

March 9, 2018  
Mr. Jeffery Mitchell  
Project Manager  
Environmental Health and Safety  
Charlotte-Mecklenburg Schools  
3301 Stafford Drive  
Charlotte, NC 28208

RE: Drinking Water Sampling Results  
First Ward Creative Arts Academy  
715 North Caldwell Street  
Charlotte, Mecklenburg County, North Carolina

Dear Mr. Mitchell:

AECOM Technical Services of North Carolina, Inc. (AECOM) is submitting this letter report summarizing recent drinking water sampling results for First Ward Creative Arts Academy at 715 North Caldwell Street, Charlotte, North Carolina (Site or facility). The drinking water sampling was conducted in accordance with the guidelines established in the *Charlotte-Mecklenburg Schools Drinking Water Sampling Plan* (Sampling Plan) dated September 19, 2017 and in accordance with the Environmental Protection Agency (EPA) *3Ts for Reducing Lead in Drinking Water in Schools* (3Ts) (EPA, 2006).

## Scope of Work

AECOM conducted a comprehensive drinking water sampling program at First Ward Creative Arts Academy in accordance with the Sampling Plan and EPA 3Ts. The following sections outline the sampling program procedures and results.

### Facility Inventory

The work completed included a facility walk through to identify consumption points and assess the conditions of those consumption points for potential repair or replacement. Following the facility inventory, sampling activities were coordinated with the facility Principal and head Custodian. A summary of the facility inventory, including photographs of the consumption points, associated unique identification label and maps with locations, is included as **Appendix A**.

### Sampling Procedure

AECOM personnel arrived at the facility on September 29, 2017, subsequent to the school dismissal bell, to complete a pre-sampling flush of the facility plumbing system. Each consumption point fixture identified during the facility inventory was flushed for a minimum of five (5) minutes. Following a water flush of each consumption point, the fixture was taped off to provide visible indication the fixture was temporarily out of service, and for quality control (QC) purposes associated with the pending sampling event. Signage associated with the sampling was placed in high traffic areas advising occupants to not use any water sources within the facility including non-potable sources (i.e. sinks, faucets and toilets). Additionally,

Mr. Mitchell  
March 9, 2018  
Page 2

school faculty and staff were informed of the water use requirements prior to the pre-sample flushing and following completion of the pre-sample flushing.

AECOM personnel returned to the facility for collection of samples from the drinking water consumption points on September 30, 2017 a minimum of eight (8) hours following the pre-sample flushing. A total of 45 consumption points were flushed during the pre-sample flushing and subsequently sampled the next morning at the Site (**Appendix A**). In accordance with the Sampling Plan, a two-step sampling process was followed for the collection of samples at the facility, as discussed further below. Each sample was collected for total lead and total copper in accordance with the Sampling Plan. All samples were collected directly into laboratory prepared containers and transferred under proper chain of custody to Research & Analytical Laboratories, Inc. in Kernersville, North Carolina (R&A), a North Carolina Drinking Water certified laboratory. Each sample was analyzed for lead and copper by EPA Method 200.8. Chain of custody records and the full laboratory analytical report is included as **Appendix B**.

#### Initial "First Draw" Sample Collection

Initial "first draw" samples were collected on the morning of September 30, 2017. To the extent possible, the drinking water consumption points closest to the main water service line(s) entry point were collected first, then the next closest points continuing to move away from the water service line(s) entry point until the consumption points farthest away were sampled last. Each sample location was documented in electronic field notes including a unique sample identification, sample time, sample characteristics, and additional sampling details such as unusual flow from the fixture. Each sample was collected using new disposable nitrile gloves changed between each sample.

#### Follow-up "Flush" Sample Collection

Following the collection of initial "first draw" samples, consumption points (with the exception of water coolers) were flushed for 30 seconds before collecting follow-up "flush" samples according to the order established during "first draw" sample collection. Water coolers were flushed for a minimum of 15 minutes prior to sample collection. Due to the length of flush time required for water coolers they were flushed and sampled after collecting all other consumption point "flush" samples, in the order established during "first draw" sample collection. "Flush" samples were collected from all consumption points where plumbing configurations were such that no piping disconnections were necessary. In some instances, plumbing configurations prohibited the collection of "flush" samples (i.e. kitchen ice makers). Following the completion of sample collection, signage was removed and normal water usage was communicated to onsite facility personnel. Sampling activities were completed prior to the start of the school day.

#### Sample Results

On September 30, 2017, forty-five (45) "first draw" and forty-four (44) "flush" samples were collected, as well as one field blank for quality assurance/quality control (QA/QC). Initial "first draw" samples were collected on September 30, 2017 for the analysis of lead and copper in drinking water. Laboratory analytical results received on October 18, 2017 indicated one (1) sample result (368-KA-1-Initial) was in exceedance of the North Carolina Drinking Water Standards (NC DWS) for lead (15 micrograms per liter

Mr. Mitchell  
March 9, 2018  
Page 3

[µg/L]). After receiving and verifying the initial sample results, AECOM notified the CMS EHS Project Manager to internally communicate the actions necessary to take the affected fixture out of service.

