

FINAL

**Quality Assurance Project Plan
700 South 1600 East PCE Plume
AOU-1: East Side Springs
Salt Lake City, Utah**

Amendment No. 1

**BPA No. VA259-14-A-0021
TO No. VA259-14-J-1384**

February 24, 2015

**Effective Dates: 02/10/2015—9/30/2015
Revision 0**

**Prepared for: VA Salt Lake City Health Care System
500 Foothill Drive
Salt Lake City, Utah 84148**

**Prepared by: First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005**



This page left intentionally blank

FINAL

Title and Approval Sheet

Quality Assurance Project Plan (QAPP)

Effective Period: October 1, 2014 – September 30, 2015

700 South 1600 East PCE Plume
AOU-1: East Side Springs
Salt Lake City, Utah

First Environment
Program Manager:



First Environment, Inc. (Prime)

Date: 2/25/15


First Environment
QA/QC Manager:



First Environment, Inc. (Prime)

Date: 2/25/15


CH2M Hill
Project Manager:



CH2M Hill (Subcontractor)

Date: 3/5/15

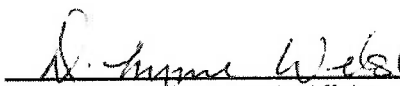
CH2M Hill Project Quality
Assurance Manager:



CH2M Hill (Subcontractor)

Date: 3/5/15


VA COR/Remedial Program
Manager, CERCLA:



Department of Veteran's Affairs

Date: 3/6/2015

U.S. EPA Remedial
Project Manager:



U.S. EPA Region 8

Date: 4/1/2015


U.S. EPA Project
Manager:



U.S. EPA Region 8

Date: 4/1/15

U.S. EPA
Quality Assurance Manager:



U.S. EPA Region 8

Date: 4/2/15

UDEQ Project
Manager:

NOT REQUIRED PER FFA LANGUAGE
RE: PRIMARY DOCUMENT APPROVAL
SEE ROUTING SLIP.

Date: _____

This page left intentionally blank

FINAL

TABLE OF CONTENTS

Title and Approval Sheet.....	i
Background.....	1
Elimination of VC Data Collection Using the HAPSITE	2
Data Collection and Analysis Effort for Assessing VC Presence.....	2

FINAL

Background

Residences and structures within the downgradient footprint of the 700 South 1600 East PCE plume are being assessed as part of an accelerated investigation to determine potential health impacts to the public from vapor intrusion (VI). As part of this investigation, a field portable gas chromatograph/mass spectrometer (GC/MS) manufactured by Inficon (the “HAPSITE”) is being used for real-time screening of indoor air background sources, VI sources, and near-slab soil gas. The data collected with the HAPSITE is being used to identify potential points of entry, potential indoor source materials, assess the potential for VI, and determine the need to collect and analyze confirmatory air samples using SUMMA canisters and TO-15 analyses.

The primary contaminant of concern for this assessment is Tetrachloroethylene (PCE). Due to the possibility of reductive dechlorination of PCE, the daughter products Trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-DCE), and vinyl chloride (VC) are also being assessed. Site-wide groundwater data collected to date indicates that the aquifer and associated springs are aerobic in nature and that reductive dechlorination and significant daughter product generation is not occurring. However, there is still a slight possibility that daughter products may be generated due to localized reducing conditions in groundwater.

As part of the screening and decision making process, the Department of Veterans Affairs (VA) adopted U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for PCE, TCE, and VC (cis-DCE does not have an established RSL) applicable to EPA indoor air exposures. The HAPSITE analytical results for indoor air are compared to the RSLs to identify the need for further sampling (long-term monitoring), confirmation sampling using TO-15 Summa canister analyses, or immediate mitigation actions. The approved RSLs for the project are as follows: PCE, 11 ug/m³ (1.62 ppbv); TCE, 0.42 ug/m³ (0.1 ppbv); and VC, 0.17 ug/m³ (0.07 ppbv).

