



ERRATA SHEET
Sampling and Analysis Plan
AOU-1: East Side Springs
700 South 1600 East PCE Plume
Salt Lake City, Utah
Approved July 2015

1. Introduction

This errata sheet includes updates to text and tables in the approved Sampling and Analysis Plan (SAP) which was included as Appendix A of the Remedial Investigation Work Plan (RIWP) AOU-1: East Side Springs 700 South 1600 East PCE Plume (FE 2015) as identified in the a *Remedial Investigation Work Plan/Sampling and Analysis Plan – List of Errata Sheets per the Quality Assurance Project Plan Update (QAPP) January 2016 Technical Memorandum* (EA 2016a) and those updates identified since the submittal of the technical memorandum. Only those inconsistencies considered to be minor will be included on this errata sheet. Substantive changes and inconsistencies will be updated by use of a minor field modification.

2. General Errata

1. Contaminant of concern (COC) is referenced throughout the document. Because a risk assessment has not yet identified the contaminants of concern, COC is hereby replaced with “preliminary contaminant of potential concern” (PCOPC).
2. Tetrachloroethene (PCE), trichloroethene (TCE), and dichloroethene (DCE) are hereby used in place of alternative names (tetrachloroethylene, trichloroethylene, and dichloroethylene) that use the same abbreviations.
3. The terms “screening” and “definitive” are hereby removed throughout the SAP to be consistent with QAPP Update Revision 1 and to address EPA Crosswalk¹ items B1(f)(i), B1(f)(iii), B1(f)(iv), B1(f)(v), B1(f)(vi), B1(f)(viii), B1(f)(ix)
4. Effective dates for the SAP are hereby consistent with the effective dates of the QAPP Update Revision 1 (i.e. 10/01/2015 – 09/30/2016).

3. Specific Errata

1. Section 4.1 Indoor Air Quality Screening, Characterization, and Verification (Additional Technical Clarification)
The final bullet of the section is hereby updated to indicate that the second round of indoor air sampling will be conducted during the heating season (Spring 2016), consistent with the QAPP Update Revision 1 (Section 2.3.1)
2. Section 4.4 Shallow Groundwater and Surface Water Investigation (Additional Technical Clarification)
Section 4.4 is hereby updated to include the ability to make field decisions to relocate borings or

piezometer monitoring points if obstacles are encountered during drilling or when unanticipated contaminant concentrations are observed, described in the QAPP Update Revision 1 (Section 3.1.8), as follows:

Sampling surface seeps will be dependent on accessibility to specific locations. If specific locations are not accessible, then an appropriate alternative location for that seep will be sampled. With respect to temporary groundwater sample point locations, if specific locations are not accessible due to property access, physical access or subsurface limitations are encountered, then the sample point will be located as close as practicable to the original location. In the event sample points converted to temporary piezometers are subsequently damaged or become inaccessible, the location will be deleted from further testing unless the data is deemed by the PM to be critical to a project decision and requires replacement.

In addition, the fifth and sixth bullets of the section are hereby updated to be consistent with the QAPP Update Revision 1 (Section 2.3.4) as follows:

- *Based on evaluation of field data by the FTL and PM, collect groundwater samples for certified laboratory analysis at 10 percent of the shallow groundwater sampling locations to confirm field analytical results and provide high-quality nature and extent information for groundwater in the AOU-1 portion of the PCE plume. Groundwater samples will be analyzed for VOCs, SVOCs, metals, alkalinity, anions, pH, and total dissolved solids at a CLP laboratory or ALS in accordance with CLP protocols. The CLP lab will be selected by the EPA Region 8 Sample Coordinator at the time of sampling. It is expected that up to five groundwater samples will be submitted for confirmatory laboratory analyses.*
 - *Temporary monitoring points converted to short term piezometers will be used to measure water levels at least two additional times through September 2016 to determine seasonal changes in shallow groundwater elevations. In addition, up to five of the piezometers will be sampled for target VOCs for analysis at a CLP laboratory at least one additional time before September 2016.*
3. Section 5.0 Field and Sampling Procedures, Equipment, Calibration Sample Handling, and Analysis (EPA Crosswalk¹ item B2(e))
Clarification regarding how samples are to be homogenized, composited, split, or filtered, if needed are hereby updated to match the information in the QAPP Update Revision 1 sections 2 and 3.
 4. Section 5.0 Field and Sampling Procedures, Equipment, Calibration Sample Handling, and Analysis (EPA Crosswalk¹ items B6(f), B7(c)(ii))
The resolution of deficiencies, re-inspection performance, and effectiveness of corrective action will be updated to match the QAPP Update Revision 1 section 3.6 and section 4.0.
 5. SAP Section 5.0 Field and Sampling Procedures, Equipment, Calibration Sample Handling, and Analysis (EPA Crosswalk¹ items B6(a)(iii), B6(d), B7(a)(iii), B7(b)(iii))
Procedures for the inspection and calibration and the frequency of calibration of equipment, tools, and instruments are hereby updated to match what is presented in the QAPP Update Revision 1 section 3.6 and Table 33.

