
**Sara Holbrook Community Center
56 – 66 North Avenue
Burlington, Vermont 05401**

KAS #510170470

**WORK PLAN AND COST ESTIMATE – BROWNFIELDS
PHASE II ENVIRONMENTAL SITE ASSESSMENT**

December 12, 2017, Rev December 29, 2017

Prepared for:

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1.0 INTRODUCTION

This Work Plan for a Brownfields Phase II Environmental Site Assessment (ESA) at the Sara Holbrook Community Center property located at 56 – 66 North Avenue, Burlington, Vermont (the property) has been prepared by KAS, Inc. (KAS) for the Chittenden County Regional Planning Commission (CCRPC).

A Phase I Brownfields ESA was completed for the property by KAS in November 2017.¹ The Phase I ESA identified two Recognized Environmental Conditions (RECs) and recommended further environmental investigations for the subject property. The following RECs were noted in the Phase I ESA document:

1. The apparent past use of the garage building at 58 North Avenue for automobile repair with the presence of an automobile repair pit and two floor drains; and,
2. The high likelihood for urban fill to be present beneath the property due to the location of the property within a long time urban environment along with the identified presence of fill at two locations in close proximity.

The Sara Holbrook Community Center, Inc. has not finalized the redevelopment plan for the property; however, the preliminary plans are to demolish the existing buildings at 56 and 58 North Avenue and construct a new larger community center on the property.

The preliminary redevelopment plan will steer the Phase II ESA work scope to characterize the property in a manner to best protect human health during and after redevelopment. The Phase II ESA will focus on potential environmental routes of exposure which directly bear on the planned future use. The preliminary redevelopment plan suggests the primary routes of exposure to potential contaminants of concern will be via direct contact with soils. A groundwater assessment is not being proposed at this time because future site use as a community center does not indicate a probable groundwater exposure risk (no wells will be drilled) and given depth to groundwater is estimated to be between 70 to 125 feet below grade. The proposed development on the property will use the existing City of Burlington municipal water supply to service the property.

The recommended scope of work and descriptions of tasks to be accomplished are included in Section 2.0. The anticipated staffing and organizational structure are included in Section 3.0. The implementation schedule to conduct these tasks is provided in Section 4.0. The fee schedule to complete the scope of work is included in Section 5.0.

2.0 SCOPE OF WORK

The following work scope is advanced. The Phase II ESA work scope is intended to address the RECs noted in the Phase I ESA. The following tasks will be completed in the Phase II ESA:

¹ KAS, Inc., Phase I Environmental Site Assessment, Sara Holbrook Community Center, Burlington, Vermont, November 29, 2017.
KAS #510170470 2 December 2017



- 1) Work Plan, Site specific QAPP addendum to KAS' approved Generic QAPP (RFA12098), and submittal, notifications, approvals, project coordination, and health and safety plan preparation;
- 2) Assessment of Garage Building Floor Drains;
- 3) Environmental Conditions Assessment: soil vapor;
- 4) Environmental Conditions Assessment: soils;
- 5) Laboratory data verification; and,
- 6) Preparation of a summary report

2.1 Work Plan, QAPP Addendum, Approvals, Coordination, HASP

KAS has prepared a site specific work plan addressing the known site assessment data requirements (this document). Once the work plan is approved by CCRPC and the Sara Holbrook Community Center, KAS will prepare a site specific QAPP addendum for review and approval by the CCRPC, the U.S. Environmental Protection Agency, Region 1 (EPA) and the Vermont Department of Environmental Conservation (VTDEC). This document is necessary to set forth the conditions associated with collection and testing of environmental samples. The site-specific QAPP addendum will compliment KAS' approved Generic QAPP (RFA12098) for Brownfields work in the State of Vermont. KAS will respond to comments and will obtain site-specific QAPP addendum approval prior to on site work.

