



May 27, 2009

Ms. Theresa Santangelo-Dreiling  
Colorado Department of Transportation  
Property Management Program  
Hazardous Materials Unit  
15285 South Golden Road, Building 47  
Golden, Colorado 80401

**RE: Asbestos and Limited Lead-Based Paint Inspection of Bridge E-17-FX  
Located on Interstate 70 at Mile Marker 274.66**

Dear Ms. Santangelo-Dreiling:

This letter report presents the results of the asbestos and limited lead-based paint inspection of Bridge E-17-FX, conducted under Contract 08 HAA 00035. The following sections include an outline of the scope of the project, descriptions of the methodologies employed during the inspection, a summary of findings and recommendations based on those findings.

## **PURPOSE AND SCOPE**

The purpose of the asbestos and limited lead-based paint inspection was to detect the presence of regulated asbestos containing material (RACM) and lead-based paint (LBP) in or on the structural components and driving surface of the Site bridge(s). As described in our proposal, the scope of the project included a physical assessment of the Site structure(s), collection and analysis of suspect asbestos containing material (ACM) and LBP samples, and preparation of a report containing the findings of the inspection and analyses as well as recommendations based on those findings.

## **INSPECTION METHODOLOGIES**

This asbestos and LBP survey included observations of the bridge structure, obtaining representative samples, determination of friability and condition, and analysis of suspect ACM and LBP. The methodologies for inspection and analyses were generally based on U.S. Environmental Protection Agency (EPA) and Department of Housing and Urban Development (HUD) regulations, including EPA Asbestos Hazard Emergency Response Act (AHERA) and EPA Title X.

### **Sampling Methodology**

ACM samples were obtained by physically removing a small portion (approximately one (1) square-inch) of the material using a sharp instrument (utility knives, coring tools, etc.). Samples of asphalt paving materials were obtained using an electric hammer drill with a coring bit after the surface of the sample area was thoroughly cleaned with de-ionized water. All layers of the sampled material were penetrated, and the disturbance

Tetra Tech

363 Centennial Parkway, Suite 210, Louisville, CO 80027  
Tel 303.665.4392 Fax 303.665.4391 [www.tetrattech.com](http://www.tetrattech.com)

of adjacent material was kept at a minimum. The samples were then placed into labeled containers and sealed. The sampling instruments were then wet-wiped to remove any materials which could contaminate following samples. Each sample was labeled identifying the sample number and location. Sampling was conducted in a manner by which damage to building materials was minimized. Sample locations were repaired after sampling using caulking, joint compound, and/or duct tape, as appropriate. All samples were logged onto field data sheets that contain a brief description of the sample areas, inspector identification, the date of inspection and a description of the material sampled.

If applicable, LBP samples were obtained by physically removing a small portion (approximately two (2) square-inches) of the paint using a sharp instrument (utility knives, coring tools, etc.). All layers of the paint were penetrated, and the disturbance of adjacent material was kept at a minimum. The samples were then placed into labeled containers and sealed. The sampling instruments were then wet-wiped to remove any materials which could contaminate following samples. Each sample was labeled identifying the sample number and location. Sampling was conducted in a manner by which damage to building materials was minimized.

### **Analytical Methodology**

The ACM samples collected during the onsite inspection were transported under chain-of-custody to FRS Geotech, Inc. (FRS) at 1441 West 46<sup>th</sup> Avenue, Suite 14 in Denver, Colorado for analysis of asbestos content. The analytical procedure utilized by FRS during analysis of the bulk samples was the EPA-recommended method 600/R-93/116, or Polarized Light Microscopy with Dispersion Staining. FRS was instructed to hold the samples for six months from the date of analysis in the event that further analysis is required.

If applicable, the LBP samples collected during the onsite inspection were transported under chain-of-custody to Reservoirs Environmental, Inc. (Reservoirs) at 5801 Logan Street, Suite 100 in Denver, Colorado for analysis of lead content. The analytical procedure utilized by Reservoirs during analysis of the paint samples was the EPA-recommended method Flame Atomic Absorption Spectrometry. Reservoirs was instructed to hold the samples for six months from the date of analysis in the event that further analysis is required.

The laboratory analytical results are attached to this letter report.

### **FINDINGS AND RECOMMENDATIONS**

Based on the results of the physical assessment, sampling and analyses the following findings were made:

- No ACM was detected at the Site bridge(s).
- No LBP was detected at the Site bridge(s).

Based on these findings, Tetra Tech recommends the following:

- No ACM or LBP remediation is required prior to renovation or demolition.

## **LIMITATIONS**

Tetra Tech has endeavored to meet what it believes is the applicable standard of care for the services performed and, in doing so, is obliged to advise CDOT of limitations regarding this report. Tetra Tech believes that providing information about limitations is essential to help clients identify and thereby manage risks. These risks can be mitigated, but not eliminated, through additional research. Tetra Tech will, upon request, advise CDOT of the additional research opportunities available and associated costs.