6. SAP Section 5.1.5 Water Level Pressure Transducers (EPA Crosswalk¹ item B2(d))
Protocols for averaging time and how continuous monitoring instruments store and maintain raw data or data averages are hereby included in the QAPP Update Revision 1 Attachment 2 – Standard Operating Procedures.
7. Section 5.5 Temporary Groundwater Monitoring Point Installation and Sampling (Additional Technical Clarification)
Section 5.5 is hereby updated to indicate that soil lithology will be performed on all locations in the focus area, and 50 percent of locations outside the focus area. Locations will be selected based on distribution.
8. Section 5.5.2 Temporary Monitoring Point - Groundwater Sample Collection (Additional Technical Clarification)
Section 5.5.2 is hereby updated to indicate expedited analytical turn-around times will be requested for PCOPCs required for the GeoProbe® investigation for field decision purposes, to be consistent with the QAPP Update Revision 1 section 2.3.4.
9. Section 5.12 Field Quality Control Samples (EPA Crosswalk¹ item B5(a)(v))

Section 5.12.1 Field Duplicate Samples is hereby updated to be consistent with the QAPP Update Revision 1 (Section 3.5.1.4) as follows:

A field duplicate sample is collected at the same time and from the same source as the original sample but submitted to the laboratory as a separate sample to assess the consistency of the overall sampling and analytical system. Water, soil, and sediment field duplicates will be collected and analyzed on a 10 percent basis for all analytical laboratory methods or a minimum of one per sampling event (defined as a shipment of samples to the lab under one chain-of-custody) if fewer than 10 samples are collected. Soil gas and indoor air samples will be collected and analyzed on a 10 percent basis for TO-15 analyses or a minimum of one per sampling event if fewer than 10 air samples are submitted at a time. Field duplicate samples will be collected, numbered, packaged, sealed in the same manner as other samples, and submitted blind to the laboratories.

Section 5.12.2 Equipment Rinsate Blanks is hereby updated to be consistent with the QAPP Update Revision 1 (Section 3.5.1.2) as follows:

Equipment rinsate blanks are used to evaluate sampling device cleanliness. Rinsate blanks are collected after a sample collection device is subjected to standard decontamination procedures. ASTM Type II water (purchased and certified from a commercial vendor) will be poured over or through the sampling device and collected in a sample container for analysis. Equipment rinsate blanks will be collected at a minimum frequency of 1 per 20 samples collected or one per day when fewer than 20 samples are collected. No equipment rinsate blanks will be collected for indoor air/soil gas samples (Methods TO-15 and TO-15 SIM).

Section 5.12.3 Trip Blanks is hereby updated to be consistent with the QAPP Update Revision 1 (Section 3.5.1.3) as follows:

The trip blank consists of a VOC sample vial filled in the laboratory with ASTM Type II reagent grade or organic-free water, transported to the sampling site, handled like an environmental sample, and returned to the laboratory for analysis. Trip blanks are not opened in the field. Trip blanks are prepared only when VOC samples are collected and analyzed for VOC analytes. No trip blanks will be collected for indoor air/soil gas samples (Methods TO-15 and TO-15 SIM). Trip blanks are used to assess the potential introduction of contaminants from sample containers or during the transportation and storage procedures. Each cooler of samples sent to the

laboratory for analysis of VOCs will contain one trip blank. When an analyte is detected in the trip blank, the appropriate flag will be applied to all VOC sample results from samples in the cooler with the affected trip blank.

Section 5.12.4 Temperature Blanks is hereby updated to be consistent with the QAPP Update Revision 1 (Section 3.5.1.5) as follows:

All coolers with samples that require preservation to 4°C shall contain at least one temperature blank. The temperature blank should be a 40-(ml glass vial filled with water and placed in a representative position inside the cooler. Each vial shall be clearly marked TEMPERATURE BLANK. If the temperature blank is positioned inappropriately or is not representative of the cooler temperature measurement, the laboratory shall document the deficiency and notify the PM.

Section 5.12.5 Matrix Spike/Matrix Spike Duplicate Samples is hereby updated to be consistent with the QAPP Update Revision 1 (Section 3.5.3.2) as follows:

MSs and MSDs are aliquots of a sample spiked with known concentrations of all target analytes. The spiking occurs during sample preparation and prior to analysis. Each analyte in the MS and MSD shall be spiked at a level less than or equal to the midpoint of the calibration curve for each analyte. Collection of a volume of sample adequate for running analyses in triplicate is required for MS/MSDs. Therefore, the MS/MSD shall be designated on the chain-of-custody. A minimum of one MS and one MSD shall be designated by the PM for each site and included for every 20 field samples, for applicable methods. MS/MSDs are not performed for method TO-15.