Permits/ Notifications/Approvals

KAS will research permitting requirements to allow the work elements to take place and will acquire necessary permits. At the present time the following permits, notifications and approvals are known:

- QAPP approval from the VTDEC and the EPA; and,
- Dig-safe notification and utility clearance.

Prior to intrusive subsurface work, KAS will work to locate existing subsurface utilities so they can be avoided. KAS will contact DigSafe at least 48 hours in advance of subsurface work so that member utility markouts can be made. KAS will also coordinate with the City of Burlington Department of Public Works (DPW) to locate service utility lines and other lines that may exist on the property and which may not be marked by Dig-Safe. Costs for a private utility locating service have not been included and if it becomes apparent that these are needed, will be brought to light as soon as possible. Should other permitting requirements come to light during the course of the work, KAS will promptly notify the involved parties (none are anticipated).

Project Coordination

KAS will contract with the CCRPC and will conduct necessary project coordination activities to allow the project to proceed as planned. KAS will maintain active communications with the involved parties including CCRPC, the property owner, EPA and VTDEC. Notice of onsite activities will be given ahead of time to allow for attendance by the involved parties if desired. KAS will conduct necessary coordination/ management activities to initiate and maintain



contractual agreements required to allow the work to continue. All project documents including the QAPP and the Brownfields Phase II ESA report will be submitted to CCRPC for review before distribution.

Health and Safety Plan (HASP)

A site-specific HASP will be prepared and implemented to govern the safety aspects of the job in accordance with the Vermont Occupational Safety and Health Administration (VOSHA) requirements. KAS will appoint one of its 40 hour OSHA 1910.120 trained persons as the Site Safety Officer with a backup also designated. No activities will take place on the site without a Site Safety Officer present. A copy of the HASP will be kept on site and will be available to other parties at any time requested. All HASP requirements will be passed onto subcontractors.

2.2 Building Drain Assessment

KAS will coordinate with Roto-Rooter of Williston, Vermont to investigate the two floor drains noted inside the garage building at 58 North Avenue. The purpose of this assessment will be to document the condition of the lines and to locate their probable discharge location(s). If it is determined or believed, based on the video scoping, that the floor drain lines are connected to the municipal sewer KAS will coordinate with Roto-Rooter to conduct a vegetable dye test to verify that all of the floor drains inside the garage building are indeed routed to the municipal sewer system. KAS will coordinate with City of Burlington Public Works (DPW) officials to gain access to the reported floor drain discharge points (storm and sanitary sewers).

It is assumed that each floor drain is accessible and open, and not clogged with sediment or debris. Based on visual observation made during the Phase I ESA site visit, it appeared some debris was present in the lines; however, it was not clear whether or not each drain was entirely plugged. If it is discovered the floor drains are plugged or otherwise inaccessible, KAS will not be able to perform the video scoping or dye test.

If the floor drain lines are determined to be in poor condition with probable cracks and/or leaks noted or are determined to terminate at a dry well location, KAS may alter the soil boring locations outlined in Section 2.4 as necessary to better assess subsurface soils in these areas.

Assuming some sediment and debris is noted within the floor drains, one composite sample will be collected from the drains for laboratory analysis of the following constituents:

- VOCs via EPA Method 8260b;
- Total Petroleum Hydrocarbons (TPH) via EPA Method 8100;
- PCBs via EPA Method 8082; and,
- Priority pollutant metals via EPA Method 6010/6020.

The sample will be transported under chain of custody procedures to Eastern Analytical Laboratories of Concord, New Hampshire (EAL) for analysis.

2.3 Environmental Assessment –Soil Vapor

A sub-slab vapor investigation will be performed to evaluate potential releases from the 58 North Avenue garage building where vehicle repair apparently occurred and two floor drains were noted. KAS will install one CoxColvin Vapor Pin™ device in the garage building. The device will be installed through the concrete floor in the approximate center of the garage. A hammer drill will be used to install the device through the floor. Once fully installed, the device will be flush with the existing floor. An additional soil vapor point will be installed in the area of the proposed new foundation to evaluate soil vapor conditions in this area. This point will be installed to a depth of approximately 8 feet below surface grade (bsg) using a 0.25" stainless steel pipe. Leak tests will be performed on the devices to ensure an adequate seal is maintained.

