-faqs.htm>

Want more information?

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's [Toxicological Profile for Lead](#)

CDC Lead Poisoning Prevention Program <https://www.cdc.gov/nceh/lead/default.htm>

Environmental Protection Agency <https://www.epa.gov/lead/protect-your-family-exposures-lead>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

If you have any more questions or concerns, you can also find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html





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: Capstone Community Action, Inc.

Address: 111 Seminary Street, Barre, Vermont

Facility ID#: _____ **and/or Spill #:** _____ **and/or SMS Site #:** 2021-5040

Will soils be temporarily stockpiled on-site or off-site for more than 90 days or between December 1st and April 1st?
 Yes No **if Yes, date range:** _____ **to** _____.

Disposal Facility: Coventry, VT landfill

Quantity of Soils: <591 cubic yards

Soil Contaminants: PAHs, lead

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); Gunners Brook is <100 ft from Site.
 - 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

Location of Soil Stockpile		Generator/Owner of Soil/Responsible Party	
Street Address	<u>111 Seminary Street</u> <u>Barre, VT</u>	Street Address	<u>111 Seminary Street</u> <u>Barre, VT</u>
Company Name	<u>Capstone Community Action, Inc.</u>	Company Name	<u>Capstone Community Action, Inc.</u>
Landowner Name	<u>Capstone Community Action, Inc.</u>	Owner Name	<u>Capstone Community Action, Inc.</u>
Landowner Phone #	<u>(802) 793-5559</u>	Owner Phone #	<u>(802) 793-5559</u>
Landowner email	<u>dfowler@capstonevt.org</u>	Owner email	<u>dfowler@capstonevt.org</u>

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.

David Fowler	<u>Facility Manager</u>
Name of Owner/Operator Representative (printed)	Company Title
<u></u>	<u>4/5/22</u>
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.

David Fowler

Print Name

David Fowler

Signature

4/15/22

Date

DEC Site Manager Approval:

Print Name

Signature of DEC Site Manager

Date of Approval





Appendix F

Cost Estimates

Soil Excavation and Disposal
 Capstone, Barre, VT
 VT DEC #2021-5040, KAS #512200594
 April 2022

Cubic Yards Impacted Soil	591
Tons of Impacted Soil	886
Number of trucks	32

WORK ELEMENT	CATEGORY	QTY	UNITS	RATE	ELEMENT COST	MARKUP	SUB COST	TASK COST
TASK 1: DIGSAFE								
KAS LABOR TASK COORD	PROJECT MANAGER	1	HR	\$115.00	\$115.00		\$115.00	
KAS TRAVEL / PREP	FIELD TECH	2	HR	\$80.00	\$160.00		\$160.00	
KAS MILEAGE	EXPENSE	164	EA	\$0.585	\$95.94		\$95.94	
KAS LABOR	FIELD TECH	0.5	HR	\$80.00	\$40.00		\$40.00	\$410.94
TASK 2: SOIL MANAGEMENT - ADDITIONAL WASTE CHARACTERIZATION SAMPLING								
KAS PROJECT COORDINATION	PROJECT MANAGER	1	HR	\$115.00	\$115.00		\$115.00	
KAS OBTAIN CASELLA APPROVAL	PROJECT MANAGER	3	HR	\$115.00	\$345.00		\$345.00	
KAS ONSITE LABOR	FIELD TECH	2	HR	\$80.00	\$160.00		\$160.00	
KAS TRAVEL	FIELD TECH	2	HR	\$80.00	\$160.00		\$160.00	
KAS MILEAGE	EXPENSE	164	MILE	\$0.585	\$95.94		\$95.94	
HAND AUGER	EXPENSE	1	EA	\$15.00	\$15.00		\$15.00	
PID	EXPENSE	1	DAY	\$90.00	\$90.00		\$90.00	
WASTE CHARACTERIZATION - PAHs	SUB - LABORATORY	1	EA	\$165.00	\$165.00	\$16.50	\$181.50	
WASTE CHARACTERIZATION - ARSENIC	SUB - LABORATORY	1	EA	\$45.00	\$45.00	\$4.50	\$49.50	
WASTE CHARACTERIZATION - TCLP LEAD	SUB - LABORATORY	1	EA	\$140.00	\$140.00	\$14.00	\$154.00	\$1,365.94
TASK 3: SOIL MANAGEMENT - EXCAVATION, TRANSPORTATION & DISPOSAL								
KAS PROJECT COORDINATION	PROJECT MANAGER	3	HR	\$115.00	\$345.00		\$345.00	
COMMON EXCAVATION (Estimate of cubic yards + 20% for swelling/expansion)	CONTRACTOR	709	CY	\$13.08	\$9,271.63		\$9,271.63	
TRANSPORTATION	CASELLA	886	TON	\$22.00	\$19,493.10	\$1,949.31	\$21,442.41	
DISPOSAL (DAILY COVER)	CASELLA	886	TON	\$43.00	\$38,100.15	\$3,810.02	\$41,910.17	\$72,969.20
TASK 4: CAP IMPLEMENTATION - KAS OVERSIGHT (ASSUMES 3 SITE VISITS)								
KAS PROJECT COORDINATION	PROJECT MANAGER	1	HR	\$115.00	\$115.00		\$115.00	
KAS ONSITE LABOR	PROJECT MANAGER	4	HR	\$115.00	\$460.00		\$460.00	
KAS TRAVEL	PROJECT MANAGER	2	HR	\$115.00	\$230.00		\$230.00	
KAS MILEAGE	EXPENSE	164	MILE	\$0.585	\$95.94		\$95.94	
							\$900.94 x 3 =	\$2,702.82
TASK 5: CORRECTIVE ACTION COMPLETION REPORT								
KAS REPORT PREPARATION	PROJECT MANAGER	24	HR	\$115.00	\$2,760.00		\$2,760.00	
KAS DRAFTING	DRAFTSPERSON	5	HR	\$85.00	\$425.00		\$425.00	
KAS REVIEW	SENIOR	1	HR	\$135.00	\$135.00		\$135.00	
KAS ADMINISTRATIVE	ADMINISTRATOR	1	HR	\$65.00	\$65.00		\$65.00	\$3,385.00

TOTAL COST ESTIMATE:	\$80,833.90
15% CONTINGENCY:	\$12,125.09
TOTAL + CONTINGENCY:	\$92,958.99



Appendix G

I-Rule 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# 2021-5040
Site Name: Capstone Parking Lot Project
Site Address: 111 Seminary Street
Site City/Town: Barre
Report Title: Corrective Action Plan
Report Date: April 11, 2022
Consultant: KAS, Inc.
Report Author: Clare Santos, P.E.

Deliverable	YES	N/A	Comments	WMPD Use Only	
				Adequate	Inadequate
Subchapter 5. Corrective Action					
§35-505. Corrective Action Plan					
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				