



# Record of Modification

to the  
Troy Sampling and Quality Assurance Project Plan  
Field Activities  
TFO-00002

**Instructions to Requester:** Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager at the Troy Field Office (TFO).

Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.

If Modification is Temporary for a single Parcel, Data Manager will scan this and place in parcel's electronic file.

**Project Work Plan/QAPP** (check one):

- Outdoor Ambient Air Study Work Plan
- Other (Title and approval date): \_\_\_\_\_

**Site-Specific Guidance/SOP:**

Title NA

Number/Revision): NA

Requester: Catherine LeCours

Title: Project Manager

Company: DEQ

Date: March 4, 2010

Description of Modification (attach additional sheets if necessary, state section and page numbers of each document that are affected by the proposed modification): **Section 4.4.4 in the Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site** references collecting approximately 3 liters per minute over the entire 5-day (120-hour) sampling event to achieve the target volume of 21,600 liters during the Troy ambient air study. A target volume of 21,600 liters will minimize the number of grid openings counted during laboratory analysis, reducing the time and cost of analysis while meeting the target analytical sensitivities.

However, sampling at high air volumes can create excessive filter loading which may lead to air pump faults, require additional analytical costs due to indirect sample analysis, or in some cases yield samples that can not be analyzed resulting in a loss of data. Therefore, the work plan reserved the option to “adjust this target volume based on changes in the target analytical sensitivities, sample results, or filter loading issues”.

**OU7 Overloading Summary:**

Tetra Tech requested that analytical results for the first sampling period be obtained as soon as possible to determine if the specified pump flow rate of 3.0 liters per minute was excessive and filter overloading would result. Three samples from Period 1 yielded overloaded cassettes while the remaining five cassettes were not overloaded. Overloaded cassette filters were noted to have a black “soot-like” substance on the filter. The three overloaded cassettes were collected at stations T-4, T-4QC and T-5 (the DEQ Office, DEQ Office QC station, and the County Shops station). Tetra Tech consulted with the DEQ and resolved that the sample stations with the overloaded filter cassettes were likely located in dusty areas and near high traveled roads. Tetra Tech recommended relocating the sampling boxes at these locations to positions farther away from the main roads. Tetra Tech also reduced the sample flow rates from 3.0 to 2.0 liters per minute. These changes were made prior to starting sample Period 4.

The three overloaded cassettes were analyzed using a secondary dilution process. Additional grid openings would need to be counted in order to achieve the analytical sensitivity and would result in increased analytical time and costs. The number of grid openings to be counted would increase from 45 to either 73 or 146 to reach required sensitivity levels.

The initial analytical results for Sample Period 1 were received on December 8, 2009, just prior to the start of Sample Period 5. The other Period 1 sample results did not require secondary dilution; therefore Period 5 flow rates were returned to 3.0 liters per minute.

The DEQ recommended that rush analysis be completed for the Period 5 samples to help evaluate if relocating the sample boxes at T-4, T-4QC, and T-5 helped avoid filter overloading at these locations. No overloaded cassette filters were identified for any of the Period 5 samples. As a result, the new locations of the boxes and the 3.0 liters per minute flow rate was established for subsequent sampling periods.

In order to evaluate ongoing sampling activities and to check for potential overloading, the DEQ recommended that additional samples be sent in for analysis prior to the ESAT laboratory becoming operational. Samples from Period 11 were forwarded to the EMSL Libby mobile lab for analysis. Several cassette filters from Period 11 were subsequently found to be overloaded.

As a result of the periodic overloading of sample filters, DEQ directed Tetra Tech reduce the sample flow rates from 3.0 to 2.0 liters per minute for the remainder of the OU7 ambient air monitoring project. This modification was made as a permanent procedural change beginning in Sample Period 13.

Field Sampling Data Sheet where Modification is documented (attach associated correspondence): **N/A**

Potential Implications of Modification: Modifications to sampling protocol involve reprogramming sampling pumps to a flow rate of 2.0 liters per minute. Analytical protocol will be impacted as additional grids will be counted to meet analytical sensitivity requirements for the reduced air flow.

Duration of Modification (Check one):

Temporary

Date(s): \_\_\_\_\_ Station Number- \_\_\_\_\_

TA- \_\_\_\_\_

Permanent (Proposed Text Modification Section) Effective Date: March 4, 2010

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): Section 4.4.4 in the *Final Remedial Investigation Work Plan Outdoor Ambient Air Study – Operable Unit Number 7 of the Libby Asbestos Superfund Site*:

#### **4.4.4 Collection Interval and Flow Rates**

To ensure that target analytical sensitivities can be achieved, the target volume of air to be collected for each sample will be ~~21,600~~ 14,400 liters. Tetra Tech may adjust this target volume based on changes in the target analytical sensitivities.

sample results, or filter loading issues. A target volume of ~~21,600~~ 14,400 liters will ~~minimize~~ optimize the number of grid openings counted during laboratory analysis, reducing the time and cost of analysis while meeting the target analytical sensitivities

The number of grid openings to be counted for this volume of air will be ~~45~~ 67 and was calculated using the equation provided in Section 6.1 of SOP No EPA-LIBBY-09 (rev 1). This equation and the spreadsheet used to calculate grid openings are shown in Appendix F.

To help ensure that samples capture long-term averages, each sample will be collected over a 5-day (120-hour) interval. Thus, the target flow rate is approximately ~~3~~ 2.0 liters per minute over the entire sampling event to achieve the target volume of ~~21,600~~ 14,400 liters.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

**Not Applicable**      **Reject**      **Low Bias**      **Estimate**      **High Bias**      **No Bias**

Technical Review and Approval: Catherine LeCours      Date: March 15, 2010  
(DEQ Project Manager or designate)

EPA Review and Approval: N/A      Date: \_\_\_\_\_  
(USEPA RPM or designate)

### DATA QUALITY INDICATOR DEFINITIONS

**Reject** - Samples associated with this modification form are not useable. The conditions outlined in the modification form adversely effect the associated sample to such a degree that the data are not reliable.

**Low Bias** - Samples associated with this modification form are useable, but results are likely to be biased low. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated low.

**Estimate** - Samples associated with this modification form are useable, but results should be considered approximations. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimates.

**High Bias** - Samples associated with this modification form are useable, but results are likely to be biased high. The conditions outlined in the modification form suggest that associated sample data are reliable, but estimated high.

**No Bias** - Samples associated with this modification form are useable as reported. The conditions outlined in the modification form suggest that associated sample data are reliable as reported.

**Basic Equations:**

$$C = N * EFA / (GO * Ago * V * 1000)$$

$$S = EFA / (GO * Ago * V * 1000)$$

$$C = N * S$$

$$V = \text{Flow} * \text{Time}$$

EFA = effective filter area

GO = number of grid openings counted

Ago = area of one grid opening

V = volume of air passed through filter

S = analytical sensitivity = 1/volume analyzed

**GOs needed to hit target S**

$$GO = EFA / (S * Ago * V * 1000)$$

Note: to make GO small, must make V big

S	0.00004	cc-1
EFA	385	mm2
Ago	0.01	mm2
V	21600	L
GO	45	

**Volume Calc**

Flow	3	L/min
Time	5	days
V	21600	L

**GOs needed to hit target S**

$$GO = EFA / (S * Ago * V * 1000)$$

Note: to make GO small, must make V big

S	0.00004	cc-1
EFA	385	mm2
Ago	0.01	mm2
V	14400	L
GO	67	

**Volume Calc**

Flow	2	L/min
Time	5	days
V	14400	L