Sub-Slab Vapor Sampling

Following installation, a discrete soil vapor sample will be collected from the two soil vapor points at least 24 hours after the devices are installed. The devices will first be purged of three to five volumes of air with a calibrated low-flow pump. A maximum 4-hour sampling will then be conducted using a dedicated 6-liter Summa vacuum canister and flow regulator. The soil vapor air samples will be collected for laboratory analysis of VOCs in air via EPA Method TO-15. One indoor air sample will be collected from within the garage space and one outdoor air sample will be collected in an upwind location of the sampling area. Lastly, an air quality sample will be collected from the probe with a photoionization detector (PID).

Sampling information will be recorded on a sampling data sheet in accordance with KAS' Soil Vapor Sampling Procedure. Quality Assurance/Quality Control measures will be taken to ensure that the sample collected from each soil vapor probe is representative of the soil vapor and not the atmosphere above it. Helium will be used as a tracer gas to verify the quality and integrity of each soil vapor probe's seal to the ambient air. A helium detector will be used on-site to verify the integrity of the seal.

The samples will be transported under chain of custody procedures to EMSL Laboratories, Inc. of Cinnaminson, NJ for analysis.

2.4 Environmental Assessment –Soils

KAS will conduct an environmental assessment of subsurface soils beneath the property. A geoprobe drill rig will be used to collect soil samples throughout the property for field and laboratory testing. The soil borings will be advanced to depths up to 12 feet bsg, which is slightly beyond the maximum planned depth of excavation for the property redevelopment, except for the three borings near the garage building, which will be advanced to 20 feet bsg or refusal, whichever comes first. The soil sampling method will consist of collecting discrete soil samples at select locations to evaluate possible source areas identified in the Phase I ESA (garage floor drains and pit) and to evaluate the potential presence of urban fill contaminants in soils beneath the property.

Discrete soil samples will be obtained in the vicinity of the garage building at 58 North Avenue and in various areas throughout the property where future redevelopment and soil

disturbance is scheduled to occur. These locations are shown on the Site Plan in Appendix A but are subject to modification by the field supervisor, to account for field findings, overhead and buried utilities and other possible obstructions.

The soil samples will be collected from the depth of maximum perceived contamination as noted with PID readings, staining, or olfactory evidence. If no contamination is noted then the sample will be obtained from the 0 – 18 inch bg zone. The exact sample interval will be dependent on the noted thickness of the overlying surface material (asphalt, gravel, and/or sod). If a noticeable distinction between a fill and native layer is identified, distinct layers will be chosen for the sampling and analysis. Drill cuttings will be placed back in the boring upon completion of sampling. One sample will be collected from the borings advanced around the garage building and one sample will be collected from each of the remaining six proposed boring locations (see Site Plan, Appendix A) for a total of seven soil analytical samples.

Seven discrete soil samples and one duplicate sample will be collected for laboratory analysis of the following constituents:

- VOCs via EPA Method 8260b;
- Polycyclic aromatic hydrocarbons (PAHs) via EPA Method 8270d;
- Total Petroleum Hydrocarbons (TPH) via EPA Method 8100;
- PCBs via EPA Method 8082; and,
- Priority pollutant metals via EPA Method 6010/6020.

The samples will be transported under chain of custody procedures to Eastern Analytical Laboratories of Concord, New Hampshire (EAL) for analysis.

2.5 Laboratory Data Validation / Verification

Following receipt of laboratory analytical data and laboratory quality assurance information, KAS' quality assurance officer (QAO) will perform data verification /validation as described in the QAPP. The verification will evaluate the usability of the data generated during the investigation including soil laboratory analytical data, and will determine whether data quality objectives (DQO) are met. Parameters to be evaluated will be described in the QAPP. The QAO will prepare a data verification report that notes whether DQOs are met, and will opine as to whether the data generated during the investigation are usable for the intended purposes.