10. Table 3 Sample Identification System and Section 5.13.1 Sample Labeling and Custody (EPA Crosswalk¹ item B3(d)(ii))

The table is hereby nullified. CLP sample numbers will be assigned per the QAPP Update Revision 1 (Section 3.3.1) as follows:

A CLP Sample Number, unique per sampling location, is used to identify and track samples throughout the sampling and analytical processes, and is recorded on many types of sampling documentation (e.g., Traffic Report/Chain-of-Custody), records, sample labels, and sample tags). CLP Sample Numbers are provided to samplers by their RSCC. The CLP Sample Number should not contain the letters "I," "O," "U," and "V."

Samplers must contact their RSCC (or designee) to obtain CLP Sample numbers for their sampling event. Samplers must correctly assign the CLP Sample numbers to the appropriate sample bottle or container.

EPA-assigned CLP Case numbers are used to track groups of samples throughout the sampling and analytical processes and are recorded on many types of sampling documentation (e.g., TR/chain-of-custody records, sample labels, and/or sample tags). Samplers may contact their RSCC to obtain their laboratory assignment notification.

Sample labels will be affixed to the sample containers and covered with clear packaging tape. For samples being submitted to the CLP laboratory, the label must contain, at a minimum, a CLP Sample number so that they can be associated with, and listed on, the associated Traffic Report/Chain-of-Custody record. The sample label for CLP and non-CLP analyses should also include the required analysis, case number, and preservative used (to eliminate confusion at the laboratory).

11. Section 5.13.6 Project Information/Records Storage and Retention (EPA Crosswalk¹ items A9(c), A9(d), B10(e)(i), B10(e)(ii))

Section 5.13.6 is hereby replaced with Section 2.6.5 of the QAPP Update Revision 1 as follows:

The EA Team will retain the entire project file as hard copy and/or electronic data on EA project servers located in Hunt Valley, MD until the completion of all project activities. Thereafter, all data will be archived in a secure and protected facility and maintained for 10 years after contract closeout. Analytical results and sample location data collected during the RI will be entered into a GIS database for mapping and publication, and the GIS metadata and files archived in electronic format for transmittal to EPA and UDEQ, if requested.

Backup copies of electronic data, including pdf files of documents will be stored offsite on a SharePoint server maintained by EA during the term of the contract, and at the end of the contract, transferred to an offsite data archive site.

The official administrative record for the Site is located at Salt Lake City Public Library – Anderson-Foothill Branch, in Salt Lake City, Utah. A copy of the administrative record will be maintained at VA’s Salt Lake City Health Care System at 500 Foothill Drive in Salt Lake City, UT 84148. Copies of project reports, including the RIWP, SAP, and QAPP Update Revision 1 are to be available in hard and electronic format for the duration of the CERCLA project. EPA Region 8 in Denver, CO and UDEQ in Salt Lake City, UT will receive all copies of documents, lab data, and other published project information for their records.

12. Section 6.4 Transfer of Custody and Shipment (EPA Crosswalk¹ item B3(b)(iv)) (Additional Technical Clarification)

Transfer of Custody and Shipment section is hereby updated to indicate the laboratory custodian is to fax records and/or scan and send a pdf form electronically to the project manager, consistent with the EPA Crosswalk¹ item B3(b)(iv)) Sample Handling and Custody for QAPP Update Revision 1 Section 3.3.4.

13. Section 7.0 References (EPA Crosswalk¹ item B3(a)(iii))

The following references hereby replace previous versions of documents listed in the SAP:

- U.S. Environmental Protection Agency (EPA). 2006. *Guidance on Planning Using the Data Quality Objectives Process*. EPA QA/G-4. EPA/240/B-06/001. February.
- EPA. 2012. *U.S. EPA's Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors*. EPA 530-R-10-002. Office of Solid Waste. March.
- EPA. 2013b. *EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*. EPA/540/R-014/002. October.
- EPA. 2015. *Office of Solid Waste and Emergency Response Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air*. OSWER Publication 9200.2-154. June.

14. Attachment 3 Standard Operating Procedures (EPA Crosswalk¹ item B6(a)(iii))

Standard Operating Procedures associated with the field activities that are included in the SAP Attachment 3 have been incorporated in the QAPP Update Revision 1 Attachment 2.

4. References

EA Engineering, Science, and Technology, Inc., PBC (EA). 2016a. Remedial Investigation Work Plan/Sampling and Analysis Plan – List of Errata Sheets per the Quality Assurance Project Plan Update January 2016 Technical Memorandum for the Accelerated Operable Unit 1: East Side Springs, 700 South 1600 East PCE Plume, Salt Lake City, Utah. January.

EA. 2016b. Quality Assurance Project Plan Update Revision 1 for the Accelerated Operable Unit 1: East Side Springs, 700 South 1600 East PCE Plume, Salt Lake City, Utah. February.

First Environment (FE). 2015. Final Remedial Investigation Work Plan, AOU-1: East Side Springs, 700 South 1600 East PCE Plume, Salt Lake City, Utah. July.

¹EPA Crosswalk refers to Attachment 1 of the Quality Assurance Project Plan Update Revision 1 (EA 2016b).