This asbestos and limited lead-based paint bridge inspection did not include any inquiry with respect to methane, lead in drinking water, formaldehyde, subsurface investigation activities or other services or potential conditions or features not specifically identified and discussed herein. In those instances where additional services or service enhancements are included in the report as requested or authorized by CDOT, specific limitations attendant to those services are presented in the text of the report.

The findings and opinions conveyed via this report are based upon information obtained at a particular date from a variety of sources specified herein, and which Tetra Tech believes are reliable. Nonetheless, Tetra Tech cannot and does not warrant the authenticity or reliability of the information sources it has relied upon.

This report represents Tetra Tech's services to CDOT as of the report date. In that regard, the report constitutes Tetra Tech's final document, and the text of the report may not be altered in any manner after final issuance of the same. Opinions relative to environmental conditions given in this report are based upon information derived from the most recent Site reconnaissance date and from other activities described herein. CDOT is herewith advised that the conditions observed by Tetra Tech are subject to change. Certain indicators of the presence of hazardous materials may have been latent or not present at the time of the most recent Site reconnaissance and may have subsequently become observable. In similar manner, the research effort conducted for the asbestos building inspection is limited. Accordingly, it is possible that Tetra Tech's research, while fully appropriate for an asbestos building inspection and in compliance with the scope of service, may not include other important information sources. Assuming such sources exist, their information could not have been considered in the formulation of our findings and conclusions.

This report is not a comprehensive site characterization or regulatory compliance audit and should not be construed as such. The opinions presented in this report are based upon findings derived from a Site reconnaissance, a review of specified records and sources and comments made by interviewees. Specifically, Tetra Tech does not and cannot represent that the Site contains no hazardous or toxic materials, products, or other latent conditions beyond those observed by Tetra Tech during its site assessment. Further, the services herein shall in no way be construed, designed or intended to be relied upon as legal interpretation or advice.



Bridge E-17-FX  
May 27, 2009

Please do not hesitate to contact us at 303.665.4392 if you have any questions regarding this letter report.

Sincerely,  
Tetra Tech

A handwritten signature in blue ink, appearing to read 'RJE', written in a cursive style.

Ryan J. Egan  
Project Manager

Attachments: Analytical Results

**FRS Geotech, Inc.**  
1441 W. 46th Ave, Ste. 14  
Denver, CO 80211-2338

Phone: (303) 477-2559  
(800) 386-3136  
FAX: (303) 477-2580  
e-mail: frsgeo@ix.netcom.com

May 26, 2009

Mr. Ryan Egan  
Tetra Tech  
363 Centennial Pkwy  
Suite 210  
Louisville, CO 80027

Re: Project: CDOT--Bridge E-17-FX, PO#114-181881

FRS Lab Number 113647

Dear Mr. Ryan Egan:

The bulk samples submitted to FRS Geotech, Inc. have been analyzed by polarized light microscopy (PLM), the EPA-recommended method for determination of fibrous constituents in building materials. The percent of asbestos contained in the samples is a visual estimation based upon comparisons with published charts. The results of these analyses are summarized in the enclosed table. This report relates only to the items received and tested by our laboratory. According to requirements set by the National Institute of Standards and Technology/NVLAP, this report must not be used to claim endorsement by NVLAP or any agency of the US Government. Also, NVLAP guidelines specify that this report should not be reproduced, except in full, without the written approval of FRS.

A copy of your Chain of Custody is attached for your convenience. This report is considered highly confidential. Results will not be discussed with any person not associated with you.

Please call if you have any questions about this work.

Sincerely,

David A. Schroeder, Ph.D.  
Data Controller

Enclosures

NVLAP Accredited Lab #102078-0  
AIHA Accredited Lab #101557

**FRS GEOTECH, INC.**  
 1441 W. 46th Avenue, Ste. 14  
 Denver, CO 80211-2338

**RESULTS OF BULK ASBESTOS SAMPLE ANALYSIS  
 BY POLARIZED LIGHT MICROSCOPY (PLM) EPA-600/R-93/116**

Phone: (303) 477-2559  
 (800) 386-3136  
 Fax: (303) 477-2580  
 e-mail: frsgeo@ix.netcom.com

