February 16, 2021

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

Re: Goodfellow Federal Center – Building 104 DISC Air and Wipe Sampling Evaluation
Project No. 121244

Dear Ms. Czarnecki:

Thank you for the opportunity to provide the General Services Administration (GSA) with the above referenced environmental sampling activities. The following is our report.

INTRODUCTION

As requested, Burns & McDonnell conducted area air and dust wipe sampling and testing for the presence of seven (7) of the RCRA metals including arsenic, barium, cadmium, chromium, lead, selenium, and silver within the DISC data center in Building 104 of the Goodfellow Federal Center located at 4300 Goodfellow Boulevard in St. Louis, Missouri. The purpose of the investigation was to provide sampling data regarding existing conditions to supplement previous investigation reports prepared for the facility. Air and dust wipe sampling was conducted on February 9, 2021 by Emily Ahlemeyer of Burns & McDonnell.

DUST WIPE SAMPLING AND RESULTS

Dust wipe sampling was conducted in accordance with ASTM Standard E1728: *Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination* and ASTM Standard D6966: *Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Determination of Metals*. ASTM Standards E1728 and D6966 are consistent with the methodology described in the Housing and Urban Development Guidelines-Appendix 13.1 and 40 CFR 745.63. The Brookhaven National Laboratory's Surface Wipe Sampling Procedure (IH75190) was also used as a guideline.

A representative surface area of approximately one square foot (1 SF) was measured and delineated. The dust wipe samples were collected using dedicated dust wipe cloths meeting ASTM E1792 Standard. Each dust wipe cloth was pre-moistened and individually wrapped. Each sample was collected by wiping in a back and forth "S" pattern over a measured sampling area using a clean, disposable glove. Then, the wipe was folded over itself and the area was wiped again in a direction perpendicular to the first wipe orientation. Then, the wipe folded over itself again and the area was wiped around the perimeter. The wipe sample was then placed into a labeled, clean container. Dust wipe samples were submitted to Environmental Hazards Services, LLC (EHS) in Richmond, Virginia for Inductively Coupled Plasma (ICP) analysis of

metals analysis using Environmental Protection Agency (EPA) method SW846 3050B/6010D. EHS is accredited under the American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program (LAP) identification number LAP-100420.

Whereas the Occupational Safety and Health Administration (OSHA) has not established regulatory limits for surface concentrations of metals, the OSHA Technical Manual Section II: Chapter 2 (III.A) describes a method for calculating "housekeeping" standards, as recommended acceptable surface limits. Brookhaven's IH75190 procedure uses the housekeeping standards to derive a lower, "clean area limit" for non-operational areas that can be accessed or contacted without special training or precautions. Burns & McDonnell calculated clean area limits for metals not included in the Brookhaven procedure, specifically barium, chromium (total), selenium and silver. Wipe results were compared to the Brookhaven procedure's clean area limits for each metal.

Results of the dust wipe samples collected from the building indicate that 13 of the 14 samples contained concentrations of target metals above laboratory reporting limits. The following table identifies the range of results for each of the seven metals that were analyzed. Samples with a "<" sign indicate that the results were below the lab's reportable limit.

Table 1. Summary of Dust Wipe Results

Analyte	Lowest Concentration[(a)] (µg/sq. ft) [(b)]	Highest Concentration[(a)] (µg/sq. ft) [(b)]	Clean Area Limit [(c)] µg/sq. ft [(b)]
Silver	<0.5	24	62
Arsenic	<0.78	3.4	62
Barium	4.6	360	3,094
Cadmium	<0.10	9.1	31
Chromium (Total)	<1.0	1,000	3,094
Lead	1.3	750	10 [(d)]
Selenium	<2.0	<2.8	1,236

(a) Samples with a "<" sign indicate that the results were below the laboratory's reporting limit.
(b) µg/sq. ft = micrograms per square foot of surface area.
(c) Clean Area Limit per Brookhaven IH75190=OSHA Housekeeping Limit [PEL (µg/m^3) x 10 m^3/100cm^2] / 15.
(d) Lead clean area limit: Brookhaven references EPA/HUD limit for floors, set at 10 µg/sq. ft. as of January 2020.

