



CERTIFICATE OF ANALYSIS

Chain of Custody: 611173
Client: Howard County Public School System
Address: 10910 Route 108
Ellicott City, MD 21042
Attention: Jeff Klenk

Job Name: Clemens Crossing Elementary School
Job Location: 10320 Quarterstaff Road, Columbia,
MD 21044
Job Number: 13.034
P.O. Number: Not Provided

Date Submitted: 11/02/2018
Date Analyzed: 11/08/2018
Report Date: 11/08/2018
Date Sampled: 10/30/2018 - 10/31/2018
Person Submitting: Jeff Klenk

Summary of Drinking Water Analysis for Metals

| AMA Sample Number | Client Sample Number | Sample Collection Information | | Analysis Type | Sample Analyte | Reporting Limit | Final Result | Comments |
|-------------------|----------------------|-------------------------------|----------|---------------|----------------|-----------------|--------------|----------|
| | | Date/Time | Location | | | | | |
| 611173-1 | CCES 2 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-2 | CCES 3 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-3 | CCES 4F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 1.8 ug/L | |
| 611173-4 | CCES 7 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-5 | CCES 10 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-6 | CCES 11F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-7 | CCES 12F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 1.2 ug/L | |
| 611173-8 | CCES 13F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-9 | CCES 14F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-10 | CCES 15F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 1.4 ug/L | |
| 611173-11 | CCES 16F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-12 | CCES 17F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-13 | CCES 19F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-14 | CCES 20F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-15 | CCES 21F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 1.8 ug/L | |
| 611173-16 | CCES 22F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-17 | CCES 23F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 2.6 ug/L | |
| 611173-18 | CCES 24F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 1.5 ug/L | |
| 611173-19 | CCES 25 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-20 | CCES 26 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |



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|-------------------|----------------------|-------------------------------|----------|---------------|----------------|-----------------|--------------|---|
| | | Date/Time | Location | | | | | |
| 611173-21 | CCES 27F 1st Draw | 10/30/2018 5:02 am | DF/C | Furnace AA | Lead | 1 ug/L | 1.2 ug/L | |
| 611173-22 | CCES 28F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-23 | CCES 29F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 1.2 ug/L | |
| 611173-24 | CCES 30F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-25 | CCES 31F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-26 | CCES 32F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-27 | CCES 33F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-28 | CCES 34F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-29 | CCES 35F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-30 | CCES 36F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-31 | CCES 37F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-32 | CCES 38F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-33 | CCES 39F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | 2.7 ug/L | |
| 611173-34 | CCES 40F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-35 | CCES 41F 1st Draw | 10/30/2018 5:02 am | CC/B | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-36 | CCES 1 1st Draw | 10/31/2018 5:02 am | KS | Furnace AA | Lead | 1 ug/L | 110 ug/L | 107.6 ug/L. This sample has an elevated level of lead (above 20.5 ppb). |
| 611173-37 | CCES 4S 1st Draw | 10/31/2018 5:02 am | NO | Furnace AA | Lead | 1 ug/L | 4.5 ug/L | |
| 611173-38 | CCES 5 1st Draw | 10/31/2018 5:02 am | OT.2 | Furnace AA | Lead | 1 ug/L | 1.2 ug/L | |
| 611173-39 | CCES 6 1st Draw | 10/31/2018 5:02 am | TL | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-40 | CCES 8 1st Draw | 10/31/2018 5:02 am | CR | Furnace AA | Lead | 1 ug/L | 1.4 ug/L | |



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|-------------------|----------------------|-------------------------------|----------|---------------|----------------|-----------------|--------------|----------|
| | | Date/Time | Location | | | | | |
| 611173-41 | CCES 9 1st Draw | 10/31/2018 5:02 am | CR | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-42 | CCES 11S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.7 ug/L | |
| 611173-43 | CCES 12S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-44 | CCES 13S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.8 ug/L | |
| 611173-45 | CCES 14S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.3 ug/L | |
| 611173-46 | CCES 15S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.1 ug/L | |
| 611173-47 | CCES 16S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.9 ug/L | |
| 611173-48 | CCES 17S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 2.5 ug/L | |
| 611173-49 | CCES 18 1st Draw | 10/31/2018 5:02 am | OT.7 | Furnace AA | Lead | 1 ug/L | 3 ug/L | |
| 611173-50 | CCES 19S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.5 ug/L | |
| 611173-51 | CCES 20S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.1 ug/L | |
| 611173-52 | CCES 21S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-53 | CCES 22S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.1 ug/L | |
| 611173-54 | CCES 23S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.1 ug/L | |
| 611173-55 | CCES 24S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-56 | CCES 27S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.3 ug/L | |
| 611173-57 | CCES 28S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.1 ug/L | |
| 611173-58 | CCES 29S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 2.9 ug/L | |
| 611173-59 | CCES 30S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 2.1 ug/L | |
| 611173-60 | CCES 31S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |



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|-------------------|----------------------|-------------------------------|----------|---------------|----------------|-----------------|--------------|----------|
| | | Date/Time | Location | | | | | |
| 611173-61 | CCES 32S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.9 ug/L | |
| 611173-62 | CCES 33S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.4 ug/L | |
| 611173-63 | CCES 34S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-64 | CCES 35S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-65 | CCES 36S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-66 | CCES 37S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-67 | CCES 38S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.1 ug/L | |
| 611173-68 | CCES 39S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | < 1 ug/L | |
| 611173-69 | CCES 40S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1 ug/L | |
| 611173-70 | CCES 41S 1st Draw | 10/31/2018 5:02 am | CC/S | Furnace AA | Lead | 1 ug/L | 1.3 ug/L | |
| 611173-71 | CCES 42 1st Draw | 10/31/2018 5:02 am | CR | Furnace AA | Lead | 1 ug/L | 1.3 ug/L | |



CERTIFICATE OF ANALYSIS

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| AMA Sample Number | Client Sample Number | Sample Collection Information Date/Time | Location | Analysis Type | Sample Analyte | Reporting Limit | Final Result | Comments |
|-------------------|----------------------|--|----------|---------------|----------------|-----------------|--------------|----------|
|-------------------|----------------------|--|----------|---------------|----------------|-----------------|--------------|----------|

Analysis Methods: Flame AA: APHA SM3111B (1999, 22nd Ed.), Furnace AA: APHA SM3113B (2010, 22nd Ed.), ICP: EPA 200.8 (Rev. 5.4)

mg/L = Parts Per Million (ppm), N/A = Not Applicable, µg/L = Parts Per Billion, N/P = Not Provided

Analyst(s): Suphin Chinnapad

Sample Collector: Jeff Klenk
Certification:

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director G. Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP or any agency of the Federal Government. All rights reserved. AMA Analytical Services, Inc.