Client: **Tetra Tech**

Lab No.: **113647**

Project: **CDOT--Bridge E-17-FX, PO#114-181881**

Page 1 of 2

Sample No. [layer] Description	Volume (%)	Sample Date	Nonasbestos Fibrous Material (%)	Asbestos Minerals (%)	Summary (%)
<u>M15.1A</u> Flex joint [brown]	100%	05/13/09	Fiberglass Cellulose 95 Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected Other Fibrous Material 95 Nonfibrous Material 5
<u>M15.1B</u> Flex joint [brown]	100%	05/13/09	Fiberglass Cellulose 90 Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected Other Fibrous Material 90 Nonfibrous Material 10
<u>M15.1C</u> Flex joint [brown]	100%	05/13/09	Fiberglass Cellulose 95 Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected Other Fibrous Material 95 Nonfibrous Material 5
<u>M16.1A</u> Concrete [gray]	100%	05/13/09	Fiberglass Cellulose Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected Other Fibrous Material -- Nonfibrous Material 100
<u>M16.1B</u> Concrete [gray]	100%	05/13/09	Fiberglass Cellulose Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected Other Fibrous Material -- Nonfibrous Material 100
<u>M16.1C</u> Concrete [gray]	100%	05/13/09	Fiberglass Cellulose Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected Other Fibrous Material -- Nonfibrous Material 100

\* Composite analysis (multilayered sample, see individual layer analyses).

Analyst(s): Mark Cooperrider

Completed: 05/26/2009

**FRS GEOTECH, INC.**1441 W. 46th Avenue, Ste. 14  
Denver, CO 80211-2338**RESULTS OF BULK ASBESTOS SAMPLE ANALYSIS  
BY POLARIZED LIGHT MICROSCOPY (PLM) EPA-600/R-93/116**Phone: (303) 477-2559  
(800) 386-3136  
Fax: (303) 477-2580  
e-mail: frsgeo@ix.netcom.comClient: **Tetra Tech**Lab No.: **113647**Project: **CDOT--Bridge E-17-FX, PO#114-181881**

Page 2 of 2

Sample No. [layer] Description	Volume (%)	Sample Date	Nonasbestos Fibrous Material (%)	Asbestos Minerals (%)	Summary (%)
<u>M16.1D</u> Concrete [gray]	100%	05/13/09	Fiberglass Cellulose Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected <b>Other Fibrous Material</b> -- <b>Nonfibrous Material</b> 100
<u>M16.1E</u> Concrete [gray]	100%	05/13/09	Fiberglass Cellulose Trace <1% Synthetics Spider web Trace <1%	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected <b>Other Fibrous Material</b> Trace <1% <b>Nonfibrous Material</b> 99
<u>S1.1A</u> Surfacing [gray]	100%	05/13/09	Fiberglass Cellulose Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected <b>Other Fibrous Material</b> -- <b>Nonfibrous Material</b> 100
<u>S1.1B</u> Surfacing [multiple colors (inseparable)]	100%	05/13/09	Fiberglass Cellulose Synthetics Wollastonite Trace <1%	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected <b>Other Fibrous Material</b> Trace <1% <b>Nonfibrous Material</b> 99
<u>S1.1C</u> Surfacing [multiple colors (inseparable)]	100%	05/13/09	Fiberglass Cellulose Synthetics Others	Amosite Anthophyllite Chrysotile Crocidolite Trem./Act.	<b>Total Asbestos:</b> None Detected <b>Other Fibrous Material</b> -- <b>Nonfibrous Material</b> 100

\* Composite analysis (multilayered sample, see individual layer analyses).

Analyst(s):

Mark Cooperrider

David A. Schroeder

Completed: 05/26/2009

Client: Tetra Tech  
 Address: 363 Centennial Pkwy  
 Suite 210  
 City: Louisville  
 State: CO Zip: 80027  
 Telephone: (303) 665-4392  
 FAX\*: (303) 665-4391  
 Person to Contact: Ryan Egan  
 Alternate Phone: (303) 416-0532

**FRS GEOTECH, INC.**  
**Bulk Chain of Custody**  
 1441 W. 46<sup>th</sup> Ave., Suite 14  
 Denver, CO 80211-2338  
 (303)477-2559 or (800)386-3136  
 FAX: (303)477-2580  
 e-mail: frsgeo@ix.netcom.com  
**Asbestos** X **Mold** \_\_\_\_\_

FRS Lab No.: \_\_\_\_\_ Page 1 of 1  
 Job Description: CDOT - Bridge  
E-17-FX  
 P.O. #: 114-81881  
 Turnaround time requested:  
 Rush 1-day  5-day  Other: \_\_\_\_\_  
 Return Samples No  
 \*NOTE: Specifying a FAX number authorizes FRS Geotech, Inc. to FAX confidential reports to that number.

Accept/ Reject	Sample Number	Sample Date	Sample Description and Location
	MK.1A	5/13/09	Flex Joint
	↓ B	↓	↓
	↓ C	↓	↓
	M16.1A	↓	Concrete
	↓ B	↓	↓
	↓ C	↓	↓
	↓ D	↓	↓
	↓ E	↓	↓
	S16.1A	↓	Surfacing
	↓ B	↓	↓
	↓ C	↓	↓

Relinquished by (Name, date, time):  
 1. 5/21/09 1600  
 2. \_\_\_\_\_

Received by (Name, date, time):  
 1. \_\_\_\_\_  
 2. \_\_\_\_\_

Send White and Yellow copies with samples (Yellow copy returned with Report). Keep Pink copy for Client Records.