Seven (7) dust wipe samples exceeded the lead clean area limit. Samples 104-W-02, 104-W-04, 104-W-06, 104-W-07, 104-W-08, 104-W-09, and 104-W-10 resulted in lead concentrations of 75, 210, 22, 30, 33, 750, and 20 µg/sq. ft, respectively. The remaining target metal sample results were

below housekeeping and clean area limits, as recommended and described by OSHA and the Brookhaven Procedure.

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

AIR SAMPLING AND RESULTS

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.

Results of the air sampling indicate that all 6 air samples collected from Building 104 and analyzed for RCRA metals were below laboratory reporting limits and their respective OSHA Permissible Exposure Limit (PEL), as based on a time-weighted-average.

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 C. The complete laboratory report for the air sampling from EHS is attached in Appendix D.

LIMITATIONS

The scope of this assessment was limited in nature. Burns & McDonnell collected samples from a representative number of surfaces in an effort to minimize cost while providing a general overview of site conditions. Sample locations do not encompass all equipment surfaces at the site. Additionally, samples were only analyzed for a select number of potential contaminants. Burns & McDonnell is not responsible for potential contaminants not identified in this report.

Burns & McDonnell appreciates the opportunity to work 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)

Matt Shanahan, CHMM
Project Manager

Attachments:

- Appendix A – Wipe Sampling Summary Table
- Appendix B – Wipe Sampling Laboratory Report
- Appendix C – Air Sampling Summary Table
- Appendix D – Air Sampling Laboratory Report

Information in Appendices B and D are 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 – WIPE SAMPLING SUMMARY TABLE

Appendix A
Wipe Sample Summary Table

Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Silver	0.86	µg/ft^2	62
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Arsenic	< 0.78	µg/ft^2	62
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Barium	5.9	µg/ft^2	3,094
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Cadmium	0.11	µg/ft^2	31
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Chromium	2.4	µg/ft^2	3,094
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Lead	2.2	µg/ft^2	10
104-W-01	DISC, Room 4	Column E11, top of cooling unit	Selenium	< 2.0	µg/ft^2	1,236
104-W-02	DISC, Room 4	Column D14, under floor	Silver	18	µg/ft^2	62
104-W-02	DISC, Room 4	Column D14, under floor	Arsenic	2.0	µg/ft^2	62
104-W-02	DISC, Room 4	Column D14, under floor	Barium	280	µg/ft^2	3,094
104-W-02	DISC, Room 4	Column D14, under floor	Cadmium	4.1	µg/ft^2	31
104-W-02	DISC, Room 4	Column D14, under floor	Chromium	22	µg/ft^2	3,094
104-W-02	DISC, Room 4	Column D14, under floor	Lead	75 **	µg/ft^2	10
104-W-02	DISC, Room 4	Column D14, under floor	Selenium	< 2.5	µg/ft^2	1,236
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Silver	< 0.56	µg/ft^2	62
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Arsenic	< 1.1	µg/ft^2	62
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Barium	5.8	µg/ft^2	3,094
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Cadmium	< 0.11	µg/ft^2	31
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Chromium	2.4	µg/ft^2	3,094
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Lead	3.2	µg/ft^2	10
104-W-03	DISC, Room 4	Column D11, server rack, R3 C2	Selenium	< 2.8	µg/ft^2	1,236
104-W-04	DISC, Room 3	Column D11, under floor	Silver	24	µg/ft^2	62
104-W-04	DISC, Room 3	Column D11, under floor	Arsenic	3.4	µg/ft^2	62
104-W-04	DISC, Room 3	Column D11, under floor	Barium	150	µg/ft^2	3,094
104-W-04	DISC, Room 3	Column D11, under floor	Cadmium	9.1	µg/ft^2	31
104-W-04	DISC, Room 3	Column D11, under floor	Chromium	22	µg/ft^2	3,094
104-W-04	DISC, Room 3	Column D11, under floor	Lead	210 **	µg/ft^2	10
104-W-04	DISC, Room 3	Column D11, under floor	Selenium	< 2.5	µg/ft^2	1,236
104-W-05	DISC, Room 3	Column B8, top of transformer	Silver	< 0.50	µg/ft^2	62
104-W-05	DISC, Room 3	Column B8, top of transformer	Arsenic	< 1.0	µg/ft^2	62
104-W-05	DISC, Room 3	Column B8, top of transformer	Barium	4.6	µg/ft^2	3,094
104-W-05	DISC, Room 3	Column B8, top of transformer	Cadmium	< 0.10	µg/ft^2	31
104-W-05	DISC, Room 3	Column B8, top of transformer	Chromium	< 1.0	µg/ft^2	3,094
104-W-05	DISC, Room 3	Column B8, top of transformer	Lead	3.4	µg/ft^2	10
104-W-05	DISC, Room 3	Column B8, top of transformer	Selenium	< 2.5	µg/ft^2	1,236

