

**DRAFT
AIR SAMPLING PLAN
FOR THE
MINNESOTA 35W BRIDGE - ER
MINNEAPOLIS, HENNEPIN COUNTY, MINNESOTA**

Prepared for
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

Prepared by
WESTON SOLUTIONS, INC.
Region V Superfund Technical Assessment and Response Team

Initial 8/3/2007
Revised 8/7/2007
Revised 8/8/2007
Revised 8/10/2007

Project Dates of Sampling:	August 3, and 10, 11, and 12, 2007
CERCLA Site/Spill Identifier No.:	TBD
Contractor Organization:	Weston Solutions, Inc. and BayWest
Contract Name:	START III
Contract No.:	EP-S5-06-04
Technical Direction Document No.:	0708-005
Document Control No.:	259-2A-AAYV

**DRAFT
AIR SAMPLING PLAN
FOR THE
MINNESOTA 35W BRIDGE - ER
MINNEAPOLIS, HENNEPIN COUNTY, MINNESOTA**

Revised 8/10/07

Approved by: _____ Date: _____
U.S. EPA Region V
On-Scene Coordinator
Sonia Vega

Reviewed by: _____ Date: _____
Minnesota Pollution Control Agency
Steve Lee

Reviewed by: _____ Date: _____
Minnesota Pollution Control Agency
Rick Strassman

ACRONYM LIST

CFR	Code of Federal Regulations
COC	Chain-of-Custody
ERRS	Emergency and Rapid Response Services
GMW	General Metal Works
MCE	mixed cellulose ester
MS/MSD	Matrix Spike/ Matrix Spike Duplicate
NIOSH	National Institute for Occupational Safety and Health
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyl
PCM	Phase Contract Microscopy
PDR	Personal Data Ram
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
PUF	Polyurethane Foam
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RISC	Risk Integrated Closure System
RMG	Resource Management Group
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
TAL	Target Analyte List
TCL	Target Compound List
TEM	Transmission Electron Microcopy
TSP	Total Suspended Particulates
TWA	Time-Weighed Average
U.S. EPA	United States Environmental Protection Agency
WESTON	Weston Solutions, Inc.

TABLE OF CONTENTS

Section	Page
ACRONYM LIST	i
TABLE OF CONTENTS	iii
LIST OF TABLES	iv
LIST OF FIGURES	iv
1.0 Introduction.....	1
2.0 Project Management and SAP Distribution and Project Team Member List.....	1
3.0 Planning and Problem Definition	2
3.1 Problem Definition.....	2
3.2 Site History and Background.....	2
3.3 Contaminants of Concern/Target Analytes.....	2
4.0 Project Description and Schedule	3
5.0 Project Quality Objectives	4
5.1 Project Objectives	4
5.2 Measurement and Performance Criteria	4
5.3 Data Quality Objectives.....	4
6.0 Sampling Design.....	5
6.1 Sample Collection.....	5
6.2 Sample Numbering System.....	8
Management of Investigation-Derived Wastes.....	9
7.0 Sampling Procedures	9
7.1 Sampling Standard Operating Procedures	9
7.2 Decontamination Procedures	9
8.0 Sample Handling, Tracking, and Custody Procedures	9
9.0 Field Analytical Methods and Procedures	9
9.1 Field Analytical Methods and Standard Operating Procedures.....	9
9.2 Field Testing Laboratory	10
9.3 Screening/Confirmatory Analyses.....	10
10.0 Fixed Laboratory Analytical Methods and Procedures	10
11.0 Quality Control Activities.....	10
11.1 Field Quality Control	10
11.2 Analytical Quality Control.....	10
11.3 Performance Evaluation Samples	10
12.0 Documentation, Records, and Data Management.....	11
13.0 Quality Assurance Assessment and Corrective Actions.....	11
14.0 Reports to Management	11
15.0 Steps 1, 2 and 3: Data Review Requirements and Procedures	11

