



July 18, 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 June 7, 2022, Ashley Anstaett 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 ( $\mu\text{m}$ ) 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.

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**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 6 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 <sup>(a)</sup> (µg/m <sup>3</sup> ) <sup>(b)</sup>	Highest Concentration <sup>(a)</sup> (µg/m <sup>3</sup> ) <sup>(b)</sup>	Permissible Exposure Limit (PEL) (µg/m <sup>3</sup> ) <sup>(b)</sup>
Arsenic	<0.25	<0.26	10
Barium	<0.25	<0.26	500
Cadmium	<0.025	<0.052	5
Chromium (Total)	<1.3	<1.3	500
Lead	<0.25	<0.26	1
Selenium	<1.3	<1.3	200
Silver	<0.25	<0.26	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) µg/m<sup>3</sup> = 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 &



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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 GSA 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 covering the signature area of the letter.

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](mailto:r6environmental@gsa.gov).

**APPENDIX A – RESULTS SUMMARY BY LOCATION**

**Appendix A**  
**Results Summary by Location**

Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
104E-A-01	2nd floor, east lobby waiting area, windowsill	Arsenic	< 0.25	µg/m <sup>3</sup>	10
		Barium	< 0.25	µg/m <sup>3</sup>	500
		Cadmium	< 0.050	µg/m <sup>3</sup>	5
		Chromium	< 1.3	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.25	µg/m <sup>3</sup>	1
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.25	µg/m <sup>3</sup>	10
104E-A-02	2nd floor, Canopy Café, island	Arsenic	< 0.25	µg/m <sup>3</sup>	10
		Barium	< 0.25	µg/m <sup>3</sup>	500
		Cadmium	< 0.050	µg/m <sup>3</sup>	5
		Chromium	< 1.3	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.25	µg/m <sup>3</sup>	1
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.25	µg/m <sup>3</sup>	10
104E-A-03	2nd floor, east admin desk adjacent to room P47E1	Arsenic	< 0.25	µg/m <sup>3</sup>	10
		Barium	< 0.25	µg/m <sup>3</sup>	500
		Cadmium	< 0.025	µg/m <sup>3</sup>	5
		Chromium	< 1.3	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.25	µg/m <sup>3</sup>	1
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.25	µg/m <sup>3</sup>	10
104E-A-04	2nd floor, office area, south windowsill	Arsenic	< 0.26	µg/m <sup>3</sup>	10
		Barium	< 0.26	µg/m <sup>3</sup>	500
		Cadmium	< 0.052	µg/m <sup>3</sup>	5
		Chromium	< 1.3	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.26	µg/m <sup>3</sup>	1
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.26	µg/m <sup>3</sup>	10
104E-A-05	2nd floor, office P51E1, glass conference table	Arsenic	< 0.25	µg/m <sup>3</sup>	10
		Barium	< 0.25	µg/m <sup>3</sup>	500
		Cadmium	< 0.050	µg/m <sup>3</sup>	5
		Chromium	< 1.3	µg/m <sup>3</sup>	500
		Lead <sup>2</sup>	< 0.25	µg/m <sup>3</sup>	1
		Selenium	< 1.3	µg/m <sup>3</sup>	200
		Silver	< 0.25	µg/m <sup>3</sup>	10

**Appendix A**  
**Results Summary by Location**

Sample Number	Location	Analyte	Result	Units	Recommended Limits <sup>1</sup>
104E-A-06	Field blank	Arsenic	< 0.15	µg	--
		Barium	< 0.15	µg	--
		Cadmium	< 0.030	µg	--
		Chromium	< 0.75	µg	--
		Lead <sup>2</sup>	< 0.15	µg	--
		Selenium	< 0.75	µg	--
		Silver	< 0.15	µg	--

Notes:

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

<sup>2</sup>Limits equal to the World Health organization (WHO) Ambient Air Limit

**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: 22-06-03464  
 Received Date: 06/17/2022  
 Reported Date: 06/27/2022

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 <sup>3</sup> )	Narrative ID
22-06-03464-001	104E-A-01	06/24/2022	Arsenic (As)	611	<0.15	<0.25	
			Barium (Ba)		<0.15	<0.25	
			Cadmium (Cd)		<0.030	<0.050	
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.25	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.25	
22-06-03464-002	104E-A-02	06/24/2022	Arsenic (As)	611	<0.15	<0.25	
			Barium (Ba)		<0.15	<0.25	
			Cadmium (Cd)		<0.030	<0.050	
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.25	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.25	
22-06-03464-003	104E-A-03	06/24/2022	Arsenic (As)	611	<0.15	<0.25	
			Barium (Ba)		<0.15	<0.25	
			Cadmium (Cd)		<0.030	<0.050	



# Environmental Hazards Services, L.L.C

Client Number: 26-3514

Report Number: 22-06-03464

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 <sup>3</sup> )	Narrative ID
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.25	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.25	
22-06-03464-004	104E-A-04	06/24/2022	Arsenic (As)	583	<0.15	<0.26	
			Barium (Ba)		<0.15	<0.26	
			Cadmium (Cd)		<0.030	<0.052	
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.26	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.26	
22-06-03464-005	104E-A-05	06/24/2022	Arsenic (As)	606	<0.15	<0.25	
			Barium (Ba)		<0.15	<0.25	
			Cadmium (Cd)		<0.030	<0.050	
			Chromium (Cr)		<0.75	<1.3	
			Lead (Pb)		<0.15	<0.25	
			Selenium (Se)		<0.75	<1.3	
			Silver (Ag)		<0.15	<0.25	
22-06-03464-006	104E-A-06	06/24/2022	Arsenic (As)	0	<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

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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	A. Anstaeht
Turn-Around Time	<input checked="" type="checkbox"/> 5 DAY <input type="checkbox"/> 3 DAY <input type="checkbox"/> 2 DAY <input type="checkbox"/> 1 DAY <input type="checkbox"/> SAME DAY OR WEEKEND - Must Call Ahead		

LAB NUMBER	Client Sample ID	Collection Date & Time	METALS							Other Metals	PARTICULATES				AIR			WIPES  AREA <small>Circle The Unit of Measurement Used</small> cm or in	
			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 <sub>10</sub>	Total Time	Flow Rate		Vol.
																Mins.	L/min.		Total Liters
1	1046-A-01	6/7/22 1118							Ag, As, Ba, Cd, Cr, Pb, Se						235		601	X	
2	1046-A-02	1119												235		601	X		
3	1046-A-03	1120												235		601	X		
4	1046-A-04	1120												233		583	X		
5	1046-A-05	1120												233		606	X		
6	1046-A-06	0700												NA		NA	X		
7																	X		
8																	X		
9																	X		
10																	X		
11																	X		
12																	X		
13																	X		
14																	X		
15																	X		

Released By:	A. Anstaeht	Date:	6/8/2022	Time:	1300
Signature:	(b) (6)				

LAB USE ONLY - BELOW THIS LINE

Received By: J. Hol


Signature: (b) (6)

Date: 6/17/22 Time: 11:30  AM  PM

Portal Contact Added

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

22-06-03464



Due Date:  
**06/24/2022**  
 (Friday)  
 EL                      MM-L