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RIWP Minor Field Modification-01 **Protocol for Performing Indoor Air and Near-slab Soil Gas Assessments** **700 South 1600 East PCE Plume Superfund Site** **Salt Lake City, Utah**

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Introduction

This document provides a description of a minor modification to the Protocol for Performing Indoor Air and Near-slab Soil Gas Assessments, Version 4.0 (dated December 23, 2014) for the use of real-time on-site gas chromatography/mass spectrometry (GC/MS) analysis to evaluate the potential for vapor intrusion in structures associated with the Accelerated Operable Unit-1 (AOU-1) portion of the 700 South 1600 East PCE Plume (Plume). The protocol is included as Appendix H of the RIWP. The minor modification is a result of lessons learned during implementing the protocol in early January 2015, additional field training with the field-portable GC/MS (HAPSite™), and the initial screening using the protocol at a variety of sites during the first four weeks of the field effort.

The changes to the protocol are primarily changes in the order of various components of the indoor air screening process. In addition, further clarification to the quantitative indoor ambient air testing process to better define the location and number of rooms to be tested per floor level are provided.

Indoor Air Screening Process Modification

The current Protocol provides general procedures in Sections 7.0, 8.0, and 9.0 for conduct of initial qualitative (HAPSite™ in survey mode) screening for indoor background sources, conduct of initial qualitative (HAPSite™ in survey mode) vapor entry point screening, and conduct of quantitative (HAPSite™ in analyze mode) indoor ambient air sampling, respectively. This portion of the testing is done under ambient conditions. Currently, immediately upon entering a site, the HAPSite™ is used to conduct surveys throughout the building to identify potential locations of indoor background source materials and potential locations of vapor entry. Then, based on the surveys, the HAPSite™ is used in analyze mode to quantify concentrations on each floor of the structure and in habitable rooms.

After testing a number of buildings, it is apparent that walking through a site room-by-room with the HAPSite™ in survey mode is inefficient due to the lack of elevated indoor sources above the survey mode detection limits of about 100 ppb in nearly all structures. Below the survey mode

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detection limits, the team can only record total ion counts (TICs) relative to baseline TIC to obtain a gross representation of target compounds. In addition, the vapor entry survey has rarely assisted in identifying entry points when random surveys of cracks, wall penetrations, and crawl spaces have been performed in survey mode. Quantitative testing of ambient air has proven to be better at providing initial data that allows the HAPSite™ operator to isolate specific rooms or areas of a site for further evaluation of indoor sources and entry points.

The original Protocol should be changed so that the order of indoor air testing begins with ambient indoor air analysis (Section 9.0) and then proceeds with either indoor background source surveys (Section 7.0) based on ambient results and visual observation of source materials, or vapor entry point surveys based on ambient results and observations of potential entry points.

The regulatory agencies (EPA and UDEQ) verbally agreed to the change on February 5, 2015 and effective upon VA acceptance of the Minor Field Modification, the Protocol is modified so that ambient indoor air analysis will be conducted upon entry into a site. Ambient air samples will be collected and analyzed by the HAPSite from each occupied level of the site and from selected representative rooms or areas on each level. In addition, the operator will collect ambient samples from selected spaces (i.e., closets, utility rooms, and crawl spaces accessed via entry doors from the basement areas) where indoor source materials may be present. Rooms or spaces with notable potential entry points (i.e., large floor cracks, open sump pits, floor drains, exposed sub-slab soil) will also be tested to determine ambient air concentrations within the space.

Upon completion of ambient air sampling and analysis with the HAPSite™, the operator will evaluate the initial ambient results and, in conjunction with visual observations of potential source materials, will switch the HAPSite™ to survey mode and run short (2-3 minute) surveys at locations where indoor sources are more likely to be present, as discussed in the Protocol. TICs will be noted during each survey and the specific item provoking the response also noted, if any. If ambient quantitative data indicates target compounds were below the HAPSite™ detection limits (approximately 0.1 ppbv) and no source materials were observed, then an indoor source survey is not necessary and shall be noted on the VI field forms. If ambient quantitative data shows target compound concentrations just above detection limits from a structure level where only one or two representative samples were initially collected, additional ambient samples will be collected from other locations (at least one other location) throughout that level to verify concentrations do not increase in other portions of the level – as a result of an indoor source.

After indoor source surveys are complete or deemed un-necessary, the operator will use the ambient-results evaluation and previous visual observations of potential vapor entry points to select locations to survey for vapor entry. The HAPSite will be used in survey mode as described in the original protocol and 2-3 minute surveys at suspected entry points (typically sumps, floor drains, foundation wall penetrations, and bare soil crawl spaces). TIC response will be noted and the type of entry and location also noted. If ambient quantitative data indicates target compounds were below or just above the HAPSite™ detection limits (approximately 0.1 ppbv) and no potential entry points were observed, then a vapor entry survey is not necessary and shall be noted on the VI field forms.