Appendix A
Wipe Sample Summary Table

Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Silver	1.4	µg/ft^2	62
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Arsenic	< 1.1	µg/ft^2	62
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Barium	63	µg/ft^2	3,094
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Cadmium	0.44	µg/ft^2	31
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Chromium	13	µg/ft^2	3,094
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Lead	22 **	µg/ft^2	10
104-W-06	DISC, Room 3	Column D8, switch at bottom of server	Selenium	< 2.8	µg/ft^2	1,236
104-W-07	DISC, Room 2	Column B4, under floor	Silver	0.68	µg/ft^2	62
104-W-07	DISC, Room 2	Column B4, under floor	Arsenic	1.1	µg/ft^2	62
104-W-07	DISC, Room 2	Column B4, under floor	Barium	120	µg/ft^2	3,094
104-W-07	DISC, Room 2	Column B4, under floor	Cadmium	1.2	µg/ft^2	31
104-W-07	DISC, Room 2	Column B4, under floor	Chromium	4.6	µg/ft^2	3,094
104-W-07	DISC, Room 2	Column B4, under floor	Lead	30 **	µg/ft^2	10
104-W-07	DISC, Room 2	Column B4, under floor	Selenium	< 2.5	µg/ft^2	1,236
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Silver	1.1	µg/ft^2	62
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Arsenic	1.6	µg/ft^2	62
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Barium	71	µg/ft^2	3,094
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Cadmium	0.48	µg/ft^2	31
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Chromium	1000	µg/ft^2	3,094
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Lead	33 **	µg/ft^2	10
104-W-08	DISC, Room 2	5.5DA, floor in server rack	Selenium	< 2.5	µg/ft^2	1,236
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Silver	< 0.50	µg/ft^2	62
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Arsenic	< 1.0	µg/ft^2	62
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Barium	360	µg/ft^2	3,094
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Cadmium	1.6	µg/ft^2	31
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Chromium	< 1.0	µg/ft^2	3,094
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Lead	750 **	µg/ft^2	10
104-W-09	DISC, Room 2	Column E5, top of jobmaster cabinet	Selenium	< 2.5	µg/ft^2	1,236
104-W-10	DISC, Room 1	Column C1, under floor	Silver	< 0.50	µg/ft^2	62
104-W-10	DISC, Room 1	Column C1, under floor	Arsenic	< 1.0	µg/ft^2	62
104-W-10	DISC, Room 1	Column C1, under floor	Barium	140	µg/ft^2	3,094
104-W-10	DISC, Room 1	Column C1, under floor	Cadmium	2.4	µg/ft^2	31
104-W-10	DISC, Room 1	Column C1, under floor	Chromium	2.7	µg/ft^2	3,094
104-W-10	DISC, Room 1	Column C1, under floor	Lead	20 **	µg/ft^2	10
104-W-10	DISC, Room 1	Column C1, under floor	Selenium	< 2.5	µg/ft^2	1,236