2.6 Report Preparation and Submission

A Brownfields Phase II ESA report will be prepared for review and approval. The report will be prepared and reviewed by environmental professionals.

A description of the methodologies and results will be included as will a list of deviations from the approved QAPP document, if any occur. Comparison with appropriate environmental and materials quality standards will be made, as indicated in Section 1.4. Also, the Brownfields assessment report will contain: a site map, sampling locations; conceptual site model;



laboratory analytical data and data validation report; recommendations for additional work, if necessary; conclusions; and other recommendations, as applicable.

3.0 STAFFING / ORGANIZATION

The project will be managed and overseen by KAS. Clare Santos, PE of KAS will be the designated project manager and point of contact. Her efforts will be overseen by Jeremy Roberts, PG. Mr. Roberts and Ms. Santos are environmental professionals as defined by ASTM and EPA. Toni Baitz will serve as the Quality Assurance Officer.

KAS will conduct all required coordination, notification, preparation of the site specific QAPP addendum, premarking, environmental assessment and sampling, documentation of all work, data validation/verification, and report preparation.

KAS' subcontractors will include: P&P Septic of Williston, Vermont (floor drain assessment), T&K Drilling of Troy, New Hampshire (drilling efforts), Eastern Analytical Inc. and EMSL Laboratories (laboratory testing).

4.0 IMPLEMENTATION SCHEDULE

The schedule in Appendix B provides an estimate of KAS' implementation time requirements. The Phase II ESA will take approximately 75 days once authorized. QAPP approvals may take up to 30 days depending on EPA's work load. Once the QAPP is approved, the schedule depicts a 21 day time period during which the field work is anticipated to be completed assuming favorable weather conditions exist. KAS will work closely with all parties to make sure the work is completed in as short a time frame as possible.

5.0 COST AND FEE SCHEDULE

KAS will perform the work on a fixed price basis for **\$22,230**. A total of 56% of the work (\$12,551) is associated with petroleum investigative activities and 44% hazardous investigative activities (\$9,679). A cost breakdown by task is included in Appendix C.

The labor and expense breakdown is as follows:

Category	Classification	Units	Rate
Labor	KAS Project Manager	63 hr	\$95
	KAS Draftsperson	8 hr	\$65
	KAS Field Technician	8 hr	\$65
	KAS QA Officer	34 hr	\$80
	KAS Senior Scientist	11 hr	\$115
	KAS Expenses	1 LS	\$1,737
Expense	Eastern Analytical Laboratory (soil)	1 LS	\$5,188
	Drilling Allowance	1 LS	\$2,270
	EMSL Laboratories (soil gas)	1 LS	\$1,505



This price is based on KAS rates and subcontractor cost schedules in effect at the time of this Work Plan. The pricing assumes favorable weather conditions are present. If this does not hold true, KAS will notify the CCRPC and discuss alternative steps to complete the Phase II ESA in a timely manner.

6.0 MBE/WBE FAIR SHARE INFORMATION

Approximately 56% of the work will be performed by KAS which is a certified WBE (Vermont Agency of Transportation) and a registered WBE (Vermont Department of Environmental Conservation). The balance of the work will be conducted by EAI, EMSL and T&K Drilling. Neither of these companies are, to KAS' knowledge, MBE/WBE certified.