The Quality Control (QC) protocols for the HAPSITE, as established in the approved Quality Assurance Project Plan (QAPP) and approved by EPA on December 19, 2014, required a four compound calibration (PCE, TCE, cis-DCE, and VC) using a five-point (concentration) calibration method for each analyte (specifically, concentrations of 0.1, 0.5, 1, 5, 10 ppbv for indoor air). During the use of the HAPSITE for indoor air screening and near-structure soil gas

FINAL

screening, the instrument did not provide reliable data for quantifying VC at concentrations below the 5 ppbv calibration level. This is well above the established RSL of 0.07 ppbv for VC. Therefore, this (1) eliminates the collection of VC screening and characterization data with the HAPSITE and the requirement to calibrate the HAPSITE for VC; and (2) presents a data collection and analysis effort to ensure that not screening for VC with the HAPSITE does not compromise the results of the AOU-1 remedial investigation.

Elimination of VC Data Collection Using the HAPSITE

As approved by this Amendment, VC data will no longer be assessed or reported using the field-portable HAPSITE instrument. In addition, the five-point calibration of the HAPSITE for VC and the CCV for VC will not be performed. A three-analyte/five-point calibration for PCE, TCE, and cis-DCE will continue to be performed.

There will be no changes made to the existing procedure for analyzing VC in confirmatory SUMMA canisters using Method TO-15. Assessment criteria for potential further actions and risk assessment calculations for all four analytes of interest will remain the same. No changes to the established project RSLs for the COCs are proposed.

Data Collection and Analysis Effort for Assessing VC Presence

As stated in the QAPP, the HAPSITE is used to screen for indoor air sources of the chlorinated volatiles of interest, and to use these data to determine the need to collect confirmatory samples using SUMMA canisters and analyze them according to Method TO-15. Collection of SUMMA samples is triggered by exceedances of the assessment criteria for any of the analytes of interest. In the event of an assessment criteria exceedance for PCE, TCE, or cis-DCE, vapor samples will be collected using SUMMA canisters and volatile organics analyzed by TO-15. VC will also be measured as part of the SUMMA analysis and will be considered in making subsequent decisions regarding further action and risk assessment. Analysis of SUMMA canister samples (25 already identified in the Sample and Analysis Plan and these 4) will provide definitive data of the quality needed to accurately and quantitatively assess the risk to human health and ensure that appropriate remedies are evaluated, where needed.

By eliminating the screening of VC using the HAPSITE, there is a potential risk of not identifying VI issues from VC. The overall probability of exceeding RSLs for VC in the absence of PCE,

FINAL

TCE, or cis-DCE exceedances is low. Analytical data collected to date indicate that the groundwater and associated springs are aerobic and reductive dechlorination is not generating significant concentrations of daughter products. It is believed that eliminating the field screening of VC using the HAPSITE will not compromise the data quality objectives or decision making process.

To address the possibility that VC is present in indoor air and soil gas above assessment criteria when the other contaminants of interest (PCE, TCE, and cis-DCE) are below, additional samples will be taken to verify VC is not present. Four sampling locations from surveyed and characterized structures within the study area will be selected for additional SUMMA canister sample collection. The selected structures will be located within the expected area of the PCE plume, where groundwater is within 10 to 20 feet of the ground surface and where the HAPSITE indicates that PCE, TCE, and cis-DCE do not exceed the RSLs. At each of these structures, a 24-hour SUMMA canister sample will be collected from breathing zone air and will be analyzed for VOCs using Method TO-15. One location will include a duplicate SUMMA sample (side-by-side canisters). The sample locations will be co-located with a HAPSITE reading in the lowest occupied level of the structure. At least two structural types (slab on-grade, partial finished basement, residential, school, etc.) will be assessed. These samples are in addition to the other QA samples being collected per the QAPP.

The data from the SUMMA canisters will be used to determine if VC is present above assessment levels when PCE, TCE, and cis-DCE are not detected above RSLs with the HAPSITE.

If VC measurements from the SUMMA canisters are below assessment levels at all four structures, it can then be reasonably assumed that eliminating VC from the HAPSITE screening had minimal impact on data quality objectives or decision outcomes.

If VC results from any of the four SUMMA canisters are above assessment criteria (RSLs), there is then a possibility that risk associated with exposure to VC cannot be determined using PCE, TCE, and cis-DCE as field indicators. If so, VA will address this with regulators at that time and may need to re-think the use of HAPSITE as a screening tool. However, the presence of VC

FINAL

hits may not be attributable to the 700 South 1600 East PCE Plume Superfund Site, and an alternative assessment strategy will be required to address it which may include such actions as reporting another release to the appropriate regulatory authority and notify the property owner of the results.