Appendix A
Wipe Sample Summary Table

Sample Number	Location	Area Description	Analyte	Result	Units	Clean Area Limit*
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Silver	1.2	µg/ft^2	62
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Arsenic	< 1.0	µg/ft^2	62
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Barium	62	µg/ft^2	3,094
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Cadmium	0.28	µg/ft^2	31
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Chromium	15	µg/ft^2	3,094
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Lead	7.2	µg/ft^2	10
104-W-11	DISC, Room 1	2.9 BF, inside server rack	Selenium	< 2.5	µg/ft^2	1,236
104-W-12	DISC, Room 1	Column E3, bottom of desk	Silver	< 0.50	µg/ft^2	62
104-W-12	DISC, Room 1	Column E3, bottom of desk	Arsenic	< 1.0	µg/ft^2	62
104-W-12	DISC, Room 1	Column E3, bottom of desk	Barium	5.3	µg/ft^2	3,094
104-W-12	DISC, Room 1	Column E3, bottom of desk	Cadmium	< 0.10	µg/ft^2	31
104-W-12	DISC, Room 1	Column E3, bottom of desk	Chromium	< 1.0	µg/ft^2	3,094
104-W-12	DISC, Room 1	Column E3, bottom of desk	Lead	1.3	µg/ft^2	10
104-W-12	DISC, Room 1	Column E3, bottom of desk	Selenium	< 2.5	µg/ft^2	1,236
104-W-13	DISC, Room 3	Column F8, inside server rack	Silver	0.78	µg/ft^2	62
104-W-13	DISC, Room 3	Column F8, inside server rack	Arsenic	< 1.0	µg/ft^2	62
104-W-13	DISC, Room 3	Column F8, inside server rack	Barium	13	µg/ft^2	3,094
104-W-13	DISC, Room 3	Column F8, inside server rack	Cadmium	0.18	µg/ft^2	31
104-W-13	DISC, Room 3	Column F8, inside server rack	Chromium	2.5	µg/ft^2	3,094
104-W-13	DISC, Room 3	Column F8, inside server rack	Lead	6.7	µg/ft^2	10
104-W-13	DISC, Room 3	Column F8, inside server rack	Selenium	< 2.5	µg/ft^2	1,236
104-W-14	Field Blank	--	Silver	< 0.500	µg	--
104-W-14	Field Blank	--	Arsenic	< 1.00	µg	--
104-W-14	Field Blank	--	Barium	< 0.500	µg	--
104-W-14	Field Blank	--	Cadmium	< 0.100	µg	--
104-W-14	Field Blank	--	Chromium	< 1.00	µg	--
104-W-14	Field Blank	--	Lead	< 0.500	µg	--
104-W-14	Field Blank	--	Selenium	< 2.50	µg	--

* Clean Area Limit per Brookhaven IH75190=OSHA Housekeeping Limit [PEL (µg/m^3) x 10 m^3/100cm^2]/15. Lead clean area limit: Brookhaven references EPA/HUD limit for floors, set at 10 µg/sq. ft. as of January 2020.

** Indicates results at or above the Clean Area Limit

µg/ft^2 - micrograms per square foot

APPENDIX B – WIPE SAMPLING LABORATORY REPORT

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

Wipe Metals Analysis Report

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

Report Number: 21-02-01501

Received Date: 02/10/2021
Analyzed Date: 02/11/2021
Reported Date: 02/12/2021

Project/Test Address: GFC; 4300 Goodfellow Blvd

Client Number:
26-3514

Laboratory Results

Fax Number:
816-822-3494

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
21-02-01501-001	104-W-01	Arsenic (As)	1.28	<1.00	<0.78	
		Barium (Ba)	1.28	7.48	5.9	
		Cadmium (Cd)	1.28	0.135	0.11	
		Chromium (Cr)	1.28	3.02	2.4	
		Lead (Pb)	1.28	2.86	2.2	
		Selenium (Se)	1.28	<2.50	<2.0	
		Silver (Ag)	1.28	1.10	0.86	
21-02-01501-002	104-W-02	Arsenic (As)	1.00	1.97	2.0	
		Barium (Ba)	1.00	277	280	
		Cadmium (Cd)	1.00	4.14	4.1	
		Chromium (Cr)	1.00	21.5	22	

Client Number: 26-3514 **Report Number:** 21-02-01501

Project/Test Address: GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Lead (Pb)	1.00	75.2	75	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	18.4	18	
21-02-01501-003	104-W-03	Arsenic (As)	0.889	<1.00	<1.1	
		Barium (Ba)	0.889	5.18	5.8	
		Cadmium (Cd)	0.889	<0.100	<0.11	
		Chromium (Cr)	0.889	2.16	2.4	
		Lead (Pb)	0.889	2.86	3.2	
		Selenium (Se)	0.889	<2.50	<2.8	
		Silver (Ag)	0.889	<0.500	<0.56	
21-02-01501-004	104-W-04	Arsenic (As)	1.00	3.42	3.4	
		Barium (Ba)	1.00	151	150	
		Cadmium (Cd)	1.00	9.13	9.1	
		Chromium (Cr)	1.00	22.5	22	
		Lead (Pb)	1.00	209	210	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	23.8	24	
21-02-01501-005	104-W-05	Arsenic (As)	1.00	<1.00	<1.0	
		Barium (Ba)	1.00	4.61	4.6	

