



January 11, 2022

Diane Czarnecki
Industrial Hygienist
Facilities Management Division
GSA Public Buildings Service – Heartland Region
2300 Main Street
Kansas City, MO 64108

Re: Goodfellow Federal Center – Bldg. 104E Air Sampling
Project No. 121244

Dear Ms. Czarnecki:

Thank you for the opportunity to provide the General Services Administration (GSA) with the Resource Conservation and Recovery Act (RCRA) metals air sampling investigation of the above referenced building located at the Goodfellow Federal Complex, in St. Louis, Missouri. Burns & McDonnell understands that the purpose of the investigation was to provide sampling data regarding existing conditions to supplement previous investigation reports prepared for the facility. The following report summarizes air-sample collection activities and the laboratory analytical results of the samples submitted.

METHODOLOGY

On November 30, 2021, Ashley Anstaett and Emily Pulcher of Burns & McDonnell conducted area air-sampling for the presence of seven (7) of the RCRA metals including arsenic, barium, cadmium, chromium, lead, selenium, and silver. Sampling was conducted in various locations throughout Building 104E.

The sampling plan, number of samples, sample distribution, and general methodology was developed based on previous investigation methodology and in coordination with the GSA. Sample locations and samples collected from discretionary locations were determined by sampling personnel while on-site.

Air samples for RCRA metals were collected on 37-millimeter (mm) cassettes with 0.8 micrometer (μm) mixed cellulose ester (MCE) filters, using powered air sampling pumps, in accordance with the National Institute for Occupational Safety and Health (NIOSH) Method 7300. The sampling strategy included collecting a minimum sample volume of 500 liters based on the calibrated pump flow rate and sample duration. Air samples were submitted under chain-of-custody to Environmental Hazards Services, LLC (EHS) in Richmond, Virginia for independent analysis of 7 RCRA metals according to NIOSH method 7300. EHS is accredited under the American Industrial Hygiene Association (AIHA) Industrial Hygiene Laboratory Accreditation Program (IHLAP) program, identification number LAP-100420.

Diane Czarnecki
 Facilities Management Division
 January 11, 2022
 Page 2

RESULTS AND DISCUSSION

Results of the air sampling are summarized in the table below by identifying the range of results for Building 104E for each of the seven (7) metals that were sampled. Results indicate that all 9 air samples collected from Building 104E and analyzed for RCRA metals were below their respective OSHA Permissible Exposure Limit (PEL), as based on a time-weighted-average.

Table 1. Summary of Air Sampling Results

Analyte	Lowest Concentration ^(a) ($\mu\text{g}/\text{m}^3$) ^(b)	Highest Concentration ^(a) ($\mu\text{g}/\text{m}^3$) ^(b)	Permissible Exposure Limit (PEL) ($\mu\text{g}/\text{m}^3$) ^(b)
Arsenic	<0.27	<0.29	10
Barium	<0.27	<0.29	500
Cadmium	<0.054	<0.057	5
Chromium (Total)	<1.4	<1.5	500
Lead	<0.27	<0.29	50
Selenium	<1.4	<1.5	200
Silver	<0.27	<0.29	10

Notes:

- (a) Samples with a “<” sign indicate that the results were below the laboratory’s reporting limit, which varies based on sample air volume.
- (b) $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter of air.

GSA may choose to compare results with guidance limits from additional organizations for risk evaluation, including but not limited to the American Conference of Governmental Industrial Hygienists (ACGIH) and/or the World Health Organization (WHO).

A summary table of all sampling results by location is included in Appendix A. The complete laboratory report for the air sampling from EHS is attached in Appendix B.

LIMITATIONS

The scope of this assessment was limited as follows. Burns & McDonnell collected samples from a select number of locations in an effort to minimize cost while providing a general overview of the air quality at the site. Sample locations do not encompass every indoor space at the site. Additionally, based on previous sampling history, samples were only analyzed for a select number of potential contaminants likely to affect the air quality at the site. Burns &



Diane Czarnecki
Facilities Management Division
January 11, 2022
Page 3

McDonnell is not responsible for potential contaminants not identified in this report. This report was prepared for the sole use of GSA.

Burns & McDonnell appreciates the opportunity to work with the General Services Administration on this project. Please contact us if you have any questions regarding this report or if we may be of any additional service.

Sincerely,

(b) (6)

A large black rectangular redaction box covers the signature area, with the text "(b) (6)" in red at the top left corner.