APPENDIX A

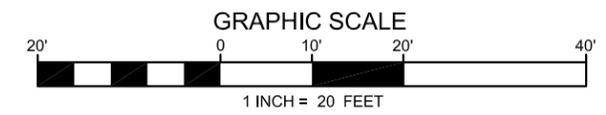
SITE PLAN



LEGEND

- PSB PROPOSED SOIL BORING
- ⊗ PSVP PROPOSED SOIL VAPOR POINT
- PROPERTY LINE
- FENCE
- ⊕ UTILITY POLE
- ▣ CATCH BASIN
- 🌳 TREE

NOTES:
 1. BASE MAP DEVELOPED FROM VCGI ORTHOIMAGERY AND PARCEL MAPS, FIELD OBSERVATIONS BY KAS, INC. ON 11/13/17.
 2. ALL UTILITES AND PROPERTY LINES ARE CONSIDERED APPROXIMATE.



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SARA HOLBROOK COMMUNITY CENTER
 56-66 NORTH AVENUE
 BURLINGTON, VERMONT

SITE PLAN

DATE: 12/13/17	DWG. #: 1	SCALE: 1"=20'	DRN.: TB	APP.: JR
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APPENDIX B

IMPLEMENTATION SCHEDULE



APPENDIX C

COST BREAKDOWN

BROWNFIELDS, NO GW INVESTIGATION, SOIL AND SOIL GAS SAMPLING

WORK ELEMENT	UNITS	CATEGORY	QTY	RATE/	ELEMENT	MARKUP @ 15%	ADJ	SUBTOTAL
DEVELOP WORK PLAN AND QAPP PREPARATION								
KAS LABOR WP PREP	HR	PRINCIPAL	7	\$115.00	\$805.00		\$805.00	
KAS LABOR HASP PREP	HR	PROJECT MANAGER	1	\$95.00	\$95.00		\$95.00	
KAS LABOR GENERAL COORDINATION	HR	PROJECT MANAGER	8	\$95.00	\$760.00		\$760.00	
KAS LABOR QAPP PREPARATION	HR	PROJECT MANAGER	12	\$80.00	\$960.00		\$960.00	\$2,620.00
PREMARK / FD ASSESSMENT (1 day)								
KAS LABOR TASK COORD	HR	PROJECT MANAGER	3	\$95.00	\$285.00		\$285.00	
TRAVEL	HR	PROJECT MANAGER	1	\$95.00	\$95.00		\$95.00	
FD ASSESSMENT / PREMARK	HR	PROJECT MANAGER	4	\$95.00	\$380.00		\$380.00	
MILEAGE	EA	EXPENSE	12	\$0.58	\$6.96		\$6.96	
SAMPLE KITS	EA	EXPENSE	1	\$15.00	\$15.00		\$15.00	
PID	DAY	EXPENSE	1	\$90.00	\$90.00		\$90.00	\$871.96
P&P SEPTIC	EA	EXPENSE	1	\$510.00	\$510.00	\$76.50	\$586.50	\$586.50
SOILS LABORATORY 7 + 1 QAQC								
EA-VOCS M8260B	EA	LABORATORY	1	\$124.00	\$124.00	\$18.60	\$142.60	
EA-TPH	EA	LABORATORY	1	\$68.00	\$68.00	\$10.20	\$78.20	
EA-PCB	EA	LABORATORY	1	\$79.00	\$79.00	\$11.85	\$90.85	
EA-PP13 METALS	EA	LABORATORY	1	\$146.00	\$146.00	\$21.90	\$167.90	
EA Metals Preparation	EA	LABORATORY	1	\$23.00	\$23.00	\$3.45	\$26.45	\$506.00
SOIL SAMPLING/SG INSTALL (1 day)								
KAS LABOR TASK COORD	HR	PROJECT MANAGER	3	\$95.00	\$285.00		\$285.00	
BORINGS-TRAVEL	HR	PROJECT MANAGER	1	\$95.00	\$95.00		\$95.00	
SOIL BORINGS/SAMPLING	HR	PROJECT MANAGER	8	\$95.00	\$760.00		\$760.00	
MILEAGE	EA	EXPENSE	12	\$0.58	\$6.96		\$6.96	