Client Number: 26-3514 **Report Number:** 21-02-01501

Project/Test Address: GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Cadmium (Cd)	1.00	<0.100	<0.10	
		Chromium (Cr)	1.00	<1.00	<1.0	
		Lead (Pb)	1.00	3.42	3.4	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	<0.500	<0.50	
21-02-01501-006	104-W-06	Arsenic (As)	0.889	<1.00	<1.1	
		Barium (Ba)	0.889	56.2	63	
		Cadmium (Cd)	0.889	0.395	0.44	
		Chromium (Cr)	0.889	11.4	13	
		Lead (Pb)	0.889	19.3	22	
		Selenium (Se)	0.889	<2.50	<2.8	
		Silver (Ag)	0.889	1.26	1.4	
21-02-01501-007	104-W-07	Arsenic (As)	1.00	1.11	1.1	
		Barium (Ba)	1.00	117	120	
		Cadmium (Cd)	1.00	1.18	1.2	
		Chromium (Cr)	1.00	4.59	4.6	
		Lead (Pb)	1.00	29.9	30	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	0.675	0.68	

Client Number: 26-3514 **Report Number:** 21-02-01501

Project/Test Address: GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
21-02-01501-008	104-W-08	Arsenic (As)	1.00	1.58	1.6	
		Barium (Ba)	1.00	71.1	71	
		Cadmium (Cd)	1.00	0.475	0.48	
		Chromium (Cr)	1.00	1010	1000	
		Lead (Pb)	1.00	33.3	33	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	1.10	1.1	
21-02-01501-009	104-W-09	Arsenic (As)	1.00	<1.00	<1.0	
		Barium (Ba)	1.00	358	360	
		Cadmium (Cd)	1.00	1.65	1.6	
		Chromium (Cr)	1.00	<1.00	<1.0	
		Lead (Pb)	1.00	746	750	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	<0.500	<0.50	
21-02-01501-010	104-W-10	Arsenic (As)	1.00	<1.00	<1.0	
		Barium (Ba)	1.00	141	140	
		Cadmium (Cd)	1.00	2.45	2.4	
		Chromium (Cr)	1.00	2.68	2.7	
		Lead (Pb)	1.00	19.9	20	

Client Number: 26-3514 **Report Number:** 21-02-01501
Project/Test Address: GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	<0.500	<0.50	
21-02-01501-011	104-W-11	Arsenic (As)	1.00	<1.00	<1.0	
		Barium (Ba)	1.00	61.9	62	
		Cadmium (Cd)	1.00	0.285	0.28	
		Chromium (Cr)	1.00	14.5	15	
		Lead (Pb)	1.00	7.21	7.2	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	1.16	1.2	
21-02-01501-012	104-W-12	Arsenic (As)	1.00	<1.00	<1.0	
		Barium (Ba)	1.00	5.32	5.3	
		Cadmium (Cd)	1.00	<0.100	<0.10	
		Chromium (Cr)	1.00	<1.00	<1.0	
		Lead (Pb)	1.00	1.30	1.3	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	<0.500	<0.50	
21-02-01501-013	104-W-13	Arsenic (As)	1.00	<1.00	<1.0	
		Barium (Ba)	1.00	12.6	13	
		Cadmium (Cd)	1.00	0.180	0.18	

Client Number: 26-3514 **Report Number:** 21-02-01501

Project/Test Address: GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID
		Chromium (Cr)	1.00	2.49	2.5	
		Lead (Pb)	1.00	6.74	6.7	
		Selenium (Se)	1.00	<2.50	<2.5	
		Silver (Ag)	1.00	0.785	0.78	
21-02-01501-014	104-W-14	Arsenic (As)		<1.00	---	
		Barium (Ba)		<0.500	---	
		Cadmium (Cd)		<0.100	---	
		Chromium (Cr)		<1.00	---	
		Lead (Pb)		<0.500	---	
		Selenium (Se)		<2.50	---	
		Silver (Ag)		<0.500	---	

Environmental Hazards Services, L.L.C

Client Number: 26-3514 **Report Number:** 21-02-01501

Project/Test Address: GFC; 4300 Goodfellow Blvd

Lab Sample Number	Client Sample Number	Analyte:	Wipe Area (ft^2)	Total Metal (ug)	Concentration (ug/ft^2)	Narrative ID

Sample Narratives:

Analyst: Kailee Guthrie

Method: Mercury (Hg): EPA SW846 7471B

All other metals: EPA SW846 3050B/6010D

Reviewed By Authorized Signatory: (b) (6)

Tasha Eaddy

QA/QC Clerk

Sample Results denoted with a “less than” (<) sign contains less than the reporting limit for each particular metal, based on a 50mL volume. The reporting limit for Cadmium is 0.10ug, Barium, Lead and Silver are 0.50ug, Arsenic and Chromium are 1.0ug, and Selenium is 2.5ug.