Matt Shanahan, CHMM
Project Manager

Attachments:

- Appendix A – Results Summary by Location
- Appendix B – Air Sample Laboratory Report

Information in Appendices A and B is not accessible for people using screen reader technology. If this information is required, it can be furnished upon request by contacting 816-223-6198 or r6environmental@gsa.gov.

APPENDIX A – RESULTS SUMMARY BY LOCATION

Appendix A
Results Summary by Location

Sample Number	Location	Analyte	Result	Units	Recommended Limits ¹
104E-A-01	2nd floor, Canopy Café, table by whiteboard	Arsenic	< 0.28	µg/m ³	10
		Barium	< 0.28	µg/m ³	500
		Cadmium	< 0.056	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.28	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.28	µg/m ³	10
104E-A-02	2nd floor, conference room by Canopy Café, table	Arsenic	< 0.28	µg/m ³	10
		Barium	< 0.28	µg/m ³	500
		Cadmium	< 0.055	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.28	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.28	µg/m ³	10
104E-A-03	2nd floor, desk in middle of room on N closet wall	Arsenic	< 0.28	µg/m ³	10
		Barium	< 0.28	µg/m ³	500
		Cadmium	< 0.056	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.28	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.28	µg/m ³	10
104E-A-04	2nd floor, desk in office P52E1	Arsenic	< 0.27	µg/m ³	10
		Barium	< 0.27	µg/m ³	500
		Cadmium	< 0.054	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.27	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.27	µg/m ³	10
104E-A-05	2nd floor, S stairwell, window ledge	Arsenic	< 0.29	µg/m ³	10
		Barium	< 0.29	µg/m ³	500
		Cadmium	< 0.057	µg/m ³	5
		Chromium	< 1.5	µg/m ³	500
		Lead	< 0.29	µg/m ³	50
		Selenium	< 1.5	µg/m ³	200
		Silver	< 0.29	µg/m ³	10

Appendix A
Results Summary by Location

Sample Number	Location	Analyte	Result	Units	Recommended Limits ¹
104E-A-06	2nd floor, N lobby, windowsill	Arsenic	< 0.27	µg/m ³	10
		Barium	< 0.27	µg/m ³	500
		Cadmium	< 0.054	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.27	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.27	µg/m ³	10
104E-A-07	2nd floor, N hallway, storage room, top shelf	Arsenic	< 0.28	µg/m ³	10
		Barium	< 0.28	µg/m ³	500
		Cadmium	< 0.055	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.28	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.28	µg/m ³	10
104E-A-08	1st floor, N lobby, stairwell near door to elevator	Arsenic	< 0.27	µg/m ³	10
		Barium	< 0.27	µg/m ³	500
		Cadmium	< 0.054	µg/m ³	5
		Chromium	< 1.4	µg/m ³	500
		Lead	< 0.27	µg/m ³	50
		Selenium	< 1.4	µg/m ³	200
		Silver	< 0.27	µg/m ³	10
104E-A-09	Field blank	Arsenic	< 0.15	µg	--
		Barium	< 0.15	µg	--
		Cadmium	< 0.030	µg	--
		Chromium	< 0.75	µg	--
		Lead	< 0.15	µg	--
		Selenium	< 0.75	µg	--
		Silver	< 0.15	µg	--

Notes:

¹Limits equal to the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs)

APPENDIX B – AIR SAMPLE LABORATORY REPORT



Environmental Hazards Services, L.L.C.
 7469 Whitepine Rd
 Richmond, VA 23237
 Telephone: 800.347.4010

Air Metals Analysis Report

Client: Burns & McDonnell Engineering
 9400 Ward Pkwy.
 Kansas City, MO 64114

Report Number: 21-12-00467
 Received Date: 12/03/2021
 Reported Date: 12/09/2021

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Client Number:
26-3514

Fax Number:
816-822-3494

Laboratory Results

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
21-12-00467-001	104E-A-01	12/08/2021	Arsenic (As)	540	<0.15	<0.28	
			Barium (Ba)		<0.15	<0.28	
			Cadmium (Cd)		<0.030	<0.056	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.28	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.28	
21-12-00467-002	104E-A-02	12/08/2021	Arsenic (As)	553	<0.15	<0.28	
			Barium (Ba)		<0.15	<0.28	
			Cadmium (Cd)		<0.030	<0.055	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.28	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.28	
21-12-00467-003	104E-A-03	12/08/2021	Arsenic (As)	538	<0.15	<0.28	
			Barium (Ba)		<0.15	<0.28	
			Cadmium (Cd)		<0.030	<0.056	

Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 21-12-00467

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.28	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.28	
21-12-00467-004	104E-A-04	12/08/2021	Arsenic (As)	556	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
21-12-00467-005	104E-A-05	12/08/2021	Arsenic (As)	535	<0.15	<0.29	
			Barium (Ba)		<0.15	<0.29	
			Cadmium (Cd)		<0.030	<0.057	
			Chromium (Cr)		<0.75	<1.5	
			Lead (Pb)		<0.15	<0.29	
			Selenium (Se)		<0.75	<1.5	
			Silver (Ag)		<0.15	<0.29	
21-12-00467-006	104E-A-06	12/08/2021	Arsenic (As)	559	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	

Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 21-12-00467

Project/Test Address: 168765; GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m ³)	Narrative ID
21-12-00467-007	104E-A-07	12/08/2021	Arsenic (As)	551	<0.15	<0.28	
			Barium (Ba)		<0.15	<0.28	
			Cadmium (Cd)		<0.030	<0.055	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.28	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.28	
21-12-00467-008	104E-A-08	12/08/2021	Arsenic (As)	559	<0.15	<0.27	
			Barium (Ba)		<0.15	<0.27	
			Cadmium (Cd)		<0.030	<0.054	
			Chromium (Cr)		<0.75	<1.4	
			Lead (Pb)		<0.15	<0.27	
			Selenium (Se)		<0.75	<1.4	
			Silver (Ag)		<0.15	<0.27	
21-12-00467-009	104E-A-09	12/08/2021	Arsenic (As)	--	<0.15	---	
			Barium (Ba)		<0.15	---	
			Cadmium (Cd)		<0.030	---	
			Chromium (Cr)		<0.75	---	
			Lead (Pb)		<0.15	---	
			Selenium (Se)		<0.75	---	
			Silver (Ag)		<0.15	---	

ENVIRONMENTAL HAZARDS SERVICES, LLC

Metals Chain of Custody Form

Pg 1 of 1

Company Name		Burns & McDonnell				Account #		26-3514									
Company Address		9400 Ward Parkway				City/State/Zip		Kansas City, MO 64114									
Phone		314-302-4661				Email		eapulcher@burnsmcd.com									
Project Name / Testing Address		GFC / 4300 Goodfellow Blvd															
PO Number		168765			Collected By		Ashley Anstaett & Emily Pulcher										
Turn-Around Time		<input checked="" type="radio"/> 5 DAY <input type="radio"/> 3 DAY <input type="radio"/> 2 DAY <input type="radio"/> 1 DAY <input type="radio"/> SAME DAY OR WEEKEND - Must Call Ahead															
LAB NUMBER	Client Sample ID	Collection Date & Time	METALS						Other Metals	PARTICULATES			AIR			WIPES	
			Pb TCLP	TCLP RCRA 8	RCRA 8 Total	Toxic Metal Profile	Welding Fume Profile	TX 11 TCLP		CA 17 Total	Total Nuisance Dust	Respirable Dust	TSP Gravimetric	TSP Pb	PM-10		Total Time
								Ag, As, Ba, Cd, Cr, Pb, Se						Mins.	L/min.	Total Liters	AREA Circle The Unit of Measurement Used cm or in
1	104E-A-01	11/30/21 1050												216	2.5	540	x
2	104E-A-02	1050												217	2.6	553	x
3	104E-A-03	1051												207	2.6	538	x
4	104E-A-04	1054												214	2.6	556	x
5	104E-A-05	1055												214	2.5	535	x
6	104E-A-06	1055												215	2.6	559	x
7	104E-A-07	1055												216	2.6	551	x
8	104E-A-08	1057												215	2.6	559	x
9	104E-A-09	0820												NA	NA	NA	x
10																	x
11																	x
12																	x
13																	x
14																	x
15																	x
Released By:		Emily Pulcher				Date:		12/2/21			Time:		1100				
Signature:		(b) (6)															


LAB USE ONLY - BELOW THIS LINE

Received By: Stone
 Signature: (b) (6)
 Date: 12/3/21 Time: 1:06 AM PM

Portal Contact Added

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010
 RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

21-12-00467



Due Date:
 12/10/2021
 (Friday)
 EL MM-L