LIST OF TABLES

Table 1	Laboratory SAP Revision Form
Table 2	Sampling and Analysis Summary

LIST OF FIGURES

Figure 1	Proposed Sampling Locations
-----------------	-----------------------------

1.0 Introduction

This Sampling and Analysis Plan (SAP) identifies the data collection activities and associated quality assurance/quality control (QA/QC) measures specific to the Minneapolis 35W (I-35W) Bridge site (the Site) located in Minneapolis, Hennepin County, in Minnesota. All data will be generated in accordance with the quality requirements described in the *START III Generic QAPP*, dated June 2006. The purpose of this SAP is to describe site-specific tasks that will be performed in support of the stated objectives. The SAP will reference back to the QAPP for generic tasks common to all data collection activities including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, assessment, and data review. Additional site-specific procedures and/or modifications to procedures described in the *START III Generic QAPP* are described in the following SAP elements.

This SAP is prepared, reviewed, and approved in accordance with the procedures detailed in the *START III Generic QAPP*. Any deviations or modifications to the approved SAP will be documented using **Table 1: SAP Revision Form**.

2.0 Project Management and SAP Distribution and Project Team Member List

Management of the Site will be as documented in the *START III Generic QAPP*. Refer to the *START III Generic QAPP* for an organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements.

The following personnel will be involved in planning and/or technical activities performed for this data collection activity. Each will receive a copy of the approved SAP. A copy of the SAP will also be retained in the Site file.

Personnel	Title	Organization	Phone Number	Email
Sonia Vega	OSC	U.S. EPA		vega.sonia@epa.gov
Tonya Balla	Project Manager	START	847-918-4094	t.balla@westonsolution.com
Sarah Meyer	Assistant. Project Manager	START	312-424-3303	s.meyer@westonsolutions.com
Pat Martin	Bay West ER Manager	START	651 755-6781	patm@baywest.com
Tonya Balla	Health and Safety	START	847-918-4094	t.balla@westonsolutions.com
Pamela Bayles	QA Reviewer	START	847-918-4030	pamela.bayles@westonsolutions.com

NOTES:

OSC – On-Scene Coordinator

QA – Quality Assurance

START – Superfund Technical Assessment and Response Team

U.S. EPA – United States Environmental Protection Agency

3.0 Planning and Problem Definition

3.1 Problem Definition

The I-35W Bridge over the Mississippi River in Minneapolis, Minnesota failed and collapsed on Wednesday August 1, 2007 at approximately 1800 hours. This air monitoring plan was initially developed as a response to this I-35W failure and to provide an initial assessment of potential asbestos and silica levels in the air. The purpose of performing the air monitoring is to assess the potential air-borne volatile organic compounds (VOCs), potential asbestos fibers, lead, and silica (crystalline) as respirable dust. The scope of work was revised on August 6, 2007. The new objective is to assess if there is an air hazard in the neighborhoods surrounding the collapse site from dust or emissions related to demolition activities. Air samples will be assessed for asbestos, silica (as respirable dust), and metals.

3.2 Site History and Background

On August 1, 2007 at approximately 1800 hours, the I-35W Mississippi River Bridge in Minneapolis, Minnesota collapsed from abutment to abutment, falling into the Mississippi River. The I-35W Mississippi River Bridge (Bridge 9340) was an eight-lane, 1,900 foot deck-arch-truss bridge that spanned the Mississippi River. The north-south bridge connected the Minneapolis neighborhoods of Downtown East and Marcy-Holmes. The bridge was opened in 1967, was 1,907 feet in length, 108 feet wide, and had a clearance below of 64 feet. To avoid interference with river navigation, the I-35W bridge had no piers built into the river bed. Instead, the center span of the bridge consisted of a single 458-foot steel arched truss over the 390-foot wide navigation channel. The north abutment of the bridge was anchored northwest of the University of Minnesota East Bank campus. The south abutment was anchored just northeast of the Minneapolis Metrodome.