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Unless otherwise noted, samples are reported without a dry weight correction. Sample location, description, area, volume, etc., was provided by the client. If the report does not contain the result for a field blank, it is due to the fact that the client did not include a field blank with their samples. EHS sample results do not reflect blank correction. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714.

Legend	ug = microgram	ug/ft^2 = micrograms per square foot
	mL = milliliter	ft^2 = square foot

ENVIRONMENTAL HAZARDS SERVICES, LLC

Metals Chain of Custody Form

Company Name	Burns & McDonnell	Account #	26-3514
Company Address	9400 Ward Parkway	City/State/Zip	Kansas City, MO 64114
Phone	314-302-4661	Email	eaahlemeyer@burnsmcd.com
Project Name / Testing Address	GFC/4300 Goodfellow Blvd		
PO Number	1687765	Collected By	Emily Ahlemeyer

Turn-Around Time: ☒ 3 DAY ○ 2 DAY ○ 1 DAY ○ SAME DAY OR WEEKEND - Must Call Ahead

LAB NUMBER	Client Sample ID	Collection Date & Time	METALS: Pb TCLP	TCLP RCRA 8	RCRA 8 Total	Toxic Metal Profile	Welding Fume Profile	TX 11 TCLP	CA 17 Total	Other Metals	PARTICULATES: Total Nuisance Dust	Respirable Dust	TSP Gravimetric	TSP Pb	PM-10	AIR: Total Time (Mins.)	Flow Rate (L/min.)	Vol. (Total Liters)	WIPES: AREA (Circle The Unit of Measurement Used: cm or in)
1	104-W-01	2/9/21 0854								Ag, As, Ba, Cd, Cr, Pb, Se									21 x 8.75
2	104-W-02	0902																	12 x 12
3	104-W-03	0906																	16 x 8
4	104-W-04	0917																	12 x 12
5	104-W-05	0923																	12 x 12
6	104-W-06	0928																	16 x 8
7	104-W-07	0935																	12 x 12
8	104-W-08	0941																	12 x 12
9	104-W-09	0946																	12 x 12
10	104-W-10	0951																	12 x 12
11	104-W-11	0958																	12 x 12
12	104-W-12	1005																	12 x 12
13	104-W-13	1012																	12 x 12
14	104-W-14	1115																	NA x NA
15																			x

Released By: Emily Ahlemeyer Date: 2/9/21 Time: 1600

Signature: (b) (6) [redacted]

LAB USE ONLY – BELOW THIS LINE

Received By: TStone

Signature: (b) (6) [redacted]