PID	DAY	EXPENSE	1	\$90.00	\$90.00		\$90.00	
SOIL PROBE MATERIALS	EA	EXPENSE	3	\$100.00	\$300.00		\$300.00	
SAMPLE KITS	EA	EXPENSE	7	\$15.00	\$105.00		\$105.00	\$1,641.96
T&K GEOPROBE SOIL BORINGS	EA	EXPENSE	1	\$1,973.20	\$1,973.20	\$295.98	\$2,269.18	\$2,269.18
SOILS LABORATORY 7 + 1 QAQC								
EA-VOCS M8260B	EA	LABORATORY	8	\$124.00	\$992.00	\$148.80	\$1,140.80	
EA-PAH M8270	EA	LABORATORY	8	\$124.00	\$992.00	\$148.80	\$1,140.80	
EA-TPH	EA	LABORATORY	8	\$68.00	\$544.00	\$81.60	\$625.60	
EA-PCB	EA	LABORATORY	8	\$79.00	\$632.00	\$94.80	\$726.80	
EA-PP13 METALS	EA	LABORATORY	8	\$146.00	\$1,168.00	\$175.20	\$1,343.20	
EA Metals Preparation	EA	LABORATORY	8	\$23.00	\$184.00	\$27.60	\$211.60	\$5,188.80
SOIL GAS SAMPLING								
KAS LABOR TASK COORD	HR	PROJECT MANAGER	4	\$95.00	\$380.00		\$380.00	
TRAVEL	HR	TECH	1	\$65.00	\$65.00		\$65.00	
SOIL GAS SAMPLING	HR	TECH	6	\$65.00	\$390.00		\$390.00	
MILEAGE	EA	EXPENSE	12	\$0.58	\$6.96		\$6.96	
PID	DAY	EXPENSE	1	\$90.00	\$90.00		\$90.00	
SOIL GAS TUBING	EA	EXPENSE	1	\$50.00	\$50.00		\$50.00	
HELIUM DETECTOR RENTAL	EA	EXPENSE	1	\$100.00	\$100.00		\$100.00	
RENTAL SHIPPING	EA	EXPENSE	1	\$50.00	\$50.00		\$50.00	
PACK CANISTERS/SHIP	HR	TECH	1	\$65.00	\$65.00		\$65.00	
TEMP/HUMIDITY PEN RENTAL	DAY	EXPENSE	1	\$15.00	\$15.00		\$15.00	
HELIUM CANISTER (TRACER GAS)	EA	EXPENSE	1	\$20.00	\$20.00		\$20.00	\$1,231.96
SG LABORATORY								
EMSL TO 15 4 HR	EA	LABORATORY	4	\$242.00	\$968.00	\$96.80	\$1,064.80	
SHIPPING	EA	EXPENSE	4	\$100.00	\$400.00	\$40.00	\$440.00	\$1,504.80

DATA VERIFICATION/VALIDATION							
KAS LABOR VALIDATION	HR	QAO	22	\$80.00	\$1,760.00	\$1,760.00	
KAS LABOR REVIEW	HR	PRINCIPAL	1	\$115.00	\$115.00	\$115.00	\$1,875.00

SUMMARY REPORT							
REPORT PREPARATION	HR	PROJECT MANAGER	30	\$95.00	\$2,850.00	\$2,850.00	
REVIEW	HR	PRINCIPAL	3	\$115.00	\$345.00	\$345.00	
DRAFTING	HR	DRAFTSMAN	8	\$65.00	\$520.00	\$520.00	
ADMINISTRATION	HR	ADM	4	\$55.00	\$220.00	\$220.00	\$3,935.00

SUBTOTAL \$22,231.16

BREAKDOWN								
KAS				\$12,175.88	56%			
EAI				\$5,188.80		Senior	11	
EMSL				\$1,504.80		PM	63	
P&P				\$586.50		Drafts	8	
T&K				\$2,269.18		QA	34	
						Tech	8	
						Expenses	\$1,517.38	
			Total	\$21,725.16				
						Petro	\$12,552.75	56.46%
						Haz	\$9,678.41	43.54%