The bridge was reportedly Minnesota's second busiest bridge, carrying an average of 141,000 vehicles a day. As a result of the bridge failure, reports indicate that more than 50 vehicles went into the river. Several vehicles, including a semi-trailer truck caught fire. In addition a portion of the bridge collapsed onto three empty freight train cars that were sitting below the bridge. To date, there are five people confirmed dead, over 100 injured, and an unknown amount of people are still missing. On Thursday August 2, 2007, the U.S. Army Corps of Engineers lowered the river level using the Ford Dam (located about 3 miles downriver at West River Road and East 50th Street) by two feet to allow easier access to vehicles in the water. Emergency responders are on-site conducting diving and recovery operations.

3.3 Contaminants of Concern/Target Analytes

Samples from August 3rd/4th, 2007 were analyzed for VOCs, asbestos, lead in air, and silica. Laboratory analysis was performed on collected air samples. VOCs were analyzed by method TO-15. Asbestos was analyzed by TEM – epa level II. Silica was analyzed by NIOSH 7500. Lead was analyzed by NIOSH 7500.

The August 10 through 12, 2007 sampling activities will continue to utilize the asbestos and silica methods referenced above for the air samples. NIOSH 7300 will continue to be utilized for lead but the parameter list is expanded to include more metal compounds. Ambient air sampling methods (high vol samples) will also be co-located with the low flow samples to ensure that the low flow method is registering the compounds of interest. Particulate matter (PM10) will also be analyzed on the same metals ambient samples, prior to the metals analysis.

4.0 Project Description and Schedule

The initial air sampling from Aug 3 and 4, 2007 consisted of tasks necessary to document and characterize threats posed to human health and the environment at the Site. The following tasks were initially performed:

- Conducted perimeter air sampling around the work zone using low and high-volume pumps and associated filter media;
- Site air monitoring of dust/particulates using a personal Data Ram (PDR);

The revised scope consists of tasks necessary to determine if there is an air hazard in the neighborhoods surrounding the collapse site from dust or emissions generated during demolition activities. All sampling is anticipated to occur during daylight hours. The following tasks will be performed Aug 10 through 12, 2007.

- Conduct perimeter air sampling at seven locations around the work zone using low and high-volume sample pumps and associated filter media.

The sampling design is provided below in Section 6.0.

A commercial laboratory will be utilized for analytical services. The Weston Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START) will provide sample coordination including laboratory procurement and sample shipment. Sample labels and chain-of-custody (COC) paperwork will be generated by START. Samples will be packaged properly by START and shipped for next-day delivery unless a local laboratory is procured. If a local laboratory is utilized, then START will deliver the samples. The turn-around time for Friday samples can be sometime later on Monday August 13th for all parameters and potentially quicker for air/wipe asbestos samples. The Saturday and Sunday samples may not be able to be shipped to a laboratory until Monday. Therefore, results may not be available until late Tuesday or potentially Wednesday morning if the OSC requires rush analysis. However, all options are being assessed to secure results as quickly as possible. The samples will be reviewed and validated by a START chemist within two weeks of data receipt from the laboratory. A summary report of the sampling results will be submitted to U.S. EPA within three weeks of receipt of the validated data.

The EPA/MPCA provided 7 proposed sampling locations in the neighbors beyond the work zone. A figure and table of these locations are attached. As of the drafting of this plan, asbestos, silica, and

metals in air will be collected at each location.

5.0 Project Quality Objectives

5.1 Project Objectives

The objective of sampling activities is to conduct perimeter air sampling to assess for potential airborne release of asbestos and silica dust and if present to then further assess the offsite migration and any threat to human health and the environment.

The initial objectives for the Aug 3 sampling included:

- Conduct perimeter air sampling;
- Collect air sample media for laboratory analysis of VOCs, asbestos, lead in air, and silica (respirable dust);
- Site air monitoring of dust/particulates using a mini ram or other particulate monitoring device; and
- Establish a baseline for future demolition activities

Objectives specific to the August 10 through 12, sampling include:

- Is there an air hazard in the neighborhoods surrounding the collapse site from dust or air emissions related to demolition activities? The hazard, or lack of hazard, should be supported by the air sampling data.