Date: 2/10/21 Time: 11:23 ☒ AM ☐ PM

☐ Portal Contact Added

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

21-02-01501

Due Date:
02/15/2021
(Monday)
EL

APPENDIX C – AIR SAMPLING SUMMARY TABLE

Appendix C
Air Sample Summary Table

Sample Number	Location	Analyte		Result	Units	Recommended Limits*
104-A-01	DISC Room 4, column D13	Silver	<	0.22	µg/m^3	10
104-A-01	DISC Room 4, column D13	Arsenic	<	0.22	µg/m^3	10
104-A-01	DISC Room 4, column D13	Barium	<	0.22	µg/m^3	500
104-A-01	DISC Room 4, column D13	Cadmium	<	0.043	µg/m^3	5
104-A-01	DISC Room 4, column D13	Chromium	<	1.1	µg/m^3	500
104-A-01	DISC Room 4, column D13	Lead	<	0.22	µg/m^3	50
104-A-01	DISC Room 4, column D13	Selenium	<	1.1	µg/m^3	200
104-A-02	DISC Room 3, column D8	Silver	<	0.22	µg/m^3	10
104-A-02	DISC Room 3, column D8	Arsenic	<	0.22	µg/m^3	10
104-A-02	DISC Room 3, column D8	Barium	<	0.22	µg/m^3	500
104-A-02	DISC Room 3, column D8	Cadmium	<	0.043	µg/m^3	5
104-A-02	DISC Room 3, column D8	Chromium	<	1.1	µg/m^3	500
104-A-02	DISC Room 3, column D8	Lead	<	0.22	µg/m^3	50
104-A-02	DISC Room 3, column D8	Selenium	<	1.1	µg/m^3	200
104-A-03	DISC Room 2, column E5	Silver	<	0.21	µg/m^3	10
104-A-03	DISC Room 2, column E5	Arsenic	<	0.21	µg/m^3	10
104-A-03	DISC Room 2, column E5	Barium	<	0.21	µg/m^3	500
104-A-03	DISC Room 2, column E5	Cadmium	<	0.042	µg/m^3	5
104-A-03	DISC Room 2, column E5	Chromium	<	1.1	µg/m^3	500
104-A-03	DISC Room 2, column E5	Lead	<	0.21	µg/m^3	50
104-A-03	DISC Room 2, column E5	Selenium	<	1.1	µg/m^3	200
104-A-04	DISC Room 1, column D2	Silver	<	0.22	µg/m^3	10
104-A-04	DISC Room 1, column D2	Arsenic	<	0.22	µg/m^3	10
104-A-04	DISC Room 1, column D2	Barium	<	0.22	µg/m^3	500
104-A-04	DISC Room 1, column D2	Cadmium	<	0.043	µg/m^3	5
104-A-04	DISC Room 1, column D2	Chromium	<	1.1	µg/m^3	500
104-A-04	DISC Room 1, column D2	Lead	<	0.22	µg/m^3	50
104-A-04	DISC Room 1, column D2	Selenium	<	1.1	µg/m^3	200
104-A-05	DISC Room 2, column B3	Silver	<	0.21	µg/m^3	10
104-A-05	DISC Room 2, column B3	Arsenic	<	0.21	µg/m^3	10
104-A-05	DISC Room 2, column B3	Barium	<	0.21	µg/m^3	500
104-A-05	DISC Room 2, column B3	Cadmium	<	0.042	µg/m^3	5
104-A-05	DISC Room 2, column B3	Chromium	<	1.1	µg/m^3	500
104-A-05	DISC Room 2, column B3	Lead	<	0.21	µg/m^3	50
104-A-05	DISC Room 2, column B3	Selenium	<	1.1	µg/m^3	200

Appendix C
Air Sample Summary Table

Sample Number	Location	Analyte		Result	Units	Recommended Limits*
104-A-06	Field Blank	Silver	<	0.15	µg	10
104-A-06	Field Blank	Arsenic	<	0.15	µg	10
104-A-06	Field Blank	Barium	<	0.15	µg	500
104-A-06	Field Blank	Cadmium	<	0.030	µg	5
104-A-06	Field Blank	Chromium	<	0.75	µg	500
104-A-06	Field Blank	Lead	<	0.15	µg	50
104-A-06	Field Blank	Selenium	<	0.75	µg	200

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

$\mu g/m^3$ - micrograms per cubic meter

APPENDIX D – AIR SAMPLING 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: 21-02-01491
Received Date: 02/10/2021
Reported Date: 02/15/2021

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

Client Number: 26-3514

Laboratory Results

Fax Number: 816-822-3494

Lab Sample Number	Client Sample Number	Analyzed Date	Analyte	Air Volume (L)	Total Metal (ug)	Concentration (ug/m³)	Narrative ID
21-02-01491-001	104-A-01	02/15/2021	Arsenic (As)	706	<0.15	<0.22	
			Barium (Ba)		<0.15	<0.22	
			Cadmium (Cd)		<0.030	<0.043	
			Chromium (Cr)		<0.75	<1.1	
			Lead (Pb)		<0.15	<0.22	
			Selenium (Se)		<0.75	<1.1	
			Silver (Ag)		<0.15	<0.22	
21-02-01491-002	104-A-02	02/15/2021	Arsenic (As)	712	<0.15	<0.22	
			Barium (Ba)		<0.15	<0.22	
			Cadmium (Cd)		<0.030	<0.043	
			Chromium (Cr)		<0.75	<1.1	
			Lead (Pb)		<0.15	<0.22	
			Selenium (Se)		<0.75	<1.1	
			Silver (Ag)		<0.15	<0.22	
21-02-01491-003	104-A-03	02/15/2021	Arsenic (As)	725	<0.15	<0.21	
			Barium (Ba)		<0.15	<0.21	
			Cadmium (Cd)		<0.030	<0.042	