May 26, 2009

**Laboratory Code:** RES  
**Subcontract Number:** NA  
**Laboratory Report:** RES 173206-1  
**Project Description:** 1147-181881  
CDOT-Bridge E-17-FX

Ryan Egan  
Tetra Tech (Louisville)  
363 Centennial Parkway, Ste 210  
Louisville CO 80027

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both PAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Inductively Coupled Plasma (AES-ICP) per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

**RES 173206-1** is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you should have any questions about this report, please feel free to call me at 303-964-1986.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeanne Orr", is written over a light blue horizontal line.

Jeanne Spencer Orr  
President

# RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Accredited Laboratory #101896  
AIHA Certificate of Accreditation #480 LAB ID 101533

## TABLE ANALYSIS: LEAD IN PAINT

RES Job Number: **RES 173206-1**  
Client: **Tetra Tech (Louisville)**  
Client Project Number / P.O.: **1147-181881**  
Client Project Description: **CDOT-Bridge E-17-FX**  
Date Samples Received: **May 22, 2009**  
Analysis Type: **USEPA SW846 3050B / AA (7420)**  
Turnaround: **24 Hour**  
Date Samples Analyzed: **May 22, 2009**

Client ID Number	Lab ID Number	Reporting Limit (%)	LEAD CONCENTRATION (%)
LBP-01	EM 423427	0.004	BRL

\* Unless otherwise noted all quality control samples performed within specifications established by the laboratory.

Due Date: 5/26/09

Jc RES 173206

Due Time: \_\_\_\_\_



Page 1 of 1

**SUBMITTED BY:**

**INVOICE TO: (IF DIFFERENT)**

**CONTACT INFORMATION:**

Company: Tetra Tech, Inc. (Louisville) Address: 363 Centennial Parkway Suite 210 Louisville, Colorado 80027 Project Number and/or P.O. #: 114-181881 Project Description/Location: CDOT - Bridge E-17-FX	Company: Address:	Contact: Ryan Egan Phone: 303.665.4392 Fax: 303.665.4391 Cell/pager: 303.416.0532 Final Data Deliverable Email Address: ryan.egan@tetrattech.com	Contact: Mark Daley Phone: 303.665.4392 Fax: 303.665.4391 Cell/pager: 303.548.5197
---	----------------------	--	---

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm	REQUESTED ANALYSIS	VALID MATRIX CODES	LAB NOTES:
<b>PLM / PCM / TEM</b> _____ RUSH (Same Day) _____ PRIORITY (Next Day) _____ STANDARD (Rush PCM = 2hr, TEM = 6hr.) <b>CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm</b> <b>Metal(s) / Dust</b> _____ RUSH <u>X</u> 24 hr. _____ 3-5 Day <b>RCRA 8 / Metals &amp; Welding Fume Scan / TCLP</b> _____ RUSH _____ 5 day _____ 10 day <b>Organics</b> _____ 24 hr. _____ 3 day _____ 5 Day **Prior notification is required for RUSH turnarounds.** **Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.** Special Instructions: _____	PLM - Short report, Long report, Point Count TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps PCM - 7400A, 7400B, OSHA DUST - Total, Respirable METALS - Analyte(s) _Lead RCRA 8, TCLP, Welding Fume, Metals Scan ORGANICS - BTEX, MTBE, 8260, GRO, DRO OTHER -	Air = A                      Bulk = B Dust = D                    Paint = P Soil = S                      Wipe = W Drinking Water = DW Waste Water = WW Other = O **ASTM E1792 approved wipe media only** Sample Volume (L) / Area Matrix Code # Containers Date Collected mm/dd/yy Time Collected hh/mm a/p	<b>EM Number</b> (Laboratory Use Only)
<b>Client sample ID number</b> (Sample ID's must be unique)			
1 LBP-01	X	N/A P 1 5/13/09 N/A	423427
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Number of samples received: \_\_\_\_\_ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By:	Date/Time: 5/21/09 16:58	Sample Condition: On Ice	Sealed	Intact						
Laboratory Use Only		Temp. (F°) _____	Y/N	Y/N						
Received By:	Date/Time: 5/22/09 8:42	Carrier: FedEx								
Results:	Contact	Page Phone Email Fax	Date	Time	Initials	Contact	Page Phone Email Fax	Date	Time	Initials
	Contact	Page Phone Email Fax	Date	Time	Initials	Contact	Page Phone Email Fax	Date	Time	Initials