5.2 Measurement and Performance Criteria

Generic measurement and performance criteria described in the *START III Generic QAPP* will be used to ensure that data are sufficiently sensitive, precise, accurate, and representative to support site decisions.

5.3 Data Quality Objectives

Data quality objectives address requirements that include when, where, and how to collect samples, the number of samples, and the limits on tolerable error rates. These steps should periodically be revisited as new information about a problem is learned.

The sampling results for each media will be compared to criteria being determined by input from the MPCA. Those criteria can be added to this plan when available.

Data will be distributed by the U.S. EPA to MPCA, MDH, and Minneapolis Environmental and Health. The data will be reviewed in those departments by comparing any reported levels to a number of ambient air standards, occupational safety standards, levels found in metro area ambient air monitoring stations, emergency action guides, and other data sources. Judgment will be applied

by air and health professionals in those departments and consensus sought on the significance of reported levels to health and the environment. The consensus opinion and any comment will be posted on the City of Minneapolis website for public information.

The most likely response to data showing concentrations of concern, if any, will be to confer with demolition and debris management command staff on methods being used for debris handling, and on possible mitigation of fugitive dust and emissions. It is likely that monitoring details and schedule will be modified following the first round(s) of data collection.

It must be noted that there are few or no standards that are directly applicable to air quality during short term periodic events such as lifting collapsed bridge sections, cutting bridge deck sections, loading debris to barge, etc. So the available standards that were developed for other situations will be used with judgment applied. It must also be noted that those other standards typically are meant for data gathered with methods that may differ from the methods used in this monitoring, for example different filtration run times, etc. It must further be noted that there are a number of potential sources of contaminants to the air in the area of the collapsed bridge, including, but not limited to steel fabrication, the University power plant and its coal handling facility, traffic in all directions, trains to the north and east, and the equipment used during the demolition and movement of materials from the site.

6.0 Sampling Design

Aug 3 / 4, 2007 sampling design

A sampling station was located on the 10th street Bridge. This is the only sampling location that was located within the secure area. Additional sampling locations were located as close to the accident site as possible outside of the secure area. The sampling locations were selected based on the prevailing wind direction at the time of sampling.

August 10 through 12, 2007 sampling design.
See attached figure and table for locations.

6.1 Sample Collection

START will collect filter media samples from designated low volume and high-volume air pumps. The collection of each sample type is described below.

AIR SAMPLING

- **VOC Sampling.** (August 3 /4, 2007 sampling only) VOCs will be performed using summa canisters equipped to draw air over an 8 hour sampling period. The laboratory will provide batch certified summa canisters and 8-hour calibrated regulators. In the event that readings with a multirae have sustained OC readings at 0.5 ppm or higher, a 1-hour grab VOC sample will be collected. Samples for laboratory analysis will be prepared and shipped in accordance with the *START III Generic QAPP* Section B.3.

- **Asbestos Sampling.** Asbestos sampling air samples will be collected to ascertain the presence of asbestos fibers in the ambient air in the vicinity of the I-35W bridge failure. A high volume electric air pump will be used to draw air through a filter cassette to be analyzed analysis using Transmission Electron Microscopy (TEM) analysis according to U.S. EPA's Environmental Asbestos Assessment Manual, "Superfund Method for the Determination of Asbestos in Ambient Air for Transmission Electron Microscopy." This method can distinguish between asbestos and non-asbestos fibers. If additional quick turn samples are collected, they could be analyzed by the National Institute for Occupational Safety and Health (NIOSH) Method 7400, Asbestos and Other Fibers by Phase Contrast Microscopy (PCM). This method uses a small personal air sampling pump (SKC model Universal PCXR4 or equivalent) to draw air at a constant rate through a mixed cellulose ester (MCE) filter held in a sampling cassette. The MCE filter will have a pore size of 0.45 microns and be 25 millimeters in diameter. A conductive cowl on the cassette prevents static electric interference with collection of fibers on the filter. After the sample is collected, the filter will be analyzed using PCM to count all fibers at least 5 μm in length with an aspect ratio (length: width) of at least 3:1. PCM analysis does not, by itself, distinguish between asbestos and non-asbestos fibers, and is, therefore, a conservative measurement method. The method is a conservative estimate of exposure, because all particles that meet the OSHA definition of a fiber are counted. In addition, a high volume electric air pump will be used to draw air through a filter cassette to be analyzed analysis using Transmission Electron Microscopy (TEM) analysis according to U.S. EPA's Environmental Asbestos Assessment Manual, "Superfund Method for the Determination of Asbestos in Ambient Air for Transmission Electron Microscopy." Samples collected for PCM will be analyzed immediately. Samples collected for TEM will be held and analyzed based on the findings of the PCM samples.
- **Lead Sampling.** Lead sampling in air will be performed using a low-flow SKC or Gillian pump connected to a 37mm MCE filter. Flows of 1 to 4 L/min with a final volume of 50 to 2000 L's is required. Lead will be analyzed by NIOSH method 7300 or a graphite furnace method (GAAFS) if available.