Client Number: 26-3514 Report Number: 21-02-01491

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/m³)	Narrative ID
			Chromium (Cr)		<0.75	<1.1	
			Lead (Pb)		<0.15	<0.21	
			Selenium (Se)		<0.75	<1.1	
			Silver (Ag)		<0.15	<0.21	
21-02-01491-004	104-A-04	02/15/2021	Arsenic (As)	714	<0.15	<0.22	
			Barium (Ba)		<0.15	<0.22	
			Cadmium (Cd)		<0.030	<0.043	
			Chromium (Cr)		<0.75	<1.1	
			Lead (Pb)		<0.15	<0.22	
			Selenium (Se)		<0.75	<1.1	
			Silver (Ag)		<0.15	<0.22	
21-02-01491-005	104-A-05	02/15/2021	Arsenic (As)	724	<0.15	<0.21	
			Barium (Ba)		<0.15	<0.21	
			Cadmium (Cd)		<0.030	<0.042	
			Chromium (Cr)		<0.75	<1.1	
			Lead (Pb)		<0.15	<0.21	
			Selenium (Se)		<0.75	<1.1	
			Silver (Ag)		<0.15	<0.21	
21-02-01491-006	104-A-06	02/15/2021	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, L.L.C

Client Number: 26-3514 Report Number: 21-02-01491

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/m³)	Narrative ID

Sample Narratives:

Method: NIOSH 7300M

Analyst: Brittany Meyer

Reviewed By Authorized Signatory: (b) (6)

Tasha Eaddy
QA/QC Clerk

Sample Results denoted with a “less than” (<) sign contains less than the reporting limit for each particular metal, based on a 15mL volume. The reporting limit is 0.03ug for Cadmium, 0.15ug for Arsenic, Barium, Lead and Silver, and 0.75ug for Chromium and Selenium.

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Unless otherwise noted, samples are reported without a dry weight correction. Sample location, description, area, volume, etc., was provided by the client. If the report does not contain the result for a field blank, it is due to the fact that the client did not include a field blank with their samples. EHS sample results do not reflect blank correction. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714.

LEGEND	ug = microgram	ug/m³ = micrograms per cubic meter
	mL = milliliter	L= Liters

ENVIRONMENTAL HAZARDS SERVICES, LLC

Metals Chain of Custody Form

Company Name	Burns & McDonnell	Account #	26-3514
Company Address	9400 Ward Parkway	City/State/Zip	Kansas City, MO 64114
Phone	314-302-4616	Email	eahlemeyer@burnsmcd.com
Project Name / Testing Address	GFC/4300 Goodfellow Blvd		
PO Number	168765	Collected By	Emily Ahlemeyer
Turn-Around Time	☒ 3 DAY ○ 2 DAY ○ 1 DAY ○ SAME DAY OR WEEKEND - Must Call Ahead		

LAB NUMBER	Client Sample ID	Collection Date & Time	METALS: Pb TCLP	TCLP RCRA 8	RCRA 8 Total	Toxic Metal Profile	Welding Fume Profile	TX 11 TCLP	CA 17 Total	Other Metals	PARTICULATES: Total Nuisance Dust	Respirable Dust	TSP Gravimetric	TSP Pb	PM-10	AIR: Total Time (Mins.)	Flow Rate (L/min.)	Vol. (Total Liters)	WIPES: AREA (Circle The Unit of Measurement Used cm or in)
1	104-A-01	2/9/21 0834								Ag, As, Ba, Cd, Cr, Pb, Se						270	2.62	706	x
2	104-A-02	0837														269	2.65	712	x
3	104-A-03	0838														269	2.70	725	x
4	104-A-04	0841														267	2.68	714	x
5	104-A-05	0842														267	2.71	724	x
6	104-A-06	0812														NA	NA	NA	x
7																			x
8																			x
9																			x
10																			x
11																			x
12																			x
13																			x
14																			x
15																			x

Released By:	Emily Ahlemeyer	Date:	2/9/21	Time:	1600
Signature:	(b) (6) [redacted]				

LAB USE ONLY – BELOW THIS LINE

Received By: TStone

Signature: (b) (6) [redacted]

Date: 2/10/21 Time: 11:09 ☒ AM ☐ PM

☐ Portal Contact Added

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

21-02-01491

Due Date:
02/15/2021
(Monday)
EL