Based on the results of 368-KA-1-Initial, AECOM directed the analytical laboratory, R&A, to analyze the corresponding “flush” sample (368-KA-1-Flush) for lead. R&A was directed to properly dispose of all other “flush” samples as initial “first draw” samples were below the applicable NC DWS.

Laboratory analytical results for the “flush” sample were received on October 24, 2017. According to laboratory analysis of the “flush” sample, the lead concentration identified in drinking water sample 368-KA-1-Flush (1.86 µg/L) was reported below the NC DWS for lead. An analytical summary table is included as **Table 1**.

### Quality Control/Quality Assurance

A review of the analytical data was conducted to determine if there are qualitative and quantitative limitations associated with the analytical results based on the results of specific QA/QC criteria. An evaluation of accuracy was determined from the review of spike recoveries [i.e., laboratory fortified blank (aka laboratory control sample) and matrix spike results]. Precision was based on the evaluation of laboratory duplicate results. Representativeness was evaluated through a review of holding times, and field and laboratory blank results. There were no qualitative and quantitative limitations associated with reported sample results. Data are valid and usable for their intended purpose. Comprehensive laboratory analytical data is included as **Appendix B**.

### Corrective Action

CMS EHS department officials worked in conjunction with Facilities Maintenance and Childhood Nutrition to replace existing plumbing connections and install lead filtration on the kitchen steamer associated with 368-KA-1-Initial/Flush. According to Child Nutrition, the kitchen steamer is the only kitchen appliance that requires an inline water source for food preparation. Sample ports were installed on the effluent side of the filtration system to monitor the efficacy of the filter. Additional water connections associated with outlet 368-KA-1 were identified by CMS EHS, disconnected by Facilities Maintenance and a sign was posted prohibiting reconnection of the plumbing without prior consent from the EHS department.

Following completion of the repairs, AECOM returned to the Site on January 24-25, 2018 to perform confirmatory sampling in accordance with the sampling procedures detailed in previous sections. Laboratory analytical results from the confirmatory sample (368-KA-1-PCA-Initial) collected on January 25, 2018 reported no lead exceedances of the NC DWS action level.

### Conclusions and Recommendations

Based on the September 25, 2017 drinking water sampling results, lead concentrations were identified above the applicable NC DWS in one (1) consumption point at the Site (368-KA-1-Initial). Follow-up

Mr. Mitchell  
March 9, 2018  
Page 4

“flush” analysis of the consumption point reported no lead exceedance of the NC DWS in the drinking water sample 368-KA-1-Flush. Corrective actions were implemented by CMS to shut off service at the identified fixture. CMS officials kept the kitchen appliance water supply out of service until new plumbing and filtration systems had been installed and confirmatory sampling was performed indicating a lead concentration below the NC DWS. Analytical results were acceptable following corrective action implementation at 368-KA-1 indicating the new filtration system was sufficient and the steamer could be returned to service.

It is recommended as a best practice to implement a compliance monitoring program to maintain compliance due to the age of the school. A sampling program should be re-evaluated if the school undergoes a major renovation that impacts the plumbing or changes in water quality are observed.

If you have any questions or require additional information please do not hesitate to contact Robert Brookshire at (980) 345-1103 or [robert.brookshire@aecom.com](mailto:robert.brookshire@aecom.com), or Amanda Taylor at (704) 499-8002 or [amanda.m.taylor@aecom.com](mailto:amanda.m.taylor@aecom.com).

Sincerely,

**AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.**



Robert Brookshire  
Project Manager



Amanda Taylor, PG  
Program Manager

Enclosures

cc: First Ward Creative Arts Academy Principal  
Project File (hard copy)