August 10 through 12, 2007 Sampling. Sampling during this time frame will be for metals, not only lead. The exact analytes to be analyzed are still be finalized but are anticipated to include: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, and zinc. Samples will be analyzed by NIOSH 7300 and ambient air samples will also be collected using high volume pumps (TSP samplers) for comparison to the low flow NIOSH method. PM10 analysis will also be conducted on the ambient air samples – prior to the lab running the metal analysis.

The ambient air samples will use NAAQS as a reference to compare to even though the samples will only be collected over an 8-hour period. Sampling and calibration procedures will follow 40 CFR part 50. The NAAQS standards can only be directly compared to when you have proper siting, quality control, etc as per 40 CFR part 50

guidelines and the ambient air sampling quality assurance handbook. However, for the scoped sampling (particulates and metals), these should be better than the NIOSH and OSHA standards.

- **Silica Sampling.** Silica sampling in air will be performed using a low-flow SKC or Gillian pump. The pump will be connected with tubing to a cyclone. A gravimetric filter will be placed in the cyclone. A nylon cyclone will be utilized. Flow rates of 1.7 L/min are required. Total volume requirements are 400 to 1000 L. Silica samples will be analyzed by NIOSH 7500.

The air sample media, flow rate volume, and preservation requirements are presented in **Table 2: Sampling and Analysis Summary**.

6.2 Sample Numbering System

All samples for analysis, including QC samples, will be given a unique sample number. The sample numbers will be recorded in the field logbook, the COC paperwork, and the shipment documents.

START will assign each sample a project sample number. The project sample number highlights the suspected contaminated area and location, and will be used for documentation purposes in field logbooks, as well as for presentation of the analytical data in memoranda and reports. The project sample numbering system will be composed of the components below.

Project Identifier

The first part of the project sample numbering system will be the three-character designation MBR to identify the sampling site, Minneapolis Bridge Response.

Matrix

This shall consist of two to three letters identifying the matrix. These matrix identifiers are as follows:

VOC – Volatile Organic Compounds
SIL – Silica Dust
ASB – Asbestos
Pb – lead
MET-metals

Sequence Identifier

This shall consist of a two-digit sequence number that tracks the number of samples collected from the Site for a particular matrix. Sequence 01 refers to the first sample, and sequence 02 refers to the second sample.

Sample Date

This shall consist of a six digit date (*i.e.*, 080307) for August 3, 2007.

Examples of the sample identifications for the Site are as follows:

- MBR1-VOC-080307: First VOC air sample collected from the Minneapolis Bridge Response air monitoring station 1 on August 3, 2007
- MBR2-ASB02-080307: Second asbestos air sample collected from Minneapolis Bridge Response monitoring station 2 on August 3, 2007.

- MBR3-SIL03-080307: Third Silica air sample collected from Minneapolis Bridge Response monitoring station 3 on August 3, 2007.

Management of Investigation-Derived Wastes

For purposes of this SAP, investigation-derived wastes are defined as any byproduct of the field activities that is suspected or known to be contaminated with hazardous substances. The performance of field activities will produce waste products, such as spent sampling supplies (e.g., bailers, drum thieves, spoons), and expendable Personal Protective Equipment (PPE). Note that disposable equipment will be used for all sample collection and therefore, no decontamination water will be generated. All waste generated during the site assessment will be placed in trash bags and left on-site in a staging area with U.S. EPA approval. If required, disposal arrangements will be executed in accordance with appropriate local, state, or federal regulations. START will refer to the U.S. EPA's *Management of Investigation-Derived Wastes During Site Inspections* (U.S. EPA, 1991) guidance on off-site disposal policies, if this action is deemed necessary.

7.0 Sampling Procedures

7.1 Sampling Standard Operating Procedures

None

7.2 Decontamination Procedures

General decontamination procedures are described in Section B.2 of the *START III Generic QAPP*. The following standard decontamination protocols will be used:

- All disposable sampling supplies and PPE will be bagged, labeled, and sealed with duct tape.

8.0 Sample Handling, Tracking, and Custody Procedures

All samples will be identified, handled, shipped, tracked, and maintained under COC, in accordance with *START III Generic QAPP* Section B.3.

9.0 Field Analytical Methods and Procedures

9.1 Field Analytical Methods and Standard Operating Procedures

- Field analytical methods will not be employed during the emergency response. All analytical methods will be performed by a laboratory and are presented in Table 2 of this report.

9.2 Field Testing Laboratory

A field testing laboratory will not be used during the emergency response.

9.3 Screening/Confirmatory Analyses

No field screening is planned. However, a meteorological weather station will be placed at one of the sampling locations. We will measure Wind Speed and Wind Direction Data with an onsite weather station to try and establish the possible sources of potential contamination; the bridge activities, local sources; etc.

10.0 Fixed Laboratory Analytical Methods and Procedures

A U.S. EPA-certified commercial laboratory will be used. EMSL in Plymouth, MN analyzed the TEM sample from the Aug 3 / 4 sampling activities. EMSL in Westmont, NJ performed the lead and silica analysis. Pace Analytical in Minneapolis, Minnesota.

EMSL in Plymouth, MN will perform all of the asbestos air samples. Braun Intertec in Minneapolis, Minnesota will perform the metals (low flow – NIOSH 7300) metals analysis and the silica analysis. The PM10 and ambient air metals analysis will be analyzed by STAT laboratory in Chicago, Illinois.

The laboratory analytical methods and procedures are detailed in Table 2 of this SAP.

11.0 Quality Control Activities

11.1 Field Quality Control

Field QC samples will be collected and analyzed for this project at the frequency described in *START III Generic QAPP*, Table 4. The number of QC samples collected for each analytical parameter and concentration level are listed in **Table 2: Sampling and Analysis Summary**.

11.2 Analytical Quality Control

QC for analytical procedures will be performed at the frequency described in *START III Generic QAPP*, Tables 5 and 6. In addition, method-specific QC requirements will be used to ensure data quality.

11.3 Performance Evaluation Samples

Performance Evaluation Samples will not be collected during this sampling event.

12.0 Documentation, Records, and Data Management

Documentation, record keeping, and data management activities will be conducted in accordance with the *START III Generic QAPP*, Section B.10.

13.0 Quality Assurance Assessment and Corrective Actions

No field audits will be conducted due to the anticipated short-term sampling activity.

14.0 Reports to Management

Reports to management will be written and distributed in accordance with the *START III Generic QAPP*, Section C.

15.0 Steps 1, 2 and 3: Data Review Requirements and Procedures

Step 1: Data collection activities, including sample collection and data generation, will be verified in accordance with the *START III Generic QAPP*, Section D.

Step 2: Data will be validated in accordance with the *START III Generic QAPP*, Section D.
A START chemist will validate the data.

Step 3: Data will be reviewed for usability in accordance with the *START III Generic QAPP*, Section D.

Table 1
SAP Revision Form

Site: Minneapolis 35W Bridge Response, Minneapolis, Minnesota
OSC: Sonia Vega
TDD: 0708-005

Date	Rev. No.	Proposed Change to SAP/QAPP	Reason for Change of Scope/Procedures	SAP Section Superseded	Requested By	Approved By
8/7/07	1	Additional sampling locations/frequency. Additional parameters and addition of wipe samples	Baseline sampling during demolition activities	SAP updated throughout	OSC Sonia Vega	
8/8/07	2	Update wipe samples to Microvac samples, provide additional method information, update sampling procedures	Incorporate comments from ERT, EPA Region V Air and Radiation Division, and MPCA	SAP updated throughout	OSC Sonia Vega	
8/10/07	3	Delete wipe samples from sampling design	MnDot maintains that no asbestos associated with the bridge. They will provide documentation to the EPA/PCA team confirming this	SAP updated throughout	OSC Sonia Vega	

Table 2

Sampling and Analysis Summary

Site: Minneapolis 35W Bridge Response, Minneapolis, Minnesota

OSC: Sonia Vega

TDD: 0708-005

Matrix	Analytical Parameter	Analytical Method	Air Sampling Media	Sampling Flow Rate (liters/minute)	Preservation Requirements	No. of Sampling Locations	No. of Blanks*	Total No. of Samples to Lab
Air – Aug 3, 2007 sampling	VOC	TO15	summa canister	8 hour sample	None	2	0	2 –
	Asbestos	NIOSH 7400 (PCM)	0.45µm MCE filter 25mm diameter with conductive extension cowl	0.5-16	None	3	0	3 – none
	Asbestos	TEM / EPA Level II	0.45µm MCE filter 25mm diameter with conductive	Total vol – 1200 L	None	3	0	3
	Silica	NIOSH 7500 (XRD) or NIOSH 7602 (IR)	Gravimetric 37 mm filter	Nylon cyclone – 1.7 L/min HD cyclone – 2.2 L/min Aluminum cyclone – 2.5 L/min target 1.7 L/min flow at 8 hrs for a final vol of 816 L	None	3	0	3
	Metals	NIOSH 7300 or an equivalent GAAFS (graphite furnace method)	37 mm MCE filter	1 to 4 L/min Final volume 400 to 1000 L Target 3 L/min flow at 8 hrs for a final vol of 1440 L	None	3	0	3

Matrix	Analytical Parameter	Analytical Method	Air Sampling Media	Sampling Flow Rate (liters/minute)	Preservation Requirements	No. of Sampling Locations	No. of Blanks*	Total No. of Samples to Lab
Air – Aug 10-12, 2007 sampling	Asbestos	TEM / EPA Level II	0.45µm MCE filter 25mm diameter with conductive	Total vol – 1200 L	None	21	3	24
	Silica	NIOSH 7500 (XRD) or NIOSH 7602 (IR)	Gravimetric 37 mm filter	Nylon cyclone – 1.7 L/min HD cyclone – 2.2 L/min Aluminum cyclone – 2.5 L/min target 1.7 L/min flow at 8 hrs for a final vol of 816 L	None	21	3	24
	Metals	NIOSH 7300	37 mm MCE filter	1 to 4 L/min Final volume 400 to 1000 L Target 3 L/min flow at 8 hrs for a final vol of 1440 L	None	21	3	24
	Metals – ambient air	SW846 6010/6020MS	8 X 10 micro quartz filter	40 CFM or 1.13 m3/min using a volumetric flow controller	None	21	3	24
	Particulates	PM10	8X10 micro quartz filter	See above	None	Combined with metals	Combined with metals	Combined with metals

Notes: Total number of samples to the laboratory does not include MS/MSD or spike/duplicate samples. However, please note that MS/MSD or spike/duplicate analysis may require additional sample volume.

°C – Degrees Celsius

* One lot or field blank may be collected for each lead, silica, and asbestos analysis.

FIGURES