Site Name	Sample ID	Lab ID	Parameter:			Copper						Lead				
			Sample Date	Date Received	Sample Date Prep	Date Analyzed	Result µg/L	Flag	MDL	RL	Dilution Factor	Result µg/L	Flag	MDL	RL	Dilution Factor
Action Levels, µg/L:							1,300					15.0				
First Ward (old)-Campus Roll-up	368-KA-1-Initial	41055-01	9/30/2017	10/5/2017	N/A	10/10/2017	30.1		0.28	1.00	1	17.2		0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-1-Initial	41055-02	9/30/2017	10/5/2017	N/A	10/10/2017	19.0		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-2-Initial	41055-03	9/30/2017	10/5/2017	N/A	10/10/2017	13.9		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-3-Initial	41055-04	9/30/2017	10/5/2017	N/A	10/10/2017	15.0		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-4-Initial	41055-05	9/30/2017	10/5/2017	N/A	10/10/2017	16.8		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-19-Initial	41055-06	9/30/2017	10/5/2017	N/A	10/10/2017	81.4		0.28	1.00	1	0.56	J	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-5-Initial	41055-07	9/30/2017	10/5/2017	N/A	10/10/2017	13.6		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-6-Initial	41055-08	9/30/2017	10/5/2017	N/A	10/10/2017	17.5		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-20-Initial	41055-09	9/30/2017	10/5/2017	N/A	10/10/2017	91.8		0.28	1.00	1	0.47	J	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KS-7-Initial	41055-10	9/30/2017	10/5/2017	N/A	10/10/2017	9.28		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-23-Initial	41055-11	9/30/2017	10/5/2017	N/A	10/10/2017	36.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-24-Initial	41055-12	9/30/2017	10/5/2017	N/A	10/10/2017	47.0		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-25-Initial	41055-13	9/30/2017	10/5/2017	N/A	10/10/2017	67.7		0.28	1.00	1	1.14		0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-21-Initial	41055-14	9/30/2017	10/5/2017	N/A	10/10/2017	70.3		0.28	1.00	1	0.60	J	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-26-Initial	41055-15	9/30/2017	10/5/2017	N/A	10/10/2017	88.0		0.28	1.00	1	1.65		0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-22-Initial	41055-16	9/30/2017	10/5/2017	N/A	10/10/2017	56.7		0.28	1.00	1	0.53	J	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-KI-1-Initial	41055-17	9/30/2017	10/5/2017	N/A	10/10/2017	1.0	U	0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-1-Initial	41055-18	9/30/2017	10/5/2017	N/A	10/10/2017	8.23		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-2-Initial	41055-19	9/30/2017	10/5/2017	N/A	10/10/2017	8.54		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-29-Initial	41055-20	9/30/2017	10/5/2017	N/A	10/10/2017	15.4		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-27-Initial	41055-21	9/30/2017	10/5/2017	N/A	10/10/2017	33.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-TL-4-Initial	41055-22	9/30/2017	10/5/2017	N/A	10/10/2017	22.8		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-28-Initial	41055-23	9/30/2017	10/5/2017	N/A	10/10/2017	28.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-5-Initial	41055-24	9/30/2017	10/5/2017	N/A	10/10/2017	15.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-6-Initial	41055-25	9/30/2017	10/5/2017	N/A	10/10/2017	66.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-3-Initial	41055-26	9/30/2017	10/5/2017	N/A	10/10/2017	48.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-4-Initial	41055-27	9/30/2017	10/5/2017	N/A	10/10/2017	45.3		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-TL-1-Initial	41055-28	9/30/2017	10/5/2017	N/A	10/10/2017	15.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-NOS-1-Initial	41055-29	9/30/2017	10/5/2017	N/A	10/10/2017	20.0		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-NOS-2-Initial	41055-30	9/30/2017	10/5/2017	N/A	10/10/2017	16.9		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-30-Initial	41055-31	9/30/2017	10/5/2017	N/A	10/10/2017	14.6		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-17-Initial	41055-32	9/30/2017	10/5/2017	N/A	10/10/2017	7.97		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-18-Initial	41055-33	9/30/2017	10/5/2017	N/A	10/10/2017	8.48		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-8-Initial	41055-34	9/30/2017	10/5/2017	N/A	10/10/2017	13.9		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-11-Initial	41055-35	9/30/2017	10/5/2017	N/A	10/10/2017	13.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-15-Initial	41055-36	9/30/2017	10/5/2017	N/A	10/10/2017	25.2		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-16-Initial	41055-37	9/30/2017	10/5/2017	N/A	10/10/2017	14.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-7-Initial	41055-38	9/30/2017	10/5/2017	N/A	10/10/2017	11.7		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-12-Initial	41055-39	9/30/2017	10/5/2017	N/A	10/10/2017	10.7		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-TL-2-Initial	41055-40	9/30/2017	10/5/2017	N/A	10/10/2017	25.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-9-Initial	41055-41	9/30/2017	10/5/2017	N/A	10/10/2017	30.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-10-Initial	41055-42	9/30/2017	10/5/2017	N/A	10/10/2017	32.4		0.28	1.00	1	1.03		0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-13-Initial	41055-43	9/30/2017	10/5/2017	N/A	10/10/2017	13.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-WC-14-Initial	41055-44	9/30/2017	10/5/2017	N/A	10/10/2017	13.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-TL-3-Initial	41055-45	9/30/2017	10/5/2017	N/A	10/10/2017	25.1		0.28	1.00	1	1.0	U	0.40	1.00	1
First Ward (old)-Campus Roll-up	368-FB-1-093017	41055-46	9/30/2017	10/5/2017	N/A	10/10/2017	1.0	U	0.28	1.00	1	1.0	U	0.40	1.00	1

**Footnotes:**

Laboratory Certification Number = 37701

U = Not Detected

J = Estimated Concentration. Present but below RL.

µg/L = micrograms